

**BELIEFS AND ATTITUDES OF MIDDLE
MANAGERS TOWARDS QUALITY PROGRAMS IN
THEIR ORGANISATIONS**

by

Douglas Davis

A thesis submitted for the degree of Doctor of Philosophy

University of Technology, Sydney

July 2000

ACKNOWLEDGMENTS

I would like to acknowledge the contribution of the following people and organisations in the development of this thesis.

Dr. Thomas Fisher, my supervisor, was a constant source of encouragement and support throughout the research. His comprehensive reviews were particularly helpful in improving the comprehensibility and logic of the thesis.

Dr. John Crawford, for making himself available, often at short notice, to assist with statistical advice.

Dr. Sue Dopson, for her generosity in sharing material and ideas on middle management research with me during a visit to Templeton College Oxford in 1992.

Professor Cal Downs of The University of Kansas Lawrence, for comments on some of the early results of the research.

Dr. Mark Fenton-O'Creevy for sharing ideas and his research findings on employee involvement with me during a visit to the Open University in 1998.

The management of the companies surveyed for allowing their organisations to participate in the research.

The many managers who generously provided their time to complete survey questionnaires or allowed themselves to be interviewed. Without their co-operation it would have not been possible to complete this thesis.

TABLE OF CONTENTS

	Page
Acknowledgements	iii
Table of contents	iv
List of tables	ix
List of figures	x
List of appendices	xi
Glossary	xii
Abstract	xiii
Chapter 1 - Introduction and rationale	
1.1 Background to the research	1
1.2 Research problem and general research question	4
1.3 Justification for the research	4
1.4 Methodology	7
1.5 Outline of this thesis	9
1.6 Limitations and key assumptions	15
1.7 Note on conduct of research	16
Chapter 2 - Literature review	
2.1 Introduction to the literature review	17
2.2 Middle management	18
2.2.1 Definitions of middle management	19
2.2.2 The nature of traditional middle management work	21
2.2.3 Changes in middle management work	22
2.2.4 Impact of information technology	25
2.2.5 Group working	26
2.2.6 Changes in size of middle management group	26
2.2.7 A more optimistic view of middle management work	27
2.2.8 An Australian study of middle managers	35
2.2.9 Middle management resistance to change	36

2.2.10	Summary of this section	37
2.2.11	Working definition of middle management	38
2.3	Quality and its implementation in organisations	39
2.3.1	Definitions of quality	40
2.3.2	Historical review of the quality movement	42
2.3.3	Management theory and TQM	49
2.3.4	Goals and expectations of quality programs	51
2.3.5	Quality program implementation	52
2.3.6	Effectiveness of TQM as a business strategy	58
2.3.7	Quality in the Australian context	60
2.4	Middle managers and quality programs	67
2.4.1	What traditional quality experts say about middle managers' role in quality	68
2.4.2	Middle management's role according to the Australian Business Excellence Framework	72
2.4.3	Research related to middle management's involvement in quality	73
2.5	Attitude formation and attitudes towards quality	94
2.5.1	Definition of attitudes	95
2.5.2	Definition of beliefs	96
2.5.3	Attitude measurement	97
2.5.4	The prediction of attitudes from beliefs	98
2.5.5	The prediction of behaviour from attitudes	100
2.5.6	The theory of planned behaviour	102
2.5.7	Predicting behaviour from attitudes towards targets	107
2.5.8	Other relevant variables and constructs	108
2.5.9	Attitude research related to quality programs	111
2.6	Summary of the literature review	116

Chapter 3 - Exploratory interviews

3.1	Introduction to exploratory interviews	120
3.2	Summary	128

Chapter 4 - Theoretical framework and hypotheses	131
4.1 Direct measurement of attitudes	133
4.2 Attitudes towards the TQM approach	133
4.3 Values and beliefs about quality program outcomes	134
4.3.1 Organisational outcomes	135
4.3.2 Program outcomes and impact on the middle manager	136
4.4 Important others	137
4.4.1 Top management	138
4.4.2 The middle manager's direct boss	139
4.4.3 The middle manager's colleagues	139
4.5 Job type	140
4.6 Active program involvement	141
4.7 Education/training in quality	142
4.8 Middle managers' wider views of the organisation	142
4.9 Other variables included in the research	144
Chapter 5 - Methodology	
5.1 Selection of research methodology	147
5.2 Overview of the methodology	151
5.3 Design of questionnaire	152
5.3.1 Instructions to respondents	155
5.3.2 Attitude measures	155
5.3.4 Beliefs	156
5.4 Questionnaire pre-testing	158
5.5 Approval from UTS Human Research Ethics Committee	159
5.6 Selection of subjects and sample	159
5.7 Process used to recruit organisations	160
5.8 Questionnaire response rate	161
5.9 Data entry and data checking	163
5.9.1 Estimate of data entry errors	163
5.9.2 Missing data	164
5.10 Analysis of quantitative data	165

5.11	Visits to organisations	168
5.11.1	Selection of organisations for interview schedule	169
5.12	Analysis of qualitative data	170
5.13	Further analysis of questionnaire data	171

Chapter 6 - Results

6.1	Introduction	172
6.2	Quantitative results	173
6.2.1	Profile of respondents	173
6.2.2	Individuals' views on their quality programs – whole sample	178
6.2.3	Program outcome values and beliefs	188
6.2.4	Values and beliefs about important others	198
6.2.5	Data reduction using exploratory factor analysis	200
6.2.6	Correlation analysis	205
6.2.7	Regression analysis	207
6.2.8	Comparison between those actively involved and those not actively involved in their quality programs	215
6.2.9	Comparison of items in parts 2 and 7 of the questionnaire	216
6.2.10	Analysis by organisation	218
6.2.11	Comparison of organisational and individual program outcomes	223
6.2.12	Analysis by job category	225
6.2.13	Consistency of beliefs about quality within organisations	227
6.3	Qualitative results	230
6.3.1	Themes resulting from content analysis	231
6.3.2	Meanings of quality	232
6.3.3	Approach to quality	234
6.3.4	Confusion over approaches to quality	237
6.3.5	Positive and negative program views	238
6.3.6	Questioning the effectiveness of applying quality	239
6.3.7	Top management support	240
6.3.8	Support from direct boss and colleagues	243
6.3.9	Events related to quality having an impact on individuals	244

6.3.10	Beliefs about the relationship between organisational and individual program outcomes	245
6.3.11	Middle managers' observations of program impacts on themselves	245
6.3.12	The changing role of middle managers	246
6.3.13	Resistance from middle managers	247
6.3.14	Views on rewards for quality related activities	248
6.3.15	Motivators and de-motivators	249
6.3.16	The importance of context	250
6.4	Summary of hypotheses test outcomes	251
 Chapter 7 - Discussion of results		 254
7.1	Participating organisations and respondents	255
7.1.1	Participating organisations	255
7.1.2	Defining middle management	258
7.1.3	Profile of respondents	259
7.1.4	Quality program involvement	261
7.2	Results addressing main hypotheses	262
7.2.1	Beliefs about the TQM approach to running an organisation	262
7.2.2	Beliefs and attitudes towards the ISO 9000 approach	267
7.2.3	Values and beliefs related to program outcomes	268
7.2.4	A paradox?	280
7.2.5	Findings related to important others	281
7.2.6	Relationship between job type and beliefs/attitudes towards quality	289
7.2.7	Hypotheses related to active program involvement	291
7.2.8	Clarity of program role	292
7.2.9	Hypothesis related to training/education in quality	293
7.2.10	Job role variables	295
7.3	Other important issues and findings	297
7.3.1	Overall job satisfaction	297
7.3.2	Issues relating to resistance by middle managers	298
7.3.3	Quality - still a subject of confusion?	300
7.3.4	Rewards linked to participation in quality related activities	302

7.4	Are middle managers important for quality program success?	302
-----	--	-----

Chapter 8 - Conclusions and recommendations

8.1	Conclusions	306
8.2	Reflections on the methodology	312
8.3	Recommendations for further research	314
8.4	Lessons for practice	316

Appendices		319
-------------------	--	-----

References		409
-------------------	--	-----

List of tables

Table No.	Name of the table	Page
3.1	Summary of four interviews	129
5.1	Research approaches and their philosophical bases	149
5.2	Questionnaire distribution and response statistics	162
6.1	Respondents' views on their hierarchical level	177
6.2	Main job activities of respondents	178
6.3	Approaches to quality in the organisations – respondents' views	179
6.4	Cross tabulation of training/education in quality and active program involvement	183
6.5	Importance and extent of program support from “important others”	200
6.6	Guide to variables used in correlation and regression analysis	206
6.7	Correlations between questions from parts 2 and 7 of questionnaire	217
6.8	Meanings of quality	233
6.9	Some perspectives in the ISO 9000 approach	235
6.10	Program views	238
6.11	Themes relating to effectiveness	240
6.12	Themes relating to top management support	241
6.13	Summary of hypotheses test outcomes	252

List of figures

Fig. No.	Name of the figure	Page
1.1	Structure of thesis	9
2.1	A satirical view of ISO 9000	45
2.2	Deming's chain reaction	47
2.3	1999 Australian Business Excellence Model	65
2.4	Ajzen's theory of planned behaviour	103
2.5	Contributions to attitude using bipolar expectancy scaling	106
4.1	Overall framework for the research	132
4.2	Major variable groups used in the research	146
5.1	Structure of questionnaire	153
6.1	Highest qualification of respondents	174
6.2	Types of education/training in quality received	175
6.3	Tenure in organisation	176
6.4	Tenure in job	176
6.5	Perceived stage of quality program development	179
6.6	Time spent on quality related activities	180
6.7	Benefits of the TQM approach	181
6.8	Initial program involvement	182
6.9	Tenure in quality program	184
6.10.	Clarity of role in quality program	184
6.11	Intentions to leave the quality program	186
6.12	Intentions to join the quality program	186
6.13	Attitude towards quality in the organisation	187
6.14	Importance of program outcomes to the individual	189
6.15	Individuals' beliefs about likelihood of program outcomes	191
6.16	Differences between importance and likelihood of program outcomes	193
6.17	Bar charts for bipolar program outcome items	195
6.18	Desirability and likelihood of outcomes – bipolar items	197
6.19	Likelihood/desirability gap – bipolar items	197
6.20	Individuals' beliefs about likelihood of program outcomes (unipolar and bipolar items)	199

List of appendices

No.	Name of appendix	Page
2A	Deming's 14 point of management	319
5A	Initial version of questionnaire	320
5B	Later version of questionnaire	327
5C	Letter of approval from UTS Research Ethics Committee	335
5D	Explanatory letter sent to organisations	336
5E	Details of participating organisations	339
5F	Summary of participating organisations	347
5G	Questionnaire coding sheet	349
5H	Interview schedule and question guide	350
5I	Examples of NUD*IST files	353
6A	Questionnaire variables, summary statistics and missing data	356
6B	Miscellaneous reasons for becoming actively involved or not becoming actively involved in company quality program	359
6C	Results of factor analysis	362
6D	Comparison of results of using alternative scales for parts 1 and 6 of questionnaire	367
6E	Descriptive statistics and figures by organisation	368
6F	Analysis of differences between organisations	375
6G	Comparing values and beliefs about company and individual program outcomes, analysis by organisation	385
6H	Comparative ranking of organisations on some key variables	387
6I	Analysis of differences between job categories	388
6J	Correlations between key variables	393
6K	Correlations between key variables, by organisation	395
6L	Multiple regression results	398
6M	Differences in beliefs about quality within organisations	406
6N	Sketch of quality program history for organisation 1	408

Glossary

ABS	Australian Bureau of Statistics
AQC	Australian Quality Council
EI	Employee Involvement
ISO 9000	International Standards Organisation's standards on quality management systems
SPC	Statistical Process Control
SQC	Statistical Quality Control
TAFE	Technical and Further Education. Former Technical College system.
TQC	Total Quality Control. An earlier version of TQM.
TQM	Total Quality Management. Defined for this research as: The management philosophy that seeks continuous improvement in the quality of performance of all the processes, products and services of an organisation. It emphasises the understanding of variation, the importance of measurement, the role of the customer and the involvement of employees at all levels of the organisation in pursuit of such improvements. (TQMI, n.d.)
UTS	University of Technology, Sydney

ABSTRACT

This overall objective of this research was to identify factors that were important in forming middle managers' attitudes toward quality and quality programs in their organisations. An underlying assumption of the research, supported by the literature, was that a middle manager's attitude toward his/her quality program could be an important indicator of behaviour toward the program e.g. resistance, willingness to be involved. Reviews of the literature on middle management, quality, attitude measurement and research more specifically related to the research topic was undertaken. The work of Ajzen (1988) was particularly useful in devising an overall theoretical framework for the research. A number of hypotheses related to the overall research question were formulated.

Twenty-one organisations agreed to participate in the research. These all had a quality program. Some of the organisations were quite advanced in quality, a number had won Australian Quality Awards, others were much less advanced. Organisations were drawn from manufacturing and services in both private and public sectors. Data was collected in two main ways. Firstly, a questionnaire was designed, piloted and distributed to approximately 1100 middle managers in participating organisations. The response rate was approximately 50%. Secondly, in depth interviews were carried out with middle managers, senior managers and quality managers in a number of the participating organisations.

The results generally confirm the importance of the middle management group as key to the success of a quality program. Middle managers across all of the participating organisations generally believed that the TQM approach to management was an effective one. Their views on the effectiveness of ISO9000 were less positive. Middle managers generally believed that the quality programs were more likely to benefit their organisations rather than to directly benefit themselves, although quality programs did provide some opportunities for some middle managers. Middle managers generally believed that their quality programs provided both operational and strategic benefit for their organisations.

Paradoxically, a widely held belief among middle managers was that quality programs did not reduce short term thinking and over-reacting to short term goals.

Positive attitudes to quality in the organisation were associated particularly with the values and beliefs that middle managers held regarding: a) program support from top management, from their direct boss and from their colleagues; b) a range of program outcomes for the organisation and c) a range of program outcomes related to the individual middle manager. For middle managers actively involved in their organisations quality program the clarity of their program role was positively related to program attitudes. Training/education in quality was also significantly related to some beliefs and attitudes towards quality and quality programs. Middle managers generally believed that quality programs involved a significant increase in paper work and bureaucracy. However this was not a significant influence on their attitudes toward quality in their organisations. An important finding was that for a wide range of beliefs and attitudes related to quality no significant differences were found between the types of jobs held by middle managers. An exception was the quality specialist group who generally had significantly more positive attitudes and beliefs about quality and their quality programs than did other job categories.

Middle managers seemed relatively at ease with most of the changes that were taking place as part of their programs. In particular they had relatively positive views on devolution of responsibility to lower level employees. Middle managers also seemed relatively at ease with their own performance being more tightly monitored with program implementation. The research supported the more optimistic view of middle management that has been reported recently (e.g. Fenton-O'Creedy 1998). The notion of the middle management still had currency in all of the organisations participating in the research despite the many structural changes that had taken place.

CHAPTER 1
INTRODUCTION AND RATIONALE

1. INTRODUCTION AND RATIONALE

1.1 Background to the Research

This research seeks to further the understanding of the beliefs and attitudes of middle managers towards quality programs¹ within their organisations. The objective of the research is to identify and measure factors that are important in forming middle managers' attitudes towards such quality programs. Researchers (e.g. Ajzen and Fishbein 1980; Ajzen 1988) have shown that individuals' attitudes towards an object or behaviour can influence their reaction towards the object or behaviour. In general positive attitudes are associated with support and participation and negative attitudes are associated with lack of support and perhaps active resistance. The research therefore involves a close examination of the relationship between middle managers and quality programs in the organisations in which they work. The fieldwork was carried out in a sample of Australian organisations.

Although quality programs can take many forms, two formal approaches have arguably dominated practice in Australia since the mid nineteen eighties. These are *total quality management* (TQM²) and quality assurance systems based on the International Standards Organisation series of standards generally known as ISO 9000³. These types of program will therefore be of particular relevance in this project. The focus of this research is on Australian organisations that have opted for the TQM approach. However in many cases both the TQM approach and the ISO 9000 approach are used, either jointly or sequentially over time.

TQM was developed in Japan after the second world war and was subsequently popularised in the West by a number of quality experts, in particular, W. Edwards Deming (Deming 1982, 1986). TQM became popular in Western organisations in the mid 1980s as manufacturing organisations attempted to use the approach in order to emulate the

¹ Note that the term *quality program* is used to describe the general approach to quality issues and principles within the organisation. In some cases it may not be identified as a specific *program* but may be an ongoing approach to quality adopted by the organisation.

² See Glossary for definition.

success of Japanese industry (Garvin 1988). The popularity of this approach has continued to the present and has been extended to non-manufacturing and public sector organisations. Although the basic concepts of TQM have not changed significantly since they were enunciated in the West by Deming (Deming 1982, 1986) they have been subject to considerable scrutiny and debate. This debate together with an increasing need to understand and improve implementation has led to the development of a number of modified models of TQM. Some of these draw on other notions such as World Class Manufacturing (Flynn, Shroeder and Sakakibara 1994). Arguably, the most persistent and influential models based on quality management principles have been the various national quality awards, for example the Malcolm Baldrige National Quality Award in the USA, The European Quality Award and the Australian Business Excellence Award. These are discussed in Section 2.3.2.6 and 2.3.7.3 of the Literature Review. Although these models have been continuously developed since their inception (the Australian and the Baldrige awards were introduced in 1988 and the European award in 1992 (AQAF, 1995, p. 3)), the concepts enunciated by Deming are still firmly embedded in them. Deming's principles are listed in Appendix 2A. However, until relatively recently critical examination of the theoretical basis of the TQM model and research into the relationship to other management constructs has been scant. This neglected area is now being addressed, for example a special issue of the *Academy of Management Review* was devoted to this issue (Dean and Bowen 1994).

ISO 9000 is a much narrower approach to quality than the TQM approach. It concentrates on setting up and maintaining procedures that assure a given consistency of performance of a specified process. It is a quality assurance system. ISO 9000 certification has to be performed by an accredited certification agency external to the implementing organisation. ISO 9000 systems do not overtly consider wider issues such as the effectiveness, productivity, competitiveness, and strategic relevance of the process under consideration, nor to any great extent notions of continuous improvement and employee involvement. This narrow focus of the ISO 9000 approach has sometimes been compared unfavourably with the more holistic approach of quality management and has even been the subject of satirical humour (Adams 1997, pp. 240-243). Never-the-less ISO 9000 has proved very

¹ See Glossary for definition.

popular in some countries such as the United Kingdom and Australia although it has not been popular in others e.g. the USA (Sun, 1996). At present some of the areas of criticism levelled at ISO 9000 are being addressed in a revision process. This revision process is intended to move the ISO 9000 approach closer to the TQM approach. This revision is expected to be issued in the year 2000 (Ketheeswaren and Ezrakovich, 1999). It should be noted that these changes in ISO 9000 were still in process at the time of writing and data collected for this research does not therefore reflect them.

A central principle of TQM is to provide that all employees in an organisation, irrespective of their seniority or job type, must become involved in work improvement activities. Organisations that have embraced the ideas of quality management have restructured and put processes in place that provide opportunities for this to happen (e.g. Lawler, Mohram and Ledford 1995). Employees are provided with TQM training and there are often quite sophisticated procedures in place that support teamwork and projects which facilitate employee participation (see for example the various quality award models cited above). Thus organisations provide the opportunity for individuals to become involved in more creative and interesting activities which may well benefit the organisation e.g. through developing improved processes, generation of innovative ideas, adding to organisational learning. On the other hand for such collaborative work practices to be successful employees need to be willing (motivated) to accept them and participate in them. Quality programs are seen by the senior management of many organisations as vital to their success (see for example Lawler *et al.* 1995).

Literature suggests that in general middle managers have an important role to play in organisations and that their support for change programs, which includes quality programs, is needed for them to be successful. Evidence suggests that structural changes such as downsizing, delayering and the introduction of new organisational forms such as self managing work groups has not led to the demise of the middle manager, at least not in larger organisations. Rather, there has been often a redefinition of the role of middle managers in organisations that have undergone these changes (see for example Dopson and Stewart 1994). Recent Australian research also suggests that although new organisational forms, such as group working, have been widely introduced into

organisations, hierarchical management structures often coexist along with these new organisational forms (Palmer and Dunford 1997, 1999).

It seems important therefore to understand the issues related to middle managers' involvement in quality programs and to be able identify and measure important factors that contribute to the effectiveness of their involvement. Such understanding will help managers to plan the implementation of quality programs effectively.

It is anticipated that this thesis will contribute to knowledge in this area.

1.2 Research Problem and General Research Question

The research problem is to identify issues of importance in relation to middle managers' involvement in quality programs in their organisations, especially to the formation of their attitudes towards their quality programs.

The overall research question is:

What factors are important in forming the attitudes of middle managers toward quality programs in their organisations?

Essentially I argue that middle managers' attitudes toward quality programs are important as they can influence the effectiveness of their participation in such programs. The research findings, based on a review of published research and from the fieldwork undertaken in this research, identified a range of factors that relate significantly to middle managers' attitudes to their quality programs.

1.3 Justification for the Research

The importance of this topic is justified on the following four grounds:

- i) The importance of quality programs at the individual organisation level and at the macro-economic level. In Australia a large infrastructure has evolved to support quality programs. The importance of quality in the Australian context was

confirmed in a major report on quality published in 1987 (Foley 1987). This report became known as the *Foley report* after the Chair of the Review Committee, Dr. Kevin Foley. The committee reported that studies had shown that poor quality of some Australian goods and services was a major concern to consumers and that there was tremendous scope to use TQM to improve the situation. "The Committee is convinced that few, if any issues are more important than quality in meeting the need to improve the competitiveness of Australian industry" (Foley 1987, p. 43, par. 3.79). Most of the recommendations in the Foley report were implemented, including eventually the establishment of a peak body - the Australian Quality Council. There is a large amount of anecdotal evidence, gathered mainly through organisation case studies, which suggests that quality programs improve productivity and competitiveness of organisations. However it has proved extremely difficult to show this connection in a convincing statistical way (see for example Fisher 1990; Powell, 1995 and more recently Hausner & Arndt 1999). A survey of Australian and New Zealand manufacturing organisations found that quality was easily ranked the most important of a number of factors, which included cost and flexibility, in relation to individual manufacturing sites' success (Australian Manufacturing Council 1994). Quality programs seem to still be popular despite the emergence of other approaches such as Business Process Reengineering (Hammer and Champy 1994). Powell (1995, p.15) cites a United States survey which reported that 93% of America's largest 500 firms had adopted TQM in some form. Particularly relevant to this research is the Australian Industrial Workplace Survey carried out in 1995, which found that 69% of workplaces surveyed with 500 or more employees reported using TQM. The figures for smaller sized workplaces were 53% for organisations with between 200 and 499 employees and 44% for organisations with between 100 and 199 employees (Morehead, Steele, Alexander, Stephen and Duffin 1997, Table 9.7 p.189).

- ii) The importance of the role of middle managers in the success of quality programs. Organisational change literature makes it clear that the way in which people issues are addressed is a vital component of successful change management

(e.g. Dawson 1994, pp. 10 - 26). This applies to all employees in an organisation whatever their job or hierarchical level. Here we are concerned with middle managers and look for evidence of their impact on organisational change, particularly related to the introduction of quality programs. Research indicates that middle managers have generally been affected in a number of ways by more recent changes in their organisations (see Section 2.2.3 of the Literature Review).

Changes that seem to have particularly affected the middle management group are the reduction of hierarchical levels in organisations and the widespread introduction of group working. These organisational changes have led to changes in middle management work. The traditional role of the middle manager, as an administrator and important hierarchical link between top management and lower levels in the organisation has to some extent been eroded. Middle managers often have to work with groups in the capacity of coach or mentor. As mentioned above one of the key characteristics of TQM is employee involvement. This means that employees at all levels in an organisation take on more responsibilities for their own work, often through the formation of groups, and also become involved in various kinds of work improvement activities. Job security has also been an issue for middle managers in Australian organisations, as a considerable amount of downsizing and delayering has been undertaken in recent years. So middle managers have been concerned about a number of issues that include their job security and changes in their role and status in their organisations. Resistance by middle managers to the implementation of quality programs has been described by a number of authors. Brennan (1991) and Hill (1991, p. 552) reported on middle management resistance to the introduction of quality circles. More recently Fenton-O'Creevy (1998, p. 68) stated that perhaps the most consistently identified barrier to the success of employee involvement initiatives is resistance from lower and middle managers.

- iii) The relative lack of research into the role of middle managers in quality programs, particularly in the Australian context. There has to date been relatively little research that investigates in depth the roles of particular groups of employees in the implementation and running of quality programs. There is some evidence that

different groups, especially as defined by their hierarchical level, can hold significantly different views on quality programs in their organisations. Harber (1991) carried out a longitudinal study of employee participation in a total quality control program at a plant of the Australian company BHP. Two of his recommendations were that future research should examine various categories of employees on demographic variables such as job level and that in depth research into managers' commitment to change programs, such as quality management programs, should be carried out. (Harber 1991: Chapter 12, p. 5). Davis and Fisher (1994) in their study of a single plant found significant differences in attitudes between hierarchical levels to changes to their jobs that had resulted from a fairly mature quality management initiative. More recently Abraham, Fisher and Crawford (1997) in their investigation of the relationship between quality culture and organisational change found a number of significant differences in views between different groups of employees. In particular, those who held power - senior management, middle management and technical support groups - had significantly higher scores than other groups on issues such as provision of adequate resources and communication effectiveness (*op. cit.* 1997, pp. 630-631). The Australian context is described in Section 2.3.7.1 of the Literature Review.

- iv) The usefulness of the potential applications of the research's findings. It is expected that the research will result in a clearer understanding of issues that relate to middle managers' involvement in quality programs, particularly factors that are important in influencing their effective involvement in such programs. This should be of practical use in organisations that implement quality programs.

1.4 Methodology

A review of literature in the areas of quality, psychology and management identified issues that were likely to be significantly related to individuals' attitudes to quality programs in their organisations and to the attitudes of middle managers in particular. The work of Ajzen (1988), Eagly and Chaiken (1993) and Jones, Glaman and Johnson (1993), was particularly important in setting up a theoretical framework for the project. A number

of exploratory interviews were carried out with middle managers who worked in an organisation that had a well established quality program. This was to test support for issues identified as important in the literature in relation to middle managers' involvement in quality programs and to identify any additional pertinent issues. Based on the literature review and the interviews a theoretical framework was established and a number of specific hypotheses formulated.

To test the hypotheses data was collected in two ways. Firstly, a self-report questionnaire was designed, piloted and then distributed to approximately 1100 middle managers in 21 large organisations known to have quality programs. Secondly, a preliminary analysis was carried out on the data contained in the 562 questionnaires that were returned completed. Thirdly, interviews were conducted with thirty-three employees in ten of the participating organisations. These interviews had a number of objectives. They enabled issues raised in the preliminary questionnaire analysis to be discussed in some depth with middle managers. Top managers and quality managers (where the latter position existed) were also interviewed to obtain their views on middle managers' involvement in quality and on some of the questionnaire results. Information about the organisations' quality programs and some additional demographic data was obtained where possible during the interviews. In some cases it was not possible for organisations to arrange all the interviews that the writer requested. Fourthly, a more detailed analysis of the questionnaire data was undertaken with some additional organisational variables included. Fifthly, qualitative data collected during interviews together with 285 written responses to an open ended item on the questionnaire were subjected to content analysis using the proprietary software package NUD*IST. Finally, the research question and hypotheses were examined in relation to all pertinent data collected and the findings related to previous research.

1.5 Outline of this Thesis

A diagram of the outline of the thesis is shown in Figure 1.1 below.

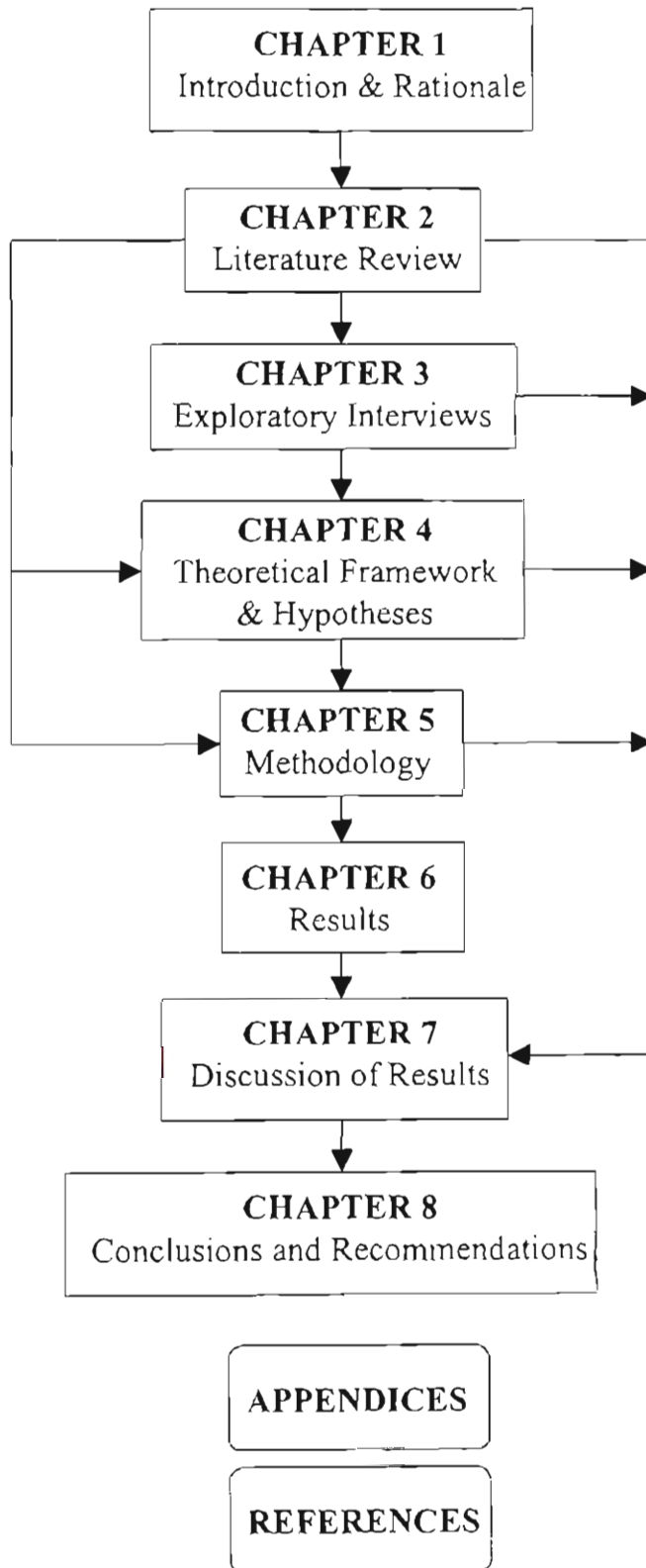


Figure 1.1 Structure of Thesis

Chapter 1 – Introduction and Rationale, introduces the research and the main research question i.e. *What factors are important in forming the attitudes of middle managers toward quality programs in their organisations?* A case is made for the importance of the research. This case is based firstly on evidence of the extent of quality programs in Australian; secondly, on the importance of quality to the competitiveness of Australian organisations and lastly on evidence of the important role that middle managers can play in the effective implementation of quality programs.

Chapter 2 – Literature Review, is divided into a number of sections. The first section reviews literature on middle management. The review shows that generally the role and concerns of middle management have changed in a number of ways over the last two decades or so. In the 1980s there was a concern that restructuring would lead to significant reductions in the numbers of middle managers. Job security, career plateauing and burnout were particular issues raised in the literature. Middle managers were also re-evaluating the balance of their work and home lives. More recent literature suggests a more optimistic future for middle managers. The forecast demise of middle management has not occurred. However changes to the roles of middle managers have continued, due mainly to various forms of devolution of responsibility to lower levels. The establishment of various forms of self-managing groups has been a major way in which this devolution has occurred. Some literature suggests that middle managers' roles have been changing from their traditional one of interpreting and implementing top management's policies to that of working with groups as coach and mentor. The balance of evidence suggests that middle managers play an important role in the implementation of change programs such as quality programs, at least in larger organisations where middle managers are more numerous.

The second section reviews quality and its implementation in organisations. Definitions of quality are examined and the evolution of various approaches to quality, especially TQM and ISO 9000 is explored. It is evident that there are considerable difficulties surrounding the definition of quality and also different approaches to implementing quality. In particular TQM is considered a relatively poorly defined concept. The literature demonstrates that TQM and ISO 9000 are the most popular formal approaches to

implementing quality. The history of quality shows that TQM and many quality techniques have their origins in manufacturing industry. It is evident that implementing a quality program in an effective way is a difficult and time-consuming process.

The third section of the literature review examines literature related to the role of middle managers in the implementation of a quality program. It is evident that there is little attention given to the role of middle management in the implementation of quality programs by the traditional quality experts such as Deming, Juran and Feigenbaum. There is a body of more recent research that examines a broad range of issues related to successful quality program implementation. This literature identifies a number of issues that are of importance in quality program implementation. Among these issues the importance of program support from middle managers is clearly identified as a key factor in program success.

The final section of the literature review examines the formation and measurement of attitudes and attitude research related to quality programs. The literature showed that the formation of attitudes towards an attitude object is complex and may depend on a rather large number of variables. The most convincing overall model that depicts attitude formation and how attitudes are linked to behaviour was that of (Ajzen 1988) and this was selected as a general framework for the research. There seems to have been relatively little research carried out specifically on attitudes towards quality or attitudes towards quality programs. However interest for this topic seems to be increasing.

Chapter 3 – Exploratory Interviews, describes a small number of interviews that were carried out with middle managers to explore some of the issues raised in Chapter 2 - Literature Review and to aid the development of the theoretical framework for the research. The interviews generally supported issues related to middle managers' involvement in quality programs raised in the literature review. There were striking differences between some of the interviewees in their knowledge of quality, their enthusiasm for their organisation's quality program and their involvement in the program. The importance of the position taken towards quality by the middle manager's direct boss

emerged as a particularly important factor in influencing their own attitudes towards quality.

Chapter 4 – Development of Theoretical Framework and Hypotheses, builds on the literature review and the exploratory interviews and presents an overall framework for the research. A number of hypotheses to be tested in the research are presented. The work of Ajzen (1988) was particularly influential in the construction of the overall theoretical framework for the research.

Chapter 5 – Methodology, describes the conduct of the research. Two main methods were used to obtain data. Medium to large sized organisations with a quality program based essentially on the TQM approach (most of the organisations combined a broad TQM approach with some processes certified to one of the ISO 9000 standards) were approached to participate in the research. Twenty one agreed to participate, they included manufacturing and service organisations from both the public and private sectors.

Organisations identified middle managers in terms of their own organisational structure. Two main methods were used to collect data. Firstly, a questionnaire was developed and sent to approximately 1100 middle managers whose organisations were participating in the research. Over 550 usable responses were received representing a response rate of approximately 50%. Secondly, in depth interviews were carried out with a number of middle managers, senior managers and with quality managers (where the latter were employed in organisations) in ten of the participating organisations. The data were analysed using a number of methods. Descriptive statistics were prepared from the questionnaire data. Analysis of variance and multiple regression analysis were also used to aid the testing of hypotheses. The qualitative results were subjected to content analysis using the QSR NUD*IST software (NUD*IST 1997).

The results are presented in Chapter 6. Of the 562 questionnaire respondents 19% were female. The average age of respondents was approximately 41 years, with most (37%) being in the 35 to 44 age group. There were no respondents over the age of 64. Mean organisational tenure was relatively long at 12.6 years, while mean job tenure was only 2.9 years. Overall 78% of respondents had received education or training in quality. It was

evident that participating organisations were at different stages in the development of quality culture in their organisations. There were significant differences between organisations on a number of variables that reflected this difference in program maturity e.g. the proportion of middle managers trained/educated in quality, the proportion who indicated active quality program involvement.

Middle managers generally had a strong belief that the TQM approach to running an organisation was an effective one. They were much more cautious about the utility of the ISO 9000 approach. This view on ISO 9000 was shared by some of the senior managers and quality managers that were interviewed.

The values that middle managers placed on various possible program outcomes were relatively consistent across organisations. On the other hand middle managers' beliefs about the likelihood of those outcome resulting from their organisations' quality programs were generally significantly different between organisations. In general middle managers believed that their quality programs were more likely to provide benefits to their organisations than to themselves. A general view of middle managers, senior managers and quality managers was that the primary purpose of their quality program was to improve organisational performance.

Analysis revealed that a number of variables seemed important in forming middle managers' attitudes towards quality programs in their organisations. Of particular importance were: values and beliefs that middle managers had about program outcomes (particularly regarding outcomes beneficial to the organisation); values and beliefs middle managers had about program support from their direct boss and colleagues and their values and beliefs about program support from top management. Job related measures of a more general nature such as organisational commitment (attitudinal), role ambiguity and role conflict were not as good predictors of attitudes towards quality and the quality program as were quality specific variables.

A comparison of beliefs and attitudes to quality between the job roles that middle managers held found few significant differences.

It was evident from interviews that some organisations had not always given sufficient attention to issues of importance to their middle management group when implementing their quality programs. This had led to problems integrating their middle management into their quality programs.

In Chapter 7 – Discussion of Results, the hypotheses are addressed and the implications of the research findings are discussed. Most of the hypotheses were supported. These included those hypotheses predicting that the following variables would be important (generally significantly related in a positive sense) in forming middle managers' attitudes toward the quality program: a) values and beliefs about program outcomes (especially outcomes of benefit to their organisations); b) values and beliefs about program support from their direct boss (including program communication); c) values and beliefs about program support from their colleagues; d) training/education in quality; e) active program involvement; f) organisational commitment and role ambiguity. The hypothesis that those middle managers working in operations type roles would have more positive beliefs about quality was not supported.

It was evident that despite the various structural changes that have taken place in organisations in recent years the concept of middle management still had considerable utility in the participating organisations. The research highlights that it is important for organisations to consider the particular needs of their middle managers in planning and implementing quality programs.

It was also evident that what could be called the quality approach to organisational change was undergoing an identification crisis. Problems surrounding defining quality and the seeming lack of integration of different approaches to quality implementation cause confusion for middle managers and perhaps threaten the quality movement.

Chapter 8 – Conclusions and Recommendations, summarises the research findings, states some of the implications for theory and practice and provides suggestions for further

research. The importance of involving the middle management group and taking issues of importance to them into account in quality planning was particularly emphasised.

1.6 Limitations and Key Assumptions

The main limitations and assumptions of this research are as follows:

- a) Although overall, organisations that participated in this research were generous in affording the researcher satisfactory access to information, in some cases, usually due to the occurrence of some major event in the organisation, access was terminated or limited from what had been previously agreed. This occurred in just two of the twenty-one organisations that participated in the research. One of these organisations was the subject of a take-over shortly after the questionnaire data was collected and was unable to participate further. The other organisation, from which a large questionnaire sample was obtained, was involved in a successful take-over bid, after which they were unable to participate further in the project. It should be noted that the relatively few large Australian organisations are subject to numerous requests for information and survey data making access difficult for the researchers.
- b) Primary data collection was restricted to Australian organisations.
- c) The sample of organisations that participated in this research was to an extent a convenience sample and therefore caution should be exercised in generalising the results of this research. Although relatively small the sample size is considered sufficient to be confident that it is reasonably representative of the population of medium to large size companies in Australia with quality programs.
- d) There is a possibility of non-response bias in the results obtained by questionnaire survey. This is discussed in more detail in Section 8.2 of the Conclusions and Recommendations.

- e) Variables related to personality, traits and the leadership style of middle managers were not measured in this research.
- f) It was assumed that it would be possible to identify sufficient middle managers in medium and large Australian organisations to make the research practical and useful.

1.7 Note on Conduct of Research

This research was carried out on a part time basis. The research instruments were designed in 1995 and the bulk of data collected in 1996. Subsequently, a number of papers relevant to this research have been published. These are included in the literature review and have been useful in aiding the interpretation of the results of this research and in critiquing the methodology used.

CHAPTER 2
LITERATURE REVIEW

2. LITERATURE REVIEW

2.1 Introduction to the Literature Review

The purpose of this literature review is to identify research and scholarship that has been carried out that is relevant to this research. This provides the context for the development of specific research questions and assists the development of a theoretical and operational framework for the research. As was stated in Chapter 1, the research methodology and the instruments for this thesis were developed in 1996. Since then a number of publications closely allied to the theme of this research have been published and are reviewed in this chapter. Although this recent work was not available to contribute to the development of the methodology used in this thesis it was of considerable value in aiding the interpretation of the results and in reviewing the methodology used.

The field of management covers a wide range of topic areas and themes, often with considerable overlap. An effort has been made to limit the literature review to material that is particularly relevant to this research program. The literature review is organised mainly by theme. It will draw substantially on articles published in the academic press, although as some writers have commented (e.g. Wilkinson, Marchington and Dale 1993), much of the literature on quality has been written by practitioners and consultants.

Middle managers are the subjects of major interest in this research. The first section of the literature review examines the notion of middle management and the reported changes to middle management work that have occurred in recent years.

In the second section the literature on quality, quality programs/initiatives and on middle managers involvement in quality is reviewed. Emphasis is given to the Australian context within which the research was undertaken. This section examines both the theoretical aspects of quality and the more practical issues related to implementation of quality programs.

The third section of the literature review deals with the formation, importance and measurement of attitudes and beliefs and other work related measures that are relevant to this research. This section also reviews literature on beliefs and attitudes towards quality and quality programs.

In the final section of this review the findings from the literature review are summarised, weaknesses and strengths of the literature are discussed and the specific research areas for this research program are identified.

2.2 Middle Management

The group of particular interest in this research is middle managers. The purpose of this section is to review the literature on middle management in order to understand better the issues relevant to middle managers when they are involved in quality programs and quality initiatives within their organisations.

After providing some definitions of middle management this section starts by discussing what could be described as the traditional role of the middle manager. This is followed by a review of the research into the changes that have taken place in middle management work in industrialised countries including Australia in recent years. The changes in middle management work have largely resulted from the major structural changes taking place in organisations such as downsizing, delayering, outsourcing and the introduction of a variety of new organisational forms such as self managed group work. According to middle management researchers such as Dopson and Stewart (1994), these changes have particularly impacted on the nature of middle management work. Until relatively recently there had been little research on middle management, for example Torrington and Weightman (1987, p. 74) reported: "The role of middle manager is little understood and seldom examined by academics". This situation has changed and more recently there has been a significant increase in academic interest in this topic (e.g. Dopson & Stewart 1993, 1994; Livian & Burgoyne 1997; Fenton-O'Creevy 1996, 1998 and Scase & Goffee 1989).

2.2.1 Definitions of Middle Management

Various researchers have used a number of different definitions of middle manager.

In his model of the organisation Mintzberg (1973) recognised a chain of middle-line managers with formal authority. According to Mintzberg these middle-line managers lie in a chain which runs from just below top management to first-line supervisor. The middle-line managers in this chain differ in status, knowledge, career possibilities, responsibilities etc. According to Mintzberg the only thing that middle managers have in common is that they are all, in a hierarchical sense, in between.

In their Australian based research Miller and Longair (1985) found that the initial definition that they used i.e. "the executive group accountable to the functional heads of the organisation", was unsatisfactory. This definition they found excluded most of the middle managers in large organisations. They eventually opted for the following modified definition which they claim that although broad, proved satisfactory in practice: "middle management are those holding positions between top management and operating supervisors - positions which might be a stepping stone to a top management position" (*ibid.* p. 1-3).

Torrington and Weightman (1987) used a more flexible approach and left the definition up to the organisations they studied. In other words, the organisations studied defined who their own middle managers were. In this case it is likely that different organisations would have different definitions.

Borucki and Byosiere (1992, p. 4) used the following definition, which they said was purposely broad: "Those occupying positions below senior management and two levels above first line supervisory level".

In a European middle management study the working definition used by the research team was: "...all those (directly) below top management, and in large companies, the divisional board", (Dopson and Stewart 1994, p. 71)

Floyd and Wooldridge in their research on middle managers' involvement in strategy used a more complex definition which they adopted from Pugh, Hickson, Hinings and Turner (1968): "Middle managers are organizational members who link the activities of vertical related groups and who are responsible for at least sub-functional work flow, but not the work flow of the organization as a whole" (Floyd and Wooldridge 1997, p. 472).

More recently Fenton-O'Creevy (1998, p. 68) defined middle managers as "...managers below the most senior tier, but not including individuals with first line supervisory responsibility who have no career path to higher management levels".

Clearly, there is no one generally accepted definition of the middle manager or middle management in the literature. All of the definitions quoted above are couched to some degree in terms of hierarchical level in the organisation. Also it is clear that some definitions such as the one by Borucki and Byosiere only apply to large multi-layered organisations, which were the object of their research. As demonstrated by Bournois and Livian (1997) problems of definition become even more complex across different countries. They compared managerial group structures across seven different countries and found significant differences in the naming and categorisation of managerial levels. Based on the experience of Miller and Longair (1985) it seems important in research to use a working definition which is easily understood by organisations participating in research and hence easy to operationalise. It is also evident that the concept of a middle manager depends to some extent on organisational context. For example an employee considered a senior manager in a sub-unit of a large organisation might be considered a middle manager in the context of the whole organisation. A working definition seems to be a compromise between consistency and the ease with which it can be operationalised. A working definition of middle management is presented in Section 2.2.11 below.

2.2.2 The Nature of Traditional Middle Management Work

The nature of what could be described as the traditional role of the middle manager or traditional middle management work has been described by a number of writers.

Stewart (1967) in her ground-breaking work on managers carried out in the U.K. was one of the first researchers to investigate the actual work activities of managers in a systematic and detailed way. She found that managers, including middle managers, engage in a large variety of activities. A large amount of time on average was spent on paperwork of various kinds, with enormous variation between individuals (*ibid.* p. 39). Managers also spent a lot of time (on average 43%) (*ibid.* p. 44) in informal discussions. Stewart identified too little time as a complaint of many managers. Stewart divided managers into five different groups based on their roles: group 1 the emissaries (the field sales manager, the public figure); group 2 the writers (the backroom specialist, head office specialist advisor); group 3 the discussers; group 4 the trouble shooters and group 5 the committee man (*sic*) (*ibid.* pp. 102-127).

Katz (1974) provided what could be called a traditional view of the middle management role. Middle management, Katz said, has been viewed in the past as performing a linking function between top management and the lower levels in the organisation, being involved mainly with administration and information processing, rather than being involved with higher level activities such as formulating strategy.

Mintzberg (1973) discerned that middle managers can have a wide range of roles and that their communications role was particularly important.

Torrington and Weightman (1987) in their study of 52 middle managers from 16 organisations described the type of work that middle managers do. They grouped the work that their subjects did into three categories: technical work; administrative work and managerial work. Technical work is done by managers because of their profession, experience or qualification e.g., accounting and engineering. Administrative work is concerned with following routine procedures, carrying out duties authorised by senior

managers. It often involves the collection of statistics and information (often from lower levels in the organisation) for the use of senior management. Managerial work involves setting precedents, taking initiatives, making decisions and influencing others to comply with the middle manager's wishes. "It is the novelty (of managerial work) that complements the comfort of administrative work" (*ibid.* p. 83). Torrington and Weightman describe what they call the *middle management trap*. This occurs when middle managers concentrate their efforts on promotion rather than developing their skills, especially their managerial skills. They found for example that technical work was being widely abandoned in the search for promotion. Torrington and Weightman suggested three features of managerial work that are stronger for middle managers than for others: networking; coping with uncertainty and co-ordinating with other departments where a knowledge of the organisation is most important (*ibid.* p. 87).

A feature of *traditional* middle management work is therefore the large variety of roles performed by middle managers. Middle managers are involved in a wide range of technical areas where their expertise is required, they are all usually involved in a significant amount of administration and to some degree in managerial work. In their traditional management role they are typically intermediaries between top management and lower levels in the organisation.

2.2.3 Changes in Middle Management Work

A number of debates concerning the impact of organisational change on middle management are identified in the literature. There appear to be two main debates, firstly the extent to which organisational changes have changed the role of the middle managers, and secondly the extent to which organisational changes have impacted on the number of middle managers. Downsizing, delayering and the introduction of new organisational forms are arguably the most widely reported organisational changes in recent years. The introduction of various forms of self-managing work groups is perhaps the most widely reported new organisational form in recent years. Also, according to Dopson and Stewart (1994) the impact of the introduction of computer technology on middle management has been a long discussed issue. Following Dopson

and Stewart it is useful to divide views on the future of middle management work into pessimistic and optimistic. The pessimistic view particularly prevalent during the late 1980s included predictions about the demise of the middle management group, and evidence of increasing levels of work related stress on remaining middle managers (e.g. Horton and Reid 1991; Lorick 1991). It was also reported that in some instances top management perceived layers of middle managers as a liability to their organisations. More recently some researchers are suggesting a more positive view of the future of middle management work (e.g. Dopson & Stewart 1994 and Floyd & Wooldridge 1997). This more optimistic view also suggests that many of the gloomy predictions of the late 1980s and early 1990s have not occurred, at least to the extent predicted. Middle managers have in some cases taken on new roles such as coaches and facilitators of groups. Some of these issues will now be discussed in more detail.

Kanter graphically describes changes that have taken place in organisations impacting on the work of middle managers in the late 1980s:

Managerial work is undergoing such enormous and rapid changes that many managers are reinventing their profession as they go...they are watching hierarchy fade away and the clear distinctions of title, task, department, even corporation blur. Faced with extraordinary levels of complexity and interdependency, they watch traditional sources of power erode and the old motivational tools lose their magic. The cause is obvious; competition forcing companies to adopt new flexible strategies and structures. Many of these are familiar: acquisitions, ...reductions in management staff and levels of hierarchy, increased use of performance-based rewards. Other strategies are less common but have an even more profound effect...for example; horizontal ties between peers are replacing vertical ties as channels of activity and communication. (Kanter 1989a, p. 85).

A relatively pessimistic view of the changes in middle management work in the late 1980s was also presented by Scase and Goffee (1989). They carried out a rigorous study of 323 male and 51 female managers working in a number of large organisations in the U.K. The work environment in the U.K. at that time was much like that described by Kanter above producing increased pressures on managers. Their research was broad, investigating the relationship between work, careers and lifestyles of managers. Many of the managers in their study felt that they were subject to greater demands to work harder and under tightly monitored circumstances (*ibid.* p. 170). They concluded that many of those included in their survey were *reluctant managers*. By this they meant that they were less than fully committed to their work, to their careers and to their organisations (*ibid.* p. 179). Excessive workload was a common complaint (*ibid.* p. 23). Their results indicated that managers were taking much more account of their home lives and personal lifestyles than they had done in the past when making decisions about work. For example managers were reluctant to strive for career success if this could only be gained at the expense of personal and family relationships. Scase and Goffee found that middle-aged managers were most affected by the additional work pressures. They considered that reluctant managers were an hindrance to organisational performance:

It is our contention, then, that large companies in Britain contain within them substantial numbers of reluctant managers and, further, that this has a significant impact on corporate performance. (*ibid.* p. 183)

Reviewing the literature on middle management up until 1992 which had generally been predicting a gloomy future for middle management Dopson and Stewart (1994, pp. 57-58) suggest four common reasons for the reported dissatisfaction by middle managers:

- 1) Being in the middle of a long hierarchy;
- 2) Having to cope with conflicting expectations;
- 3) Loss of technical expertise and
- 4) Career disillusionment e.g. lack of promotion opportunities, lack of status, loss of interesting and challenging tasks.

There is emerging however a more optimistic view of the future of middle management work as expressed by researchers such as Dopson & Stewart (1994), Floyd and Wooldridge (1994), Nonaka (1988) and Kanter (1982). In this more optimistic scenario middle managers take on a more strategic role in their organisations and become a key group in the management of knowledge and innovation in their organisations. Some of these changes will now be discussed in more depth.

2.2.4 Impact of Information Technology

One of the most persistent predictions about middle management is that the introduction of information technology would lead to a drastic reduction in their numbers. Dopson and Stewart (1994) provide an excellent review of the more scholarly literature on middle management from 1958 to 1992. They point out that many of the predictions about middle management work were based on little or no scientific evidence and many of the predictions have proved to be inaccurate. In particular the early predictions that information technology would replace many of the tasks of middle managers (e.g. Leavitt & Whistler 1958 and Hicks 1971) and lead to their demise did not occur. Although information technology has replaced many clerical tasks this has impacted on the jobs of lower level employees. Dopson and Stewart point out that the introduction of computer technology has made information more available and more transparent. This was a central conclusion made by Zuboff (1988) in her well known book *In the age of the smart machine: the future of power and work*. As a result employees including middle managers have often become more accountable for their performance. It is noted that information technology is a rapidly developing area and new approaches to planning and control such as enterprise resource planning systems are becoming more extensively used. The impact of these kinds of system on middle management is still unclear.

2.2.5 Group Working

One of the most frequently mentioned reasons for the change in middle management work is the increase in various forms of group working activities in organisations. These activities may be for example a result of restructuring or the introduction of a change program such as TQM or an employee involvement scheme (see Section 2.2.5 below). There is a long history of academic study into group working. For example much of the basic work on group dynamics was carried out prior to the 1950s and is published in the seminal work by Cartright and Zander (1960¹). There were well publicised experiments on a more macro scale carried out at the Saab and Volvo plants in Sweden with autonomous work groups being trialed as an alternative to assembly line production (Safizadeh 1991, p. 70).

More recently the widespread introduction of so-called *self-managing work groups* has been the focus of much attention (e.g. Bettenhausen 1991 and Fisher 1993). A central idea in self-managing work groups is delegation of responsibilities that were once management's prerogative. Such responsibilities can include planning and decision making. These kinds of changes have impacted on the role of middle management. Some evidence suggests that in such situations the role of the middle manager has changed from the traditional hierarchical linking role to that of working with such groups in the role of coach or facilitator. There are also clearly implications for middle managers regarding what they may see as a loss of authority, fewer opportunities to apply their skills and loss of power and status when devolution of responsibility of this kind occurs. Kanter (1982) for example points out that some managers experience a loss of power as much of their authority comes from their hierarchical position.

2.2.6 Changes in Size of Middle Management Group

One way of assessing the importance of the middle management group is to monitor changes in their numbers. It is difficult to obtain reliable estimates of the number of middle managers working in Australian organisations or changes in the number. The

¹ First published in 1953

Australian Bureau of Statistics produces an index of occupational categories and can provide statistics on these. However it is difficult to relate their categories to middle management, which as was shown in Section 2.2.1 above is a concept based more on hierarchical level than job description. Furthermore, middle managers are found mostly in large and medium sized organisations. It is not surprising therefore that statistics on changes in numbers of middle managers are sparse. There are however some estimates available from various surveys that have been carried out. Dopson and Stewart (1994) are of the opinion that although middle management numbers have decreased this decrease has been roughly in proportion to the decline in overall numbers of employees in larger organisations. Australian research by Tharenou (1998) tends to support this. Tharenou carried out a longitudinal study into employee advancement in four major Australian banks and also the Australian Commonwealth Public Service. Data was collected over the period from 1987 to 1996. Her results show that in terms of the proportion of the total workforce the percentage of middle managers actually increased over this period. In the case of the banks the proportion of the workforce made up of supervisors, middle managers and senior managers all increased slightly over this period. Middle management numbers in the banks increased from approximately 12.5% in 1987/88 to approximately 14% in 1995/96. Over the same period there was a decline in the percentage of subordinates employed. The trends were similar for permanent staff employed by the Commonwealth Public Service but with a sharper increase in the percentage of middle managers, senior managers and supervisors and a quite dramatic fall in the percentage of subordinates.

2.2.7 A More Optimistic View of Middle Management Work

More recently a more positive view of the future of middle management work has emerged. This more positive view suggests that the diminution in the proportion of middle managers has not occurred to the extent predicted and that middle managers still have an important role in organisations.

Kanter (1982, 1989b) is a strong advocate for middle management. She believes that a company's productivity will increasingly depend on the degree to which it allows its middle managers to be innovative and combine ideas with action.

Nonaka (1988) argued that the increased intensity of the market and the need for speedy information had led to compressed management. Here top management creates the vision and middle management creates and implements concepts to solve and transcend the contradictions between the vision and the way things are. He argues that middle managers are the agents for changing the organisation's self renewal process because they are able to eliminate confusion within the organisation by serving as the starting point for action. Nonaka (1994) and Nonaka and Takeuchi (1995) have also argued that middle managers have together with top managers an important role in knowledge management in their organisations. For effective knowledge management Nonaka (1994) advocates *middle-up-down management*. In this model, which he contrasts with the *top-down* and *bottom-up* models, the middle managers play a key role in processing information from above and from lower levels:

In sum, middle managers synthesize the tacit (e.g. knowledge that is difficult to express in written form) of both frontline employees and top management, make it explicit (e.g. express it in written form), and incorporate it into new technologies and products. They are the true 'knowledge' engineers of the knowledge creating organizations. (*ibid.* p. 32)

Sayles (1993) observed that in order to become more competitive organisations were changing their operations procedures more rapidly than in the past in response to market pressures. He suggests that this greater flexibility had resulted in disrupting linkages between departments and within processes which had in the past been relatively stable. Sayles sees middle managers as working leaders having a pivotal role in such situations:

It is the middle manager who must 'massage' the parts and continually 'rejiggle' and reconfigure the interfaces. Without their initiatives, under

the conditions of modern technology, the real work of the organisation will never be performed effectively (*ibid.* p. 9)

Sayles sees the work of this new breed of middle managers as having at least the following four dimensions: i) making sure the technology is understood; ii) becoming involved in continuous improvement activities; iii) evaluating trade-offs and iv) people management.

Hilmer and Donaldson (1996) are also strong defenders of middle management. They point out the sophistication of the middle management role and the contribution middle managers can make to organisational performance. They argue that middle managers are not just communicators within the hierarchy they are also making decisions and exercising their authority in order to relieve top management in large complex organisations from being overwhelmed by detail. They suggest that without middle managers filtering information flowing up the hierarchy, the top would soon get buried under the torrent of upward-flowing communications. Hilmer and Donaldson also believe that these kinds of middle management functions cannot be effectively replaced by computer based information systems.

Middle management researchers Dopson and Stewart (1994) illustrate some of the more positive changes for middle managers from the results of a European middle management survey. This was carried out in six European countries. In the first phase 43 companies were surveyed. This was followed in the second phase by more in depth interviews in a smaller number of organisations. Their account illustrates some of the changes in middle management work already discussed. They found a very complex and changing set of pressures operating in the organisations studied, with middle managers working in a much more turbulent environment which has frequently radically changed their roles. They found that middle management work was becoming more generalist with greater responsibilities and a wider range of tasks, with often a greater span of control. Middle managers were held more accountable for their work and more performance measurement was being undertaken. This often made middle managers' performance more visible via computer information systems.

Their research also suggested a decline in job and career security and the development of more restricted internal promotion opportunities for middle management. They stress the importance of changes in the labour market on middle managers – managers change jobs more frequently and there is generally less job security.

Dopson and Stewart reported that most middle managers were positive about the changes to their role and function and felt that many of the frustrations of their job had been reduced. This was because shorter hierarchies meant middle managers were closer to top management and company strategy. Middle managers generally felt that they had clear responsibilities together with control over resources necessary to effect change. Dopson and Stewart thought that surviving a number of reorganisations could partly explain the more positive attitudes found in private industries that had seen the most radical restructuring. There were concerns about future career paths now that management hierarchy had been reduced, but for most managers, particularly from the private sector, they found that the increased responsibilities had, at least in part, compensated for uncertain career paths and made their work more rewarding in itself (*ibid.* p. 74). They also found that most middle managers may not want progress into top management:

The older ones, particularly those who are not graduates may have gotten further than they expected and look at where they have come from rather than lament not getting to the top. There are others who increasingly recognise that top management is not “halcyon” but often involves even harder work, more risk and in some companies, more travelling (*ibid.* p.75).

There were a number of negative aspects reported. Coping with additional pressures and the increased workloads of expanded jobs was one concern. Also, managers felt more insecure fearing further changes while others complained that the refocusing of tasks meant that they lost aspects of their jobs that they enjoyed. There were also problems of having to adapt to changes, particularly when they were unexpected and when they were not fully consulted about those changes. Dopson and Stewart found

there were concerns that additional responsibilities of the role would not be accompanied by the required power to meet these responsibilities. They observed that there seemed to be more resistance to changes in the public sector organisations they surveyed than in the private sector ones.

The overall finding of Dopson and Stewart was that far from middle managers becoming obsolete as suggested by several commentators, a smaller number of middle managers had a greater responsibility for a wider range of duties for which they are now clearly accountable. Middle managers were described as more important than in the past for two reasons. Firstly, because, in slimmer, flatter organisations, they have more responsibility. Secondly, and more importantly they were seen by top management as occupying a pivotal role in implementing changes and are thus able to influence the success or otherwise of the organisation.

The European data led the project team to hypothesise that whether the middle managers see change as positive or negative seems to depend on:

- 1) how clear is the need for change within the organisation, competitive threat provides a more acceptable reason for change than politicians' decisions;
- 2) the extent to which change is seen as normal, which is probably a major distinction between traditional organisations and those in new industries;
- 3) what is done to try and get managers to think positively and adapt to change, for example, incentives, management training, communications about the rationale for change and the example set by top management and
- 4) whether the managers see themselves primarily as professionals, as many do in the public sector, or primarily as managers. (Dopson and Stewart 1994)

Floyd and Wooldridge have carried out research in the U.S. for some years (e.g. Floyd and Wooldridge 1990, 1992, 1994 and 1997) into middle management's involvement in strategy. Their research suggests that middle managers are becoming more involved in formulating strategy in their organisations. In a recent paper on the topic Floyd and Wooldridge (1997) point out that a substantial amount of theory and research suggests

that middle managers make important contributions to strategy. Their paper addresses two questions they claim have not been addressed by prior work in this area. Firstly, how does middle management's strategic influence relate to improved organisational performance? and secondly, what makes some middle managers engage in more of such activity than others? The paper reports the results of a study involving 259 middle managers in 25 organisations.

Using evidence from the literature they state that in general the purpose of middle management is to take responsibility for and control of the managerial problems in organisations. They define two types of broad roles of middle managers. Firstly, as boundary spanners, mediating between the organisation, its customers and its suppliers and secondly, as administrators directing the organisation's overall technical task. In particular middle managers perform a co-ordinating role, where they mediate, negotiate and interpret operational requirements in the context of organisational strategy. Middle managers are the link between an organisation's strategy and its operations. This is the function which Floyd and Wooldridge argue provides middle managers with potential for significant influence in an organisation. They present, from their earlier work (Floyd and Wooldridge 1992) a typology of forms of middle management strategic influence:

Upward forms are *synthesizing information* i.e. gathering information on the feasibility of new programs, communicating the activities of competitors, suppliers, etc., assessing the changes in the external environment and championing i.e. justifying and defining new programs, evaluating the merits of new proposals, searching for new opportunities and proposing programs or projects to higher level managers. Downward forms are *facilitating adaptability* i.e. relaxing regulations to get new projects started, buying time for experimental programs, locating and providing resources for trials, providing a safe haven for experimental programmers and encouraging informal discussions and information sharing and implementing deliberate strategy i.e. monitoring activities to support top management objectives, translating goals into action plans, translating goals into individual objectives and selling top management initiatives to subordinates.

Using Burgelman's (1991, 1994) theory of intraorganisational ecology to describe the relationship between middle management influence and organisational adaptation they argue that middle management's influence on strategy appears critical to the alignment of the external and internal environments. Burgelman argued that strategic change is not so much a process of deliberate decisions by top management, but an emergent process where adaptation depends on the substantive fit between internal and external environments. Also alignment requires the influence of middle managers who are exposed to the external environment and who therefore recognise the potential of alternative initiatives.

The results drew support for the three hypothesis that those in boundary spanning positions, such as marketing, purchasing and HRM, have increased middle management strategic influence in organisations, and increased strategic influence of the middle management group also occurs in organisations where they exert more consistent downward influence and more varied upward influence. The authors point to caution in generalising their result and that the relationships reported do not necessarily reflect causation. They do argue however that this study, together with the results of their previous studies in this topic, suggest that significant involvement in strategic decisions usefully extends beyond the top management team and that middle management involvement, in particular, is significant in both the definition and execution of strategy. They caution organisations against the possible danger of downsizing the middle management group, citing the example of Kodak (reported by Burris, 1994) whose elimination of 20,000 positions, many middle managers, led to a decline in crucial areas of their business such as innovation and creativity, leading to a fall in the introduction of new products.

Literature suggests that middle managers are most needed, at least in terms of their more traditional linking role, in organisations with a rather large number of hierarchical levels. As already discussed removing levels of hierarchy to produce flatter organisation structures has been a common strategy in recent years. It has been argued that this trend together with the introduction of new forms of working would lead to a significant reduction in the need for middle managers. Some recent Australian work by Palmer and Dunford (1997, 1999) suggests that in many larger organisations new organisational forms

may coexist with traditional formal (hierarchical) structures. Palmer and Dunford categorised new practices into the eight forms: delayring, networks/alliances, outsourcing, disaggregation, empowerment, flexible work groups, short term staffing, and reduction of internal and external boundaries. Their work suggests that the environment in which traditional middle management work exists may still be present, at least to some extent, in organisations that have introduced a range of new organisational forms.

In a study of fifty UK organisations Thomas and Dunkerley (1999) reported some positive impacts of downsizing on middle management. Restructuring had lessened several of the traditional middle management frustrations related to career stagnation. Greater job satisfaction related to increased empowerment over work roles was reported by middle managers. On the negative side, removals of layers and flattening of organisational structures had increased the work load and responsibilities of middle managers. Thomas and Dunkerley point out that much of the downsizing literature has focused on the negative aspects, in particular fear and loathing and survivor syndrome. They describe survivor syndrome as a range of negative behaviours and attitudes that cancel out the benefits anticipated from a downsizing program. They suggest that many of the problems of survivor syndrome arise from the breakdown of the traditional psychological contract, where managers were promised job security and career advancement in return for their loyalty and commitment to the organisation.

Middle management has recently been examined through the framework of the psychological contract. Anderson and Schalk (1998) point out that there are a number of past and emerging forms of the psychological contract. A definition of Rousseau's, cited by Anderson and Schalk (*ibid.* p. 639), demonstrated the essence of the approach: "the individual's beliefs about mutual obligations in the context of the relationship between employer and employee". Hallier and James (1997) analysed the dynamics of changes to middle management work at a UK air traffic services organisation through the framework of the psychological contract. They point out that middle managers often have conflicting psychological contracts. As employees they are parties to a contractual exchange with top management and may be subject to alterations in their own contracts as lower level employees. On the other hand they often act as agents of the employer in

regulating the work of lower level employees. The case showed how tensions could arise between managers' commitment to the employee contract and fulfilling their own contractual priorities. Hallier and James point out that in cases where employees at any level believe that there has been a breach of the psychological contract by an employer typical responses include lower trust, lower job satisfaction and reduced commitment to remaining with the organisation. They found that when faced with conflicting obligations managers predominately attempted to meet the expectations of senior management. They also found that performance targets and controls meant to improve middle managers' ability to meet increased commercial pressures may give rise to greater interpersonal rivalries, less considerate treatment of subordinates and ultimately, the subversion of corporate aims.

2.2.8 An Australian Study of Middle Managers

The only study of Australian middle managers of which the writer is aware was sponsored by The Australian Institute of Management and entitled: *New directions in middle management - a dilemma* (Miller and Longair 1985). Nineteen organisations in the private sector participated in the research. The conclusions seem remarkably contemporary considering that this is a relatively early piece of research in this area:

- 1 The role of middle management is changing quickly...;
- 2 The emphasis in middle management is increasingly towards management professionals...;
- 3 Flatter (organisational) structures are becoming the norm...;
- 4 Many middle managers will become plateaued (reach the end of their foreseeable career path) at a very early stage in their career...;
- 5 The jobs of middle management will have more responsibility, more authority and more interest...;

- 6 The scope of middle management is expanding but the number of managers is decreasing... and
- 7 There are cogent reasons for change. There are substantial benefits for organisations and people taking the opportunity to dramatically revitalize the functions and roles of those in middle management in Australia...
(*ibid.* Executive Summary)

2.2.9 Middle Management Resistance to Change

Not surprisingly, resistance by middle managers to some of the changes discussed above has been reported in the literature. Typically, resistance has been reported in the context of particular change initiatives in an organisation, such as the introduction of a quality program or an employee involvement program. There is also some evidence that top management has sometimes perceived middle management as being a group particularly persistent in resisting change.

Based on her doctoral work, Brennan (1991) concluded that resistance by middle managers was the major reason for the failure of quality circles when it was applied in Western organisations.

Frohman and Johnson (1993, p. 55) suggest reasons for these problems within the American organisations they studied. Organisational factors largely responsible for these problems were identified as absence of senior management's concern for employees, ineffective communications from senior management and inadequate teamwork across departments in the middle. Contradictory messages left middle managers in a difficult position: manage for the long term and produce good short-term profits; think strategically and be quick fixers; cut costs and be empathetic towards their subordinates; be lean and increase workers' commitment and loyalty to the firm etc. Other problems identified were delegation without facts and clogged vertical channels. (*ibid.* pp. 64-67).

Dawson (1994, p. 81) found that one of the major problems which Pirelli's Australian plant encountered in implementing TQM was in gaining the commitment at the middle management and supervisory level. Resistance to TQM was mainly in the form of questioning its relevance to their area of operation.

Fenton-O'Creevy (1998) suggests that perhaps the most consistently identified barrier to the success of employee involvement initiatives is resistance from lower and middle managers. Reviewing literature on resistance by middle managers he points out that often resistance does not follow a strongly overt form, such as refusing to carry out top management instructions. To illustrate that it can follow more subtle forms of behaviour he cites the study of a U.S. chemical testing plant (Connors and Romberg 1991). They found middle managers were concentrating on highly visible activities themselves and also restricting the access of lower levels to involvement in training and task forces, thus reinforcing their own power and status.

Some writers have drawn attention to a dissatisfaction by top management of middle management performance, questioning the benefit of middle managers to their organisations. Albrecht (1990, pp. v-vi) sums up this view:

Many executives have become especially frustrated with middle management inertia i.e. the passive reaction offered by the middle management ranks to the new programs or organizational initiatives aimed at cultural change. At the same time, middle managers themselves feel frustrated, demeaned, and besieged by the criticisms aimed at them. They often feel misunderstood, and may perceive themselves as scapegoats for the frustration of both upper and lower levels of the organisation.

2.2.10 Summary of this section

Middle managers are a diverse group, some considering themselves primarily professionals rather than primarily managers.

The concept of the middle manager is a hazy one; there is no generally accepted definition of a middle manager.

Until relatively recently there was little interest by academics in researching middle management. This situation has changed with increased research in the last few years.

There is clear evidence that middle managers have resisted the introduction of organisational change programs, including quality programs.

The radical changes in larger organisations in the 1980s led to widespread dissatisfaction among middle managers who saw their status and power within their organisations being reduced and job security and promotion opportunities under threat.

With the introduction of new organisational forms, such as group work, the middle manager's role has sometimes changed from the traditional linking role to that of coach and facilitator

Recent research suggests that middle managers, at least those who have survived downsizing and restructuring are more satisfied with their jobs. This research suggests also that top management has recognised that middle managers still have an important role to play within the organisation. This role includes involvement in new areas such as knowledge management and involvement in strategic decision making as well as their more traditional role as link between top management and lower levels.

2.2.11 Working definition of middle management

Given the broad nature of middle management work and the need for a definition that is sufficiently flexible to be applied in practice, the following working definition has been developed:

Middle managers are identified as the broad group of people who occupy positions in between – in a hierarchical sense – first-line supervisor and senior

management. Within this broad hierarchical range middle managers may be defined more specifically in the context of the organisations for which they work.

2.3 Quality and its Implementation in Organisations

This research is concerned with middle managers' beliefs and attitudes about quality programs in their organisations. It is therefore necessary to understand the nature of quality and quality programs and the involvement that middle managers have in these programs.

This section first describes different meanings and perspectives of quality and puts them into an historical context. Some discussion of the recent historical development of quality is considered necessary, as it is likely that to some extent beliefs and attitudes towards quality may be influenced by developments of quality that took place predominantly in manufacturing industry. Models that have been developed to assist implementation of quality programs are discussed. As Wilkinson, Marchington and Dale (1993) point out practitioners and operations oriented writers have been responsible for most of the voluminous literature on quality. More recently however, perhaps due to the longevity of TQM, quality has been examined from different perspectives and the relationship between TQM and more established management theory has started to be examined (e.g. Dean and Bowen 1994). This literature is briefly reviewed.

The field research was carried out in Australia. Therefore this section includes a brief review of the quality movement in Australia, and in particular the Australian Business Excellence Framework and the ISO 9000 series approach, both popular in Australia.

Quality programs are intended to create beneficial organisational change. Therefore the kinds of organisational change that occur when quality programs are implemented are also discussed; in particular the use of group working which can change the role of middle managers. A number of writers have examined the implementation of quality programs and identified a number of *key success factors*. These literatures are examined to see

what is said about the role of middle management. A key concept in the implementation of quality programs, particularly the TQM approach, is the involvement of employees at all levels in the organisation. Some of the literature on employee involvement is particularly relevant to this research. Lawler, Mohrman and Ledford (1993, 1995) have demonstrated the close relationship between TQM programs and employee involvement initiatives.

Research related to employee involvement in quality programs will be discussed in a general way in this section of the literature review. More specific research into beliefs and attitudes related to quality programs will be discussed in Section 2.5.9 of the literature review.

2.3.1 Definitions of Quality

Despite, or perhaps because of, the amount of information written about quality, there remains a major difficulty in identifying what quality is and what quality means. The difficulty, particularly with short definitions of quality, can be demonstrated by two comments on the definition of quality by quality expert Juran. In an early publication Juran (1974, p. 2-2, cited in Garvin 1988, p. 40) defined quality as *fitness for use*. In a later book Juran had become more cautious about the efficacy of simple definitions, stating “There are many short phrases to choose from, but the short phrase is a trap. There is no known short definition that results in a real agreement on what is meant by quality” (Juran, 1988, p. 4). Some definitions are more complex and profound. An example is Deming’s definition of quality that is central to his management philosophy now generally known as TQM. Deming suggested that good quality does not necessarily mean high quality. It means a predictable degree of uniformity and dependability at a low cost with a quality suited to the market. (Deming, 1982, p. 1-2)

Garvin (1988, pp. 40-46), reviewing definitions of quality found in the literature, grouped them into five different perspectives:

- Transcendental; quality cannot be defined - you know it when you see it. Such a definition might apply to an item of contemporary art;

- Product based; here quality equates to differences in the quantity of some desired ingredient or attribute. Such a definition could apply to the size of a dish e.g. this steak is much smaller than the last one we ate here;
- User based; here quality is gauged by the capacity to satisfy customers' wants;
- Manufacturing based; quality means conformity to a design or specification and
- Value Based; in this definition quality is the degree of goodness in relation to specific conditions, such as the cost or the intended use. Deming's definition cited above would seem to fall into this category.

A comprehensive exploration of the meaning of quality was recently undertaken by Hardie (1995) in his Doctoral thesis titled *A framework to integrate models and definitions of quality*. He commented that one of the few areas of agreement about quality in the modern sense was that it is a normative concept i.e. quality is better than a lack of quality, and high quality is better than low quality (*ibid.* p. 34). He defined the concept of quality as being in the form of a value judgement (*ibid.* p. 36). Hardie developed a framework, which he demonstrated could be used to explain a large number of different definitions of quality found in the literature. All of the definitions he tested were partial definitions in terms of his framework. He concluded "There is no single universal definition of quality which can be applied to all situations; the more general a definition of quality, the less it can be measured or applied. Several definitions must be used in conjunction to represent quality to any useful degree" (*ibid.* p. 359).

The consequences of the nature of quality, and the lack of a generally agreed definition of quality, is that quality in any particular situation has to be defined. As will be discussed approaches to applying ideas of quality such as TQM also present problems of definition and understanding. The difficulties in defining quality is one of the reasons for the decision to make changes in the Australian and U.S. quality award titles to clarify that these awards were concerned with business performance (excellence) (Fisher 1998). For the purposes of this research project the following definition is used:

Total Quality Management (TQM) is the management philosophy that seeks continuous improvement in the quality of performance of all the

processes, products and services of an organisation. It emphasises the understanding of variation, the importance of measurement, the role of the customer and the involvement of employees at all levels of the organisation in pursuit of such improvements. (TQMI, n.d.)

2.3.2 Historical Review of the Quality Movement

The purpose of this brief review is to illustrate that the way quality is understood today and that the confusions that surround the meaning and utility of quality, are a result of its historical development. The review also sets the scene for a more in depth discussion of contemporary quality models. Although quality is an age-old concept most of the ideas of quality from a business point of view were developed in manufacturing industry. This review therefore begins from the development of quality as a legitimate function in early manufacturing industry.

2.3.2.1 Standardisation, Quality Control and Quality Assurance

Mass production would not have been possible without the ability to make parts which were interchangeable (Wild 1972, pp. 24 –27). This was made possible by the development of two ideas; firstly the introduction of agreed standards to which components were made and secondly inspecting components to ensure that these specifications were indeed met. Garvin (1988, p. 5) describes the genesis of the inspection function and the inspection department. He points out that legitimacy was given to the inspection function by Fredrick Taylor who in the system of work he called Scientific Management assigned the inspection task to one of his eight groups of functional bosses. In Scientific Management Taylor advocated the idea of division of labour which for quality meant in general that those who *did the work* had it checked by independent inspectors. Garvin points out Radford's 1922 book *The control of quality in manufacturing* further defined responsibility for quality as a legitimate independent organisational function – the inspection department.

Statistical quality control was to a large extent developed in the USA during the 1920s. The pioneering work is attributed to Shewart and his colleagues working at Bell Laboratories. The classic book by Shewart on the application of statistical sampling theory was published in 1931 (Garvin 1988, p.6). Statistical quality control involves applying statistical sampling techniques to control quality. The emphasis in statistical quality control is in meeting predetermined specifications. Sample inspection was one significant result of Shewart's work. This involves taking a small sample from a batch of components and inspecting it. Based on the results of the sample inspection a decision is made whether to accept, reject or rework the whole batch. Sampling plans, such as Dodge-Romig (Garvin 1988, p. 7), were developed to assist decision making in this area. Using the same theory Shewart also made a significant contribution to process control through the development of process control charts. These charts allow the stability of a process to be checked by taking and measuring small samples of product usually at regular intervals.

2.3.2.2 Quality Assurance ISO 9000

Although a relatively early concept in quality, quality assurance re-emerged in 1987 through the publication of the ISO 9000 series. This series was derived from a number of other standards including British, U.S. and NATO standards (Peach 1997, p. 21). ISO is the acronym for the International Organisation for Standardisation, founded in 1946 to develop a common set of manufacturing, trade and communications standards. ISO has over 200 technical committees that draft standards (Peach 1997, p. 15). The ISO 9000 series consisted before the very recent revision of a family of five standards. Peach (*ibid.* p.24) describes the two primary roles of the standards as quality assurance and quality management:

Quality assurance is covered by ISO 9001, ISO 9002 and ISO 9003 and provide quality system requirements against which a customer or a third party acting on behalf of customers, can evaluate the adequacy of a supplier's quality system.

Quality management which is covered by ISO 9004 and related guidelines provides guidance for suppliers of all types of products who want to implement effective quality systems in their organisations or improve their existing quality systems.

The quality assurance standards involve setting up procedures to ensure that the output from a process is consistent. The approach is therefore wider in scope than quality control but a narrower, process-focused concept compared with TQM.

An important aspect of the application of the ISO 9001/2/3 is third party certification. Here a third party organisation that is an accredited certification body, conducts formal audits of a supplier organisation to assess conformance to the particular standard in use. A certificate of conformance is issued to complying organisations. To maintain its registered status the supplier organisation must pass periodic surveillance audits (*ibid.* p. 25).

The application of the ISO 9000 series has come in for a considerable amount of criticism which has not escaped the satirical humour of Dilbert (Adams 1997, pp. 240-243) see Figure 2.1. Key issues in the ISO 9000 debate appear to be: a) the benefits of certification - especially for small organisations; b) the motivation for certification – choice or forced compliance and c) confusion over the difference between ISO 9000 and TQM. An account of ISO 9000 experience in the Australian context is given in Section 2.3.7 below. At present some of the areas of criticism levelled at ISO 9000 are being addressed in a revision process. This revision process is intended to move the ISO 9000 approach towards the TQM approach in the year 2000 (see for example Keitheeswaran and Ezrakhovich 1999).



Figure 2.1 A satirical view of ISO 9000 (Adams 1997, p. 240)

2.3.2.3 Development of TQM

According to Walton (1986, cited in Powell 1995, p. 16) the origin of TQM can be traced back to 1949, when the Japanese Union of Scientists and Engineers (JUSE) formed a committee of scholars, engineers and government officials devoted to improving Japanese productivity and enhancing their post-war quality of life.

Ishikawa, perhaps the best known Japanese quality expert, in his book *What is Total Quality Control? The Japanese Way* (Ishikawa 1985), provides an informative commentary on the development of these ideas in Japan. Particularly influential were the visits of the American quality experts Edwards Deming, in 1950, and Joseph Juran in 1954, whose teaching had a great impact on the Japanese approach to quality (Ishikawa 1985, pp. 16-19). Deming's seminars covered process improvement (using the Plan – Do – Check – Act cycle), the use of control charts and the importance of having an understanding of process variability. According to Ishikawa (1985) Juran's visit marked a change in Japan's QC activities from dealing mainly with technology based in factories to an overall management approach, which became known as Total Quality Control (TQC) (TQM was first introduced in Western companies as TQC). Ishikawa describes TQC as a combination of quality assurance and new quality control, the latter avoiding inspection by

building quality into the process. Besides building quality into processes TQC as described by Ishikawa was a company wide approach involving all employees in improvement activities. He credits the American quality expert Armand Feigenbaum as being the originator of the TQC concept in 1957. One of the ways in which employee involvement was achieved was through the introduction of QC (quality control) circles. Techniques such as QC Circles were first introduced in Japan as early as 1950 (Ishikawa 1985, p. 21). QC Circles were voluntary and were intended to encourage foremen and workers to study together and emphasised self-development, mutual development and eventually total participation.

TQC was one of a number of Japanese management approaches that were developed concurrently from the 1950s. Apart from TQC perhaps the best known approach is just-in-time production methods (Schonberger 1982).

2.3.2.4 Spread of TQM to Western Countries

The attention of Western countries became focused on Japanese industry as it became increasingly successful in selling its manufactured goods on world markets.

Sophisticated products in the 1960s replaced the cheap products of the 1950s. The British motor cycle industry was an early casualty of Japanese imports and has never fully recovered. There was interest in how the Japanese were achieving their success and the first well documented Japanese management method to be applied outside of Japan was Quality Circles (QC circles). Quality circles were established in organisations in several countries and were generally not very successful (e.g. McGraw & Dunford 1987 and Brennan 1991). A number of reasons for failure have been put forward by researchers. These include resistance by middle managers (Brennan 1991). Literature suggests that there was certainly a lack of understanding that quality circles were only a part of a larger system of Japanese management.

The gulf between quality in Japan and quality in the USA was confirmed, at least in one industry, by Garvin's article *Quality on the Line* which was published in the influential Harvard Business Review (Garvin 1983). Garvin carried out a detailed comparison of

the room air conditioning industry in Japan and the USA. He measured variables like assembly line defect rates and the reliability of products in the field. He found that the American industry lagged the Japanese industry significantly in both quality and productivity.

The first person generally credited with popularising, outside of Japan, what has become known as Total Quality Management was W. Edwards Deming (Deming, 1982, 1986). Deming showed that the Japanese approach to management was not just about quality circles but was a complete system of management based on principles of quality. Underpinning the philosophy was his much cited 14 points of management, (see Appendix 2A). The Crisis that Deming referred to in his book *Out of the Crisis* (Deming 1986), was the decline in competitiveness of American industry, which was caused in part by what Deming called *deadly sins*. These deadly sins included lack of leadership, the prevalence of short-term thinking and the generation of waste. Deming was particularly concerned about the waste of accumulated knowledge and expertise of lower level employees. Deming argued that the application of TQM would set off a chain of events that would restore American competitiveness and create jobs. His chain reaction is shown in Figure 2.2 below.

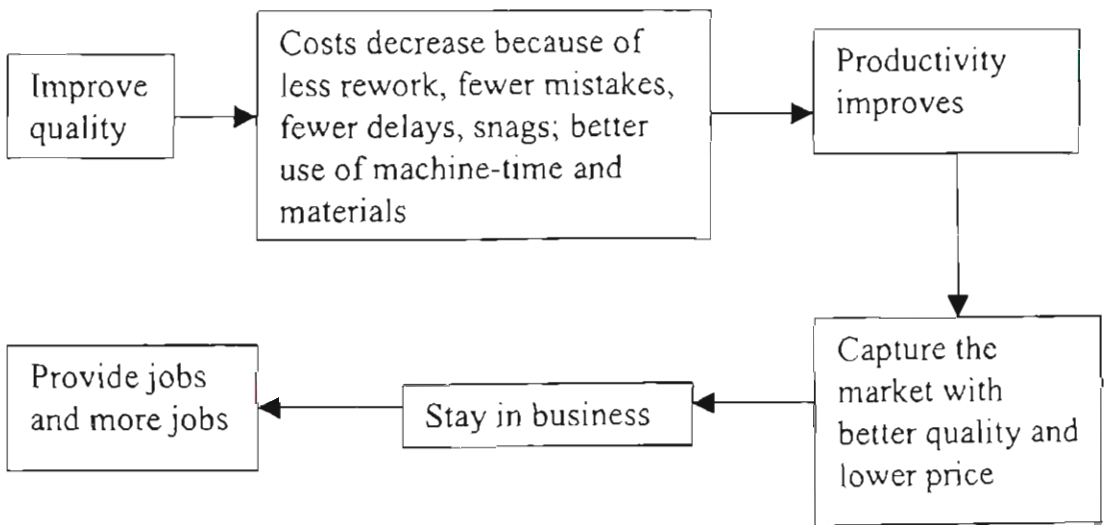


Figure 2.2 Deming's "Chain Reaction" (Deming 1986, p. 3)

Central to Deming's thesis was his definition of quality that good quality does not necessarily mean high quality. It means a predictable degree of uniformity and dependability at a low cost with a quality suited to the market (Deming 1982, p. 1-2). Deming's impact on the quality movement has been profound. What Deming was enunciating was a total approach to managing an organisation, clearly different from the concepts of quality control and quality assurance. A number of interpretations of the concepts underlying the Deming philosophy have been put forward. A useful interpretation is given by Anderson, Rungtusanathan and Schroeder (1994) who used a Delphi panel of experts to identify the underlying concepts. Their analysis revealed the following concepts: visionary leadership; internal and external co-operation; learning; process management; continuous improvement; employee fulfilment and customer satisfaction.

2.3.2.5 Popularisation of TQM and Spread to Service Industries

It is evident that the major developments leading to TQM took place in the manufacturing industry. As far as the writer is aware most of the initial applications of TQM outside Japan were also in manufacturing industries. As the popularity of the approach increased service industries began to apply TQM to their operations. In Australia an early adopter was the NRMA, a large organisation providing a range of services including insurance and motor vehicle breakdown assistance, introducing quality circles in 1985 and beginning the implementation of TQM in 1986 (Willing 1993).

2.3.2.6 Impact of Quality Awards

One of the ways in which TQM has been popularised is through various national quality awards. Arguably the most well known is the American Malcolm Baldrige National Quality Award, introduced in 1988, the same year as the Australian Quality Award (note the Australian Quality Award is now called the Australian Business Excellence Award). Another influential award - the European Quality Award was introduced in

1992 (AQAF, 1995, p. 3). There are many other national quality awards. Quality awards are not a Western invention, the Japanese Deming Quality Prize was established as early as 1951 (Deming Prize Committee 1992). The conceptual models which underpin the various quality awards have been based substantially on the principles enunciated by Deming. The Australian Business Excellence Framework is discussed in Section 2.3.7.3.

Following the principle of continuous improvement the various quality award models have been subject to on-going revision. The changes have usually been concerned with additions and enhancements of the models, the core principles remaining intact. In recent years for example new categories of organisational performance and leadership in the community have been added to some award criteria. Revisions have often stimulated useful and passionate debate, see for example Garvin's views on the Baldrige Award (Garvin, 1991).

One recent change with considerable philosophical consequences is the gradual removal of the word *quality* from the award titles. The Australian Quality Award in 1998 was renamed The Australian Business Excellence Award (AQC 1998). The name of the U.S. award remains the same in 1999 i.e. The Malcolm Baldrige National Quality Award, however the award criteria are now called "the Baldrige Criteria for Performance Excellence" (NIST 1999). According to James (1999) as the award was created and named by law any changes to the award name would require an act of the U.S. Congress.

2.3.3 Management theory and TQM

A special issue of the Academy of Management Review was devoted to examining TQM from a management theory perspective (Dean and Bowen 1994). Dean and Bowen (*ibid.* p. 394) stated: "Despite thousands of articles in the business and trade press, total quality remains a hazy, ambiguous concept". They attribute this confusion to the different frameworks put forward by various contributors to the literature. After reviewing the literature Dean and Bowen saw TQM as a philosophy or an approach to

management that can be characterised by its principles, practices and techniques. They argue that there are just three principles, namely: customer focus; continuous improvement and teamwork. Practices they define as activities, such as collecting customer information, and in turn these practices are supported by techniques e.g. various charts. The inadequacies of current models of TQM, particularly the lack of theoretical underpinning, were also highlighted in a recent Australian report (Foley, Barton, Busted, Hulbert and Sprouster 1997).

An analysis of TQM and its place in management theory has been undertaken by Dawson and Palmer (1995). They concluded that in many ways TQM can be seen as a synthesis of earlier theories and management ideas. For example they point out that TQM combines human-centred management approaches with Scientific Management's focus on data analysis and standardisation (*ibid.* p. 41).

Recently TQM has been scrutinised from a labour market perspective. Commenting on this literature Knights and McCabe (1997, pp. 374-375) point out that some writers have interpreted the prescriptions of the quality gurus such as Deming and Juran as having a managerial focus that relies on the assumption that management can control both people and their organisations as a means to improve quality. They argue that this assumption is too simplistic because it assumes a value consensus among employees and ignores many of the realities of management. Realities include conflicts of interest, differences in organisational commitment and political and power-based tensions that pervade most organisations.

Knights and McCabe point out that some writers have also argued TQM can be used by management to increase their control over employees. They cite Delridge *et al.* (in Knights and McCabe 1997, p. 374) who argue that techniques such as increased surveillance and monitoring, increased accountability, peer pressure through teams and customers and involvement in continuous improvement increases management control by eliminating slack. Total quality management thus becomes total quality control.

In a more recent article Knights and McCabe (1999) explored the assumptions often made about the way in which TQM can change power relationships. They do this through a case study of a major UK retail bank. From their observations they suggest that empowerment and employee autonomy, theoretical outcomes of TQM, may be unrealistic goals in organisations that have their history and power relations steeped in hierarchy and autocratic decision making.

It is clear that there is no complete agreement as to what constitutes TQM or on how it relates to established management theory. However there is some consensus on a number of key characteristics of the approach e.g. employee involvement, customer focus, management by facts and continuous improvement.

2.3.4 Goals and Expectations of Quality Programs

It is important to recognise that there are a number of different groups or stakeholders within organisations e.g. shareholders, employees, customers, suppliers and the wider community. Also within these groups there may be sub-groups such as top management, middle management and lower level groups. The goals and expectations of a quality program may well differ between groups as well as between individuals. How organisations integrate a quality program into their overall business strategy would be a crucial issue.

Clearly, there is a significant difference between the scope and intentions of a TQM program and an ISO 9000 program. Both approaches aim at various aspects of business improvement that might lead to a more competitive position for adopters.

TQM is an approach to improve competitiveness by helping an organisation to meet its competitive priorities. Deming's *chain reaction* (see Section 2.3.2.4 above), demonstrates a process by which this can happen through adopting TQM. Competitive priorities can of course be different between organisations and will change over time. For example the 1994 Manufacturing Futures Survey for Australia shows an increased importance of aspects of flexibility (Harrison and Lemonis 1994, Figure 6, p. 10).

However conformance quality and price were identified as two of the most important competitive priorities. The Australian Business Excellence Framework (see Section 2.3.7.3 below), suggests that organisational performance should be interpreted in a broad sense, certainly beyond financial performance, and it should be related to all stakeholders. They suggest dividing business results into two categories: firstly, indicators of success, and secondly, indicators of sustainability. Some changes will be in the operating systems in an organisation e.g. an increase in employee involvement activities, improvement in performance measurement systems. Others could be considered as outputs e.g. improved financial performance, lower costs, improved job satisfaction, improvement in the company's competitive position. An argument similar to Deming's chain reaction can be made for achieving a competitive priority. TQM enables a wide range of competitive priorities to be met, although this may involve capital expenditure or other approaches. For example product mix changes could be implemented by an improvement team who implement ideas of just-in-time production.

2.3.5 Quality program implementation

The introduction of a quality program requires changes in an organisation that could be substantial. The degree of change will depend on the existing culture in the organisation. Organisations that have no formal knowledge of TQM may exhibit many of the characteristics of TQM in their management approach and processes. For example Powell (1995, p. 30) noted:

During this phase of the study the researchers encountered several highly successful non-TQM firms. One firm that typifies this group had produced remarkable growth and profitability in a rivalrous, low technology manufacturing industry, although it explicitly rejected TQM. The interviews showed that for years the firm had done many of the things promoted by TQM advocates...

The implementation of organisational change is complex and an in depth discussion of this topic is beyond the scope of this research. There are a number of good reviews of the literature in this area for example Dawson (1994, pp. 10-26). Dawson identifies

three approaches to organisational change namely the dominant textbook approach (e.g. Lewin's three phase mode of planned change – unfreezing, changing and refreezing (Lewin 1951)), the contingency approach (e.g. an Australian example is the well regarded model developed by Dunphy and Stace 1990) and contextual perspectives. Dawson criticises Lewin's approach on a number of grounds particularly its lack of applicability in rapidly changing environments (Dawson 1994, p. 17). Dawson is less dismissive of the contingency approach which is more flexible: "...contingency theorists reject the search for a universal model and aim to develop useful generalisations about appropriate strategies and structures under different typical conditions" (*ibid.* p. 18). He confines his criticism of this approach mainly to what he sees as serious omissions in particular models. For example the omission of political considerations from the Dunphy and Stace model. The contextual approach is preferred by Dawson. In this approach change is examined within an historical and organisational context (*ibid.* p. 23). Dawson developed a contextual change framework which he applied to the analysis of a number of cases including some dealing with the introduction of TQM. His model consists of three themes, firstly, the substance of change, secondly, the context of change and thirdly, the politics of change. His model is what he calls a *processual framework*, he argues strongly that to be meaningful organisational change studies should be longitudinal.

The Dunphy and Stace (1990) contingency model is worthy of a brief description as the writer believes it offers a useful framework for discussing change. Their model (*ibid.* p. 82) has two basic dimensions, *the scale of change* which ranges from incremental to corporate transformation, and *style of change management* which ranges from collaborative to coercive. Four basic types of change strategy are identified. Type 1 is *participative evolution* – collaborative small change, Type 2 *charismatic transformation* – collaborative large scale change, type 3 *forced evolution* -- coercive small scale change and type 4 *dictatorial transformation* -- coercive large scale change.

TQM implementation may proceed in many ways. Common elements of implementation reported in the literature are: top management education; model selection e.g. Baldrige model; employee education; the setting up of a quality

infrastructure to provide planning, communication support, facilitate resources and provide overall control; setting up teams of various kinds; quality auditing; carrying out projects and integrating the ideas of continuous improvement into normal work activity. As was stated earlier quality programs are not single events but are rather an ongoing range of activities which unfold over time as an organisation evaluates program effectiveness, assesses its operational and strategic position and considers other hard and soft technologies which become available. The appointment of a new CEO can for example change the strategic focus of an organisation with important implications for the quality program. Also quality program implementation activities have to be integrated with a myriad of other events and initiatives that may be occurring in an organisation. In cases where a management consultant is hired to guide program implementation the consulting company will probably have a *standard* approach to implementation. In the case of larger organisations a Quality Manager is often appointed to oversee quality activities. A number of models of TQM implementation have been reported (e.g. McLean and Persico 1990).

2.3.5.1 Key issues in program implementation

Key issues in Quality program/TQM implementation are expressed in the literature in a number of different ways which include the following. Models such as the Australian Business Excellence Framework and the Saraph, Benson and Schroeder (1989) model specify relevant TQM issues and generally take a normative position on each. For example, considering the issue of leadership, generally more leadership of the kind specified by the model, the better. These models are essentially specifying the *critical success factors* for program implementation. A great deal of information on key implementation issues has come from an examination of how implementation actually proceeds through various form of field research – mostly case studies and questionnaire surveys. This literature typically speaks in terms such as *critical success factors* and *roadblocks* or *barriers* to success. In early work in the U.K. Dale and Duncalf (1985) focused on quality related decision making. They studied six manufacturing companies. Their research findings emphasised the importance of having a quality management policy, the importance of having committed management, the beneficial impact of a

demanding customer with high product quality standards. Following on from this work Duncalf and Dale (1988) developed a detailed quality-related decision making approach aimed at investigating the type and frequency of communications and how decisions are made.

Many issues have been identified as important for successful program implementation; some of the more important ones will be discussed briefly. The need for top management support for the quality program/TQM is perhaps the most frequently cited imperative for success. Wilkinson and Witcher (1991) in an examination of barriers to full TQM in the U.K. stress the importance of quality-committed senior managers. They stress the importance of integrating the TQM program with internal marketing matters related to TQM, such as employee recognition and rewards, pay systems, employee support and training. Wilkinson and Witcher point out that there are many detailed barriers and summarised them around the following issues:

- a) *short-termism* – an emphasis on short-term financial profits rather than on long-term objectives such as building market share or exploiting new technology;
- b) *organisational segmentation* - the tendency for parts of the organisation not to cooperate in an effective way with one another. Wilkinson and Witcher suggest that groups resist the introduction of TQM because it threatens, or they perceive that it threatens to devolve their expert knowledge throughout the organisation. Wilkinson and Witcher see TQM as essentially anti expert because it advocates that all employees should contribute to quality;
- c) *reluctant managers* – particularly middle managers and
- d) *industrial relations* - Wilkinson and Witcher point out that organisation structures in the UK often reflect the class distinctions in wider society making cooperation of lower level workers in TQM difficult. They also suggest that there could be resistance towards the monitoring and control aspects of quality.

Mann and Kehoe (1995) carried out a survey of over 200 companies to investigate factors affecting the success of TQM implementation. They suggest that it is common sense that TQM implementation is tailored to an organisation's needs and that programs

should not be too prescriptive. They also found seven main factors affecting TQM implementation:

- i) process factors – e.g. it may be difficult to encourage workers involved with menial repetitive work to become involved in continuous improvement activities;
- ii) type of employees – the authors suggest that employees with the following attributes are more likely to accept TQM: the more highly skilled; those with shorter tenure; younger employees; those with adequate salaries and conditions and those in close contact with products because quality activities are typically associated with products;
- iii) shared values – e.g. a common understanding that change is needed due to poor business performance, *young* organisations are more likely to accept TQM rather than *old* organisations;
- iv) management style – items include the attitude of top management, middle management and junior management toward change, a participative management style being more likely to encourage TQM. The writers point out that initially an authoritative leadership style may be necessary to implement TQM; barriers that discourage departmental interaction should be removed; organisations driven by short-term planning may find it difficult to change to TQM which emphasises long-term planning;
- v) organisational structure – they suggest TQM is easier to implement within one site than across a number of sites; the approach to TQM should complement the organisational structure e.g. in a multi-site situation should an integrated approach or a site by site approach to implementation be used? TQM is likely to be easier to implement if the company's organisational structure is stable e.g. TQM may be difficult to implement if there is an organisational merger;
- vi) number of employees – generally the smaller the number of employees the easier it is to implement TQM and
- vii) industrial relations – organisations with poor industrial relations are likely to find the implementation of TQM more difficult.

In their study of TQM implementation in a number of Australian organisations Dawson and Palmer (1995, pp. 189-190) identified the following eight lessons:

- i) There is no one best way to implement TQM.
- ii) Accept that implementation will have its downside and be composed of omissions and unforeseen events.
- iii) Question measurement mania.
- iv) Don't try and do everything at once.
- v) Train employees just-in-time.
- vi) Tailor your TQM program to suit your organisational needs.
- vii) Seek support from all quarters to assist TQM implementation because organisational politics and conflict often determine outcomes of change.

Masters (1996) in a article aimed at practitioners produced a list of eight major barriers to TQM success based on a review of the literature. These were: i) lack of management commitment; ii) inability to change organisational culture; iii) improper planning iv) lack of continuous training and education; v) incompatible organisational structure and isolated individuals in departments vi) paying inadequate attention to internal and external customers; vii) inadequate use of empowerment and teamwork and viii) ineffective measurement techniques and lack of access to data and results.

2.3.5.2 Program Evaluation

An important issue in program implementation is assessment of the penetration of the ideas and procedures predicated by the program into the organisation, what might be referred to as the quality culture in the organisation. Quality auditing is important as it provides a measure of progress of program implementation and a guide for future action. A useful aid to assessment is the quality matrix. Crosby's Quality Management Maturity Grid (Crosby 1979, pp. 38-39) is an early example, this uses six measurement categories e.g. quality improvement actions, and five levels of maturity ranging from stage 1 – awakening to stage 5 – certainty. The Australian Business Excellence Framework has an associated matrix named *The Australian Business Excellence Matrix*

(AQC, 1999, p. 11). The holistic S-P model developed by Saunders and Preston (1994) has also been used as an effective audit tool.

Another approach has been to design instruments to assess quality culture in a statistically rigorous way. Two widely cited instruments using this approach are those of Saraph, Benson and Schroeder (1989) and a development of this approach by Flynn, Schroeder and Sakakibara (1994). The latter incorporates ideas of world class manufacturing. A potential advantage of this approach is that it may result in a statistically reliable tool that can be used for audit and research purposes similar to the SERVQUAL instrument (Zeithaml, Parasuraman and Berry 1990). One of the difficulties of this approach from a practical point of view is that the dimensions and the nature of the resulting instrument depends upon the conceptual model of quality chosen by the developers. As discussed in Section 2.3.1 of this chapter there is really no generally agreed model of TQM. Another important issue in auditing is who the assessor is. As assessment is to some extent subjective - different assessors may well have different opinions (see for example Davis and Fisher 1994). At least three approaches can be identified in the literature:

- a) Internal expert perspective, e.g. thought leaders in quality, suggested by Saraph *et al.* (1989);
- b) Internal *who knows best* perspective, e.g. suggested by Flynn *et al.* (1994) and
- c) External expert perspective, this approach is used in some of the quality/excellence award evaluation processes and for ISO 9000 certification.

More recently Rao, Solis and Raghunathan (1999) using data collected from five countries developed an instrument for measuring the dimensions of quality. The researchers claim that their instrument adds to the scope of previously developed ones as it contains additional scales such as quality citizenship.

2.3.6 Effectiveness of TQM as a Business Strategy

There have been a large number of case studies and other accounts of the application of TQM that suggest organisational benefits. However, as far as the writer is aware there

have been few studies attempting to link the application of TQM with organisational performance in a rigorous statistical way (e.g. Fisher 1990; Powell 1995, Hausner & Arndt 1999).

Powell (1995) examined the TQM literature from a competitive advantage perspective. He reviewed studies that had been undertaken that attempted to link adoption of TQM with competitiveness. He then undertook a survey of U.S. organisations to test a number of hypotheses related to these linkages the first of which was: TQM firms outperform non-TQM firms.

Powell found that the majority of reported studies were undertaken by consultants or sponsored by organisations who had vested interests in TQM, thus perhaps introducing bias into the methodology. He found methodological weaknesses in all the studies he reviewed. For example the U.S. Government General Accounting Office (GAO) study reported that the 20 highest scoring applicants for the 1988 and 1989 Baldrige Awards achieved a number of improvements. However the study did not include firms that did not apply for the award or use a sample of non TQM organisations as a control. Powell singled out the International Quality Study by the American Quality Foundation published in 1991 (*ibid.* pp. 19-20) as being more rigorous than previous studies but still having some methodological weaknesses. He points out that in this study it was found that TQM practices, particularly process improvement and supplier certification did universally improve performance.

Powell's findings support the conclusion that TQM can produce economic value to the firm, but that it had not done so for all TQM adopters (*ibid.* p. 29). TQM success appears to depend critically on executive commitment, open organisation and employee empowerment and less upon such things as benchmarking, training, flexible manufacturing and improved measurement. Although firms may find these tools indispensable to a fully integrated TQM initiative, they apparently do not produce performance advantages in the absence of the intangibles such as employee program commitment.

Powell points out that although the data showed a significant TQM-performance correlation, they did not strictly *prove* that TQM caused performance to increase, but only that an association existed (*ibid.* pp. 31-32).

Recently, Hausner and Arndt (1999) used data from the Australian Quality Awards (AQA) to investigate the relationship between the practice of quality and business performance. A key finding was that companies with high AQA scores are much more likely to belong to the best performing organisations.

2.3.7 Quality in the Australian context

The fieldwork for this research was carried out in Australia. This section will provide a brief account of events that have taken place in quality in Australia and an examination of the Australian Quality Business Excellence Framework. In many respects the development of quality in Australia parallels other large industrialised parts of the world e.g. USA, Europe. For example the criteria of the American Malcolm Baldrige National Quality Award and the Australian Business Excellence Award have remained quite similar even though their development and improvement processes are essentially independent.

2.3.7.1 The Australian Context

Australia is a large country with a relatively small highly multicultural population of some nineteen million. Its economic wealth was built on industries such as mining, agriculture and manufacturing. As in many other industrialised countries it has in recent years been subject to considerable change both at the macro and organisational level. These changes have been due to a number of factors; increased global competition, introduction of new technology – particularly information technology, increased local competition due to deregulation and privatisation of some former Government instrumentalities. All import tariffs have been progressively reduced to encourage local industry to become more competitive. The Australian economy has been relatively strong in the last few years with

inflation being particularly low. The Australian economy has thus far weathered the current Asian economic crisis much better than most other countries in the region.

The Australian Industrial Workplace Survey carried out in 1995 (Morehead, Steele, Alexander, Stephen and Duffin 1997) contains data that is useful in setting the general workplace context for the present research. Morehead *et al.* were able to make some comparisons with results from their earlier 1990 study. They provide a summary of the structural changes mentioned above that have occurred and conclude that these changes have led to a considerable intensification of competition pressure on organisations. They found that since their 1990 survey there had been significant shifts in the structure of employment, with most new jobs being part-time rather than full time. Also there had been a continued shift toward jobs in the service sector and jobs in newly expanding industries such as information technology. These increases had been accompanied by relative reductions in some of the more traditional areas, such as manufacturing (*ibid.* p. 4). Their 1995 survey found that 17% of organisations with more than 20 employees were predominantly foreign owned (*ibid.* Table 4.2 p. 66).

The number of different unions in Australia has decreased substantially in recent years, from 295 in 1990 to just 142 in 1995 (*ibid.* Table 7.6 p. 149). Even so, the 1995 survey found that 52% of workplaces still had a union and a union delegate (*ibid.* Table 7.1 p. 140).

The 1995 survey reported on the extent of a number of management practices such as performance measurement and the use of employee involvement strategies such as quality circles and TQM. They found that 84% of workplaces reported using key performance indicators (*ibid.* Table 6.2 p. 106) and 67% benchmarked against other workplaces (*ibid.* p.104).

Particularly relevant to the present research the 1995 survey found that 69% of workplaces with 500 or more employees reported using TQM. The figures were lower for smaller sized workplaces; 53% for organisations with between 200 and 499 employees and 44% for organisations with between 100 and 199 employees (*ibid.* Table 9.7 p.189). A high

percentage of managers (92%) believed that management-employee relations in their workplaces were either good or very good (*ibid.* Table 6.26 p. 131). Considering the extent of downsizing that has taken place in Australian organisations a surprisingly large proportion of managers (80%) either agreed or strongly agreed with the statement “If they had to, management in this workplace would choose quality improvements over labour cost reductions” (*ibid.* Table 6.27 p.133).

An alarming statistic is the 42% of male and 52% of female managers reporting in the 1995 survey that their last reported illness was stress related. This indicates the pressure that managers often have to grapple with (*ibid.* Table 6.22 p. 128).

2.3.7.2 Organisation of Quality in Australia

An event that had significant impact on the organisation of quality in Australia was the publication of a Federal Government report in 1987 which became known as the Foley report after Dr. Kevin Foley, the Chair of the report committee (Foley 1987). The report confirmed that quality was of vital importance to Australian competitiveness and made a number of recommendations for improving quality infrastructure in Australia. Most of the recommendations of the report were implemented. These included the restructuring of relationships between various organisations involved in quality and in particular setting up a peak body – The Australian Quality Council. The idea of the restructuring was to better assist organisations in adopting TQM.

The National Industry Extension Service (NIES) network was set up in the late 1980s to improve the competitiveness of enterprises and thereby increase their competitive position. As a result of the Foley Report the NIES quality forum was established (Cashman 1989). One of the major initiatives that resulted was the development of a TQM implementation approach known as the *How To* approach. The NIES program provided subsidies and other help to enable eligible enterprises to apply the approach in their organisations. A large number of organisations were assisted under this scheme.

The Australian Organisation for Quality (AOQ) has been operating in Australia since 1968, providing training and education in quality for its individual members and to industry (AOQ 1999). Also the National Association of Testing Authorities Australia (NATA) has for over fifty years been Australia's only nationally and internationally recognised provider of laboratory accreditation. NATA also provides proficiency testing programs and a range of training courses in laboratory management, auditing and quality control (NATA 1998).

Recently Foley, Barton, Busted, Hulbert and Sprouster (1997) reported on the impact that the quality movement has had in Australia and provided some recommendations on how this approach could be better deployed. They saw a need for quality models to be better integrated with management theory. They saw two main causes for the majority of reported concerns about quality. Firstly, the way quality is described and secondly, confusion over ISO 9000 series and its relationship with other approaches such as TQM. They point out that ISO 9004 – *quality management and quality system elements* – is left out of most applications of ISO 9000. The report emphasises the continued importance of pursuing quality in order to improve sustainable competitive advantage.

A review of some of the major initiatives in TQM in the Australasian area is provided by Samson (1997). This review includes information on organisations that have implemented TQM in both the manufacturing and service sectors and details of a number of important surveys that have been undertaken. Other Australian based research into quality is reviewed in Section 2.4.3 below.

2.3.7.3 The Australian Business Excellence Model

As mentioned in Section 2.3.2 above quality award models have been subject to periodic changes. In 1998 the name of the Australian award was changed from the Australian Quality Awards to the Australian Business Excellence Awards (AQC 1998). A number of changes have also been made to the model since data collection for this research began. The changes made to the criteria in 1997 and 1998 were relatively minor. In 1999 the changes were more significant and included a new sub category

creation and management of knowledge (AQA, 1999, Table 1). A diagram of the 1999 model is shown in Figure 2.3.

The 1999 model will be described briefly here (AQA, 1999). The model, see Figure 2.3, can be divided into four parts: driver; operational system; focus; and results. Activities under *driver* are very much the responsibility of the top management group. They should develop strategic direction for the organisation and promote a suitable organisational culture, which fosters for example continuous improvement activities. Contributions to the wider community are included in the leadership and innovation criterion. The *focus* of the model is on customers and markets. This criterion advocates in depth knowledge and understanding of the needs of various customer groups. The *operational system* can be seen as the engine room of the model and consists of four major categories namely; people; processes, products and services; strategy and planning; and data, information and knowledge. The final major category is business results. There are clearly many similarities between Deming's philosophy summarised in his 14 points of management (see Appendix 2A) and the Australian Business Excellence Framework.

These criteria are the basis for judging for quality awards. There are a number of award categories i.e. large organisations, subsidiaries and divisions, small enterprises, medium enterprises. There is also a premier award, the Australian Quality Prize, for which entry is only open to those who have already won an Australian Quality Award. The award process involves applicants providing a written application addressing the criteria. Shortlisted applicants receive a site visit from a small panel of assessors who examine the operation in some detail. Feedback is provided to all applicants.

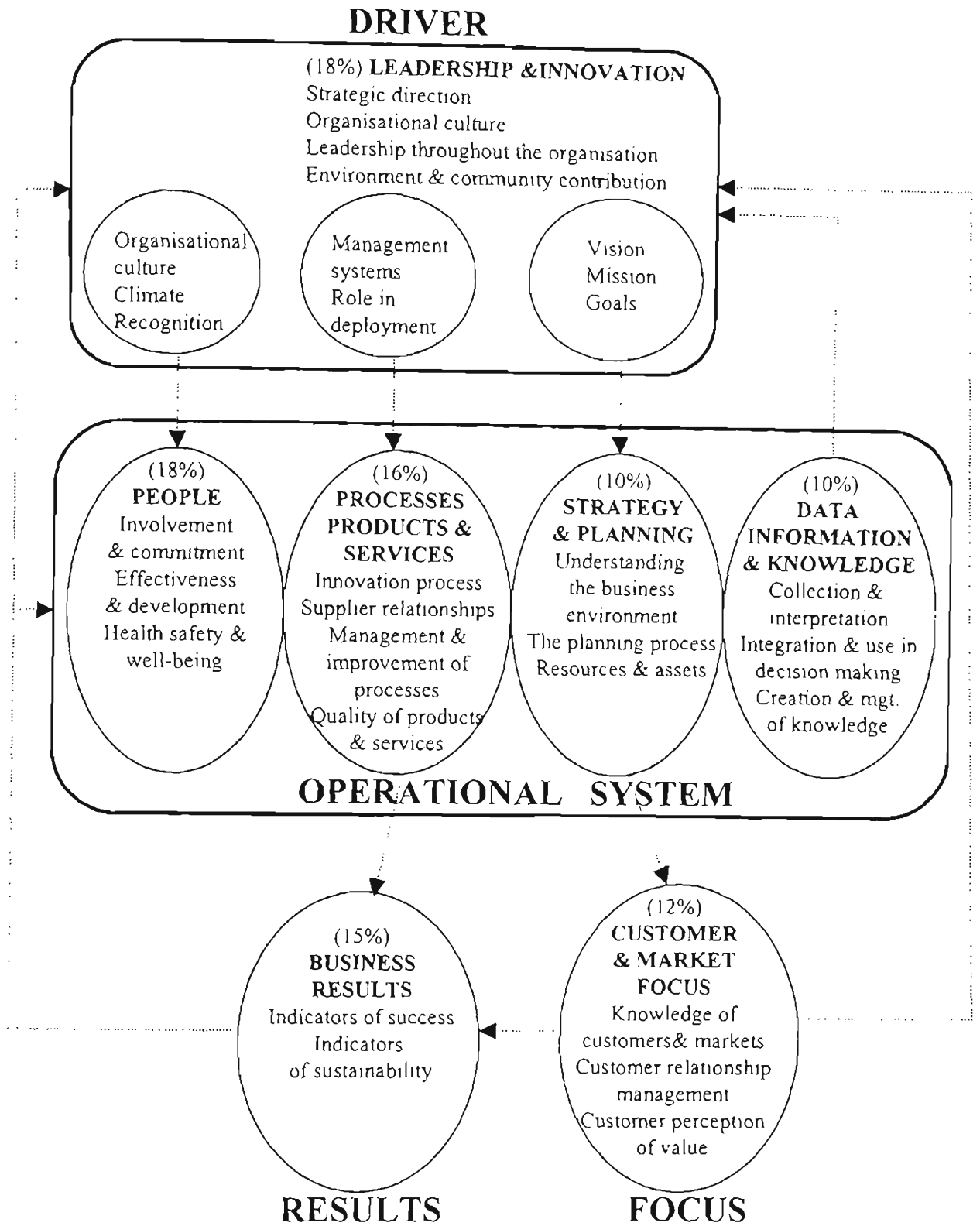


Figure 2.3 1999 Australian Business Excellence Model

Adapted from AQA (1998, Figure 5), criteria from AQA (1999, Table 1)
 Figures in parenthesis are % points allocated to each of the 7 major categories

A popular application of the Framework is for organisations to carry out self-assessment. An information package to facilitate self-assessment is available from the Australian Quality Council.

2.3.7.4 ISO 9000 Australian Experience

According to Foley *et al.* (1997 p. 53) certification to ISO 9000 is of particular relevance in Australia as per capita Australia's uptake of ISO 9000 leads the world. At the end of 1995 some 10 000 Australian enterprises were certified to ISO 9000 compared to 7500 enterprises in the USA. This popularity of ISO 9000 (in terms of usage) was also confirmed more recently in a survey of quality management practices in Australian Organisations (Terziovski, Sohal & Moss 1998). The implementation of ISO 9000 in Australia has generated a considerable amount of debate and controversy mostly reported in the press and practitioner journals.

There have been a relatively small number of surveys carried out to access various aspects of ISO 9000 implementation in Australia. Brown and Van der Wiele (1995) surveyed 160 industrial organisations in Western Australia. Respondents gave a number of reasons for seeking certification. These included in order of importance: to maintain/increase market share; to improve efficiency; to be considered for tenders; to improve customer service; to gain marketing benefits; as a base for quality improvements and to develop a culture change. Brown and Van der Wiele identified a number of forces of roughly equal weight as driving certification. Firstly, customers who are increasingly demanding certification as a prerequisite to doing business. Certain Australian states required their suppliers to be certified. Secondly, organisations felt that certification improved their general levels of customer service. The third reason given was that the organisation considered certification would give them marketing advantage over their competitors.

The most significant improvement reported from respondents due to ISO 9000 was an increase in quality awareness within organisations, which may lead them to further developments such as TQM. Not being excluded from tenders was another benefit

reported. No significant improvements in productivity, costs, wastage rates, staff motivation and staff retention were reported. Neither was an increase in market share – an important reason given for seeking certification. There were concerns raised about Government purchasing policies which required certification in order to supply Government departments. The most common problems reported related to the cost and time involved in obtaining certification. Gaining commitment both from senior management and employees was another frequently mentioned problem. The most significant criticism of the standards themselves was that some saw them as being more appropriate for manufacturing than other industries such as construction or retail.

Terziovski, Sampson and Dow (1995) used existing survey data on Australian and New Zealand Manufacturers and reached similar conclusions to those of Brown and Van der Wiele. Statistical analysis of the data showed no significant effect of ISO 9000 certification on a range of factors including sales, employee morale and customer satisfaction.

More recently, Ramsay (1998), researched the value of ISO 9000 certification to Australian small businesses. He concluded that, despite a good deal of criticism about ISO 9000 being reported from small business, generally small businesses that become certified do receive value. He found that the cost of certification was typically less than A\$2000, much less than the literature had suggested.

Revisions to the ISO 9000 series are expected to be issued in 2000. These revisions are intended to make the ISO 9000 series more compatible with the TQM approach and also address some of the criticisms mentioned above (Ketheeswaran and Ezrakhovich 1999).

2.4 Middle Managers and Quality Programs

This section will examine the role of middle managers in quality programs. Firstly, from the viewpoint of traditional quality experts such as Deming and Juran. Secondly, from what contemporary models of quality, such as the various quality award models prescribe. Published research related to the activities of middle managers and

employees in quality programs will then be discussed. This latter section will include discussion of a number of research papers on employee involvement. Lawler, Mohrman and Ledford (1992) have demonstrated a close relationship between employee involvement schemes and TQM. Literature particularly related to the measurement of attitudes to quality will be discussed in Section 2.5.9 below.

2.4.1 What Traditional Quality Experts Say about Middle Managers' Role in Quality

The acknowledged quality experts do not generally single out middle managers as a group worthy of special consideration in the context of quality.

Feigenbaum (1961) clearly recognises the importance of human relations in the implementation of quality e.g. "Effective human relations is basic to quality control" (*ibid.* p. 12). He recognises that quality improvement cuts across functional areas and advocates a teamwork approach regardless of who may have the primary responsibility for the process. Scant mention is made of middle management in this early work. In a later work (Feigenbaum 1991) mentions the conflict that can arise for the functional manager who expected to carry out the policies of top management (in quality) and at the same time run his/her department. He also acknowledges that in difficult times the functional manager can do much to set the tone of quality-mindedness in the plant by their actions (*ibid.* pp. 206-207).

In his seminal work, *Out of the Crisis*, Deming (1986) says a good deal about the importance of leadership, which he says is the job of management (*ibid.* p. 54), in implementing quality. Deming does not say very much about the specific role of middle management but the following extract, which refers to the action required to accomplish the transformation, indicates that he considered they had a key role: "The whole movement may be instituted and carried out by middle management with one voice" (*ibid.* p. 87). The problems in implementing quality and organisational change mentioned in other literature are not addressed to any great extent in this book.

Ishikawa, a leading Japanese quality expert, in his book *What is total quality control? The Japanese Way* (Ishikawa 1985), sees top and middle management as having similar concerns for quality. Chapter 7 of the book is concerned with the roles of top management and middle management in quality. Ishikawa defines middle managers (in Japanese organisations) as divisional heads and section chiefs. He describes at some length how the roles of these middle managers can vary considerably depending on organisation size and other factors. In general Ishikawa ascribes the roles in quality of policy formulation and leadership to top management. Important roles for middle management include making QC circle activities work and communication with other divisions using a cross-functional management style. He clearly recognises that middle managers have both an important and difficult role in quality as indicated by the following quotation. “In TQC, middle management will be frequently talked about and criticized. Be prepared” (*ibid.* p. 89).

Juran in his book, *Juran on Planning for Quality* (Juran 1988), does not single out middle management for special mention either. In his chapter on translating customers' requirements, he says that middle management must be bilingual, top management uses the language of money and lower levels use the language of things. This implies the traditional middle management function of being translators and communicators between levels above and below. His chapter on company wide quality management is addressed to upper management and in Juran's model of quality upper management seems to have sole responsibility for making policy (*ibid.* p. 244). In a later work Juran and Gryna (1993) consider the role in quality of middle managers, specialists and first-line supervisors to be much the same i.e. executing the quality strategy developed by upper management. However they do point out that increasingly middle managers are asked to serve as (quality) team leaders as a continuing part of their job (*ibid.* p. 144). In their chapter on developing a quality culture they present a table which shows forms of participation in quality for upper management, middle management, specialists and first-line supervisors (*ibid.* p. 173). Middle managers are shown as participating in significantly more forms of participation than upper management. They are excluded from only one upper management form namely, being on the organisation's quality

council. The forms of participation advocated for the middle managers, specialists and first-line supervisors are fairly similar.

Crosby in his popular books *Quality is Free* (Crosby 1979) and *Quality Without Tears* (Crosby 1984) does not single out middle management for special mention. Responsibility for quality is the prerogative of senior management “...senior management is 100% responsible for the problems with quality and their continuance” (Crosby 1984, p. 44).

Imai (1986) contrasts some of differences between Japanese and Western perceptions of job functions. In the Western model supervisors and workers are not generally involved in Kaizen (continuous improvement) or innovation activities, in Japan they are involved in Kaizen but not in innovation. The innovation role of middle managers is the same for both models but both top management and middle management are involved in Kaizen activities in Japan (*ibid.* p. 8).

Garvin (1988) devotes a chapter in his book *Managing Quality* to quality policies and attitudes and also explains differences between Japanese and Western approaches to management. He does not however address issues of middle management.

A more recent Japanese writer on quality, Mizuno (1988), is an exception. He devotes a chapter to managements' role in TQC and identifies activities especially important for middle managers. He sees middle managers as divisional heads and section chiefs, and provides a list of activities they should be involved in for the promotion of QC. His list of activities that middle managers should do to promote quality control is quite detailed:

1. Elaborate on policies outlined by top management and set up concrete programs for their implementation;
2. Follow their own programs ...;
3. Evaluate results and work out new plans (policy management);

4. Analyze and evaluate product quality, the processes for quality assurance, and the plans for implementing these processes, decide on priorities, and assign problems to workers to be solved;
5. Collect information and data on product quality inside and outside of the corporation...;
6. Encourage QC (quality circle) activities and analyze, standardize, and institutionalize QC circle innovations;
7. Set standards for all operations related to assuring product quality... and
8. Work to carry out cross-functional management effectively as dictated in top management policy decisions. (*ibid.* p. 41)

Some of these functions are traditional middle management functions, such as developing top management policies, whilst others, such as encouraging QC activities relate to a facilitation role.

Mizuno also describes managerial types that obstruct TQC:

1. Knows nothing about TQC;
2. Knows about TQC but is totally uninterested;
3. Opposes TQC on the grounds that it is unnecessary and
4. Believes TQC is being applied when it actually is not (i.e. QC efforts are being implemented, but they are not nearly as comprehensive as they should be. (*ibid.* p. 27)

Mizuno singles out the fourth type as being the worst obstacle to effective TQC. "This type of manager clings to his (*sic*) prejudices about TQC and does not have a firm grasp on his own corporation's performance. This type tends either to distort TQC into a spiritual movement or to limit TQC to reports and paperwork." (*ibid.* p. 28).

It appears that most of the acknowledged pioneers of the quality movement do not consider that middle managers have a special role to play in quality programs nor do they acknowledge in a clear way potential problems from the middle management group such as resistance to change. Where these pioneers do recognise a distinct role in

quality programs for middle managers that role is the traditional role of middle management, putting top management plans into practice. Some writers, in particular Juran (and with Gryna) have included more material on motivation and other cultural issues in their later works. This review generally agrees with the findings of Wilkinson, Redman and Snape (1994, p. 62) who suggest that there is scant reference in the *traditional* (quality) literature to the implications of TQM for the role of the manager (at any level):

There are brief and superficial discussions on topics such as teamwork, management style and management responsibilities, but there is little indication of how management roles change and certainly no empirical research evidence on the impact of quality management or managers' jobs.

2.4.2 Middle Management's Role According to the Australian Business Excellence Framework

The 1999 Australian Business Excellence framework (AQC 1999) will be examined from the perspective of the middle management group. As explained in Section 2.3.7 above (see also Figure 2.3) the framework integrates seven major categories, each category consisting of a number of related items. The description of the framework provides a guide to what the originators expect in the way of behaviours and processes and outcomes in an *excellent* organisation. As the framework recognises that organisations will differ in management structure and in many other respects the criteria are written in a general way. It is therefore not surprising that no specific mention is made of the role of middle management. Details about leadership are given under the category *leadership and innovation*. The item *leadership throughout the organisation* (*ibid.* p. 15) recognises that leadership is not just the prerogative of senior executives but that there should be a leadership system throughout the organisation. This item provides a description on the leadership role of senior executives (senior executives are defined as the highest decision making people of the organisation and those identified by the organisation as the senior executive) and on the *leadership system* throughout the organisation. This latter refers to how the organisation creates an environment which

promotes leadership at all levels including providing consistent direction, constancy of purpose, integrity and coaching. Other aspects of leadership throughout the organisation mentioned are: *inspirational leadership; values role-modelling; management structure and deployment of organisational objectives.*

2.4.3 Research Related to Middle Management's Involvement in Quality

There does not appear to be a significant amount of literature addressing attitudes to quality in a rigorous way. Literature particularly related to attitudes to quality is discussed in Section 2.5.9 below. In this section literature of a more general nature that is relevant to the present research is reviewed. This included survey and case study research investigating issues such as the performance of quality programs and behavioural issues encountered during program implementation. Literature on quality circles and employee involvement is also discussed in this section. Lawler, Mohram and Ledford (1992, 1995) have demonstrated that there is a close relationship between employee involvement programs and quality programs. This section concludes by reviewing recent research on middle managers' involvement in quality in Europe.

2.4.3.1 Surveys and Case Studies of General Relevance to this Research

Wilkinson, Redman, and Snape, (1994) reported the results of a U.K. survey by The Institute of Management investigating managers' beliefs about quality. Self-report questionnaires were received from 880 managers (22% response rate). 71% claimed to have a formal quality campaign in their organisations.

The most pronounced impact reported was the that quality management seems to make jobs more demanding requiring more in terms of both technical and managerial skills. A greater emphasis on teamwork was reported and also greater demands on managers' time. A majority considered that quality management made employees more questioning of managerial decisions, while just under half said that it placed managers under greater scrutiny from their superiors. Although there was general agreement about the impact of quality management between hierarchical levels (groups) there were

some significant differences reported. The authors report that the results showed that the relationship between quality management and the amount of discretion was significantly related to job level. Discretion resulting from quality management was generally greater for more senior levels. Many junior managers actually reported that quality management reduced their discretion.

Only a minority felt that quality management led to greater career opportunities, however they outnumbered those who felt it had an adverse affect on their careers.

The majority felt that their training in QM had been adequate. However 30% had either received no QM training or felt their training was inadequate. They found a strong relationship between managers' assessment of their training and the degree of success of the QM program reported by them.

The majority of the sample reported receiving some form of incentive pay and in 42% of cases quality indicators were used in the formal appraisal of employee performance. However the authors consider that the attempts to link pay with quality are controversial. A number of authorities advocate that quality improvement should be rewarded with recognition, praise and symbolic rewards, rather than "pay". The results did show that organisations that attempted to reward quality improvements with pay appeared to have more successful programs. They urge caution in action on this result and encourage more research on the relationship between QM and incentive pay schemes.

Ahire and O'Shaughnessy (1997) claim to have undertaken one of the first empirical analyses investigating the relationship between the level of top management commitment for TQM and product quality. The researchers designed and distributed a questionnaire to a sample of organisations involved in auto part production in the US and Canada. Their instrument included a number of constructs that had been validated in previous research. The questionnaires were sent to plant managers for completion. The researchers claim that the overall results support the general notion of the importance of top management commitment to the success of TQM efforts. However,

as the researchers point out the results regarding their main hypothesis of a significant positive statistical relationship between top management TQM support and product quality are inconclusive. They experienced some statistical problems with the analysis (multicollinearity difficulties) and they also suggest that their model may not have captured some important aspects of this relationship for example commitment to TQM at other levels.

In a detailed piece of qualitative research Zbaracki (1998) noted many management behaviours associated with the introduction of a TQM program. Zbaracki contends that the phenomenal spread of TQM has generated an ironic controversy. On the one hand TQM advocates view it as a uniquely effective way of improving organisational performance. On the other hand TQM opponents see it only as the latest of many organisational fads. Zbaracki studied TQM in five organisations in which the balance between technical and institutional forces differed. Zbaracki noted that in all of the five organisations he studied, introduction of a TQM program was an intentional change and in the past had not been part of the everyday reality of these organisations. The research describes how both the rhetoric of TQM and the technical aspects of TQM play an important part in its implementation in an organisation. Zbaracki defined rhetoric as a stream of discourse used to construct, spread and sustain a set of assumptions about TQM (*ibid.* p. 609). He developed an evolutionary model of TQM and described different stages of the model in terms of TQM rhetoric and reality. Reality was measured in terms of the use of technical tools of TQM. The research shows that the rhetoric of TQM plays an important part in establishing a climate in the organisation for both selection and retention of TQM. For example during the process of selecting TQM, changes in TQM rhetoric was important in converting managers from sceptical analysts of TQM to TQM advocates (*ibid.* p. 618).

Zbaracki made three general observations at the early stage of his research. Firstly, all of the organisations had some TQM success stories. Secondly, all the sites were frustrated with the problem of integrating TQM into their daily routines. Thirdly, Zbaracki noticed a tension between demands of their work and the discipline of using TQM tools.

During the selection process Zbaracki identified ignorance as a general barrier to the use of TQM tools. In particular the inability of managers to grasp the complexities of TQM prevents them from designing effective programs. He noted also the lack of integration of technical aspects of TQM with existing practices both at the managerial and employee level.

During the retention stage of TQM Zbaracki noted a divergence of rhetoric because employees gain new understanding and beliefs about TQM. As the organisations achieved successes Zbaracki describes how management felt a need to tell their stories outside the organisation. In one of the organisations this was described as *showcasing* what the teams did. Zbaracki observed that TQM success claims made by management were often distorted (usually inflated). He suggests that this distortion is due for example to managers ignorance of TQM or a tendency for them to take credit for successes. Zbaracki observed that for some employees the rhetoric did not match their experience and they grew sceptical.

Zbaracki noted that the examples of rhetoric of TQM success uncovered in his research clearly matched the predictions of institutional theory, that managers will use their conformity to increase legitimacy.

Edwards, Collinson and Rees (1998) suggest that theories related to TQM and organisational change tend to fall into two extreme camps. Firstly, those who hold that TQM transforms the attitudes and behaviour of employees and secondly those who believe that it is nothing but a means of tightening managerial control. The authors explored employee responses to TQM by carrying out research in six UK organisations. They gathered data from 280 employees using a questionnaire and also carried out interviews.

Their findings showed a wide acceptance of quality principles but little evidence of substantial empowerment of workers. They suggest that this latter does not support the view that TQM transforms behaviour. Some results also contradicted the work

intensification/control view. For example growing work effort was not widely disliked. Also favourable views on quality were the strongest, not weakest, where the monitoring of workers was most intense.

Their quantitative results suggested that quality was most accepted by workers where there is a controlled work environment. The authors call this the disciplined workers thesis. Two key factors identified for TQM success was high job security and a co-operative relationship with trade unions.

The authors concluded that neither the optimistic thesis of worker empowerment nor the pessimistic thesis of control and intensification was applicable in their sample. They also concluded that the effectiveness of quality programs varies according to the context. Job security and union acceptance were two particularly important contextual issues in their sample of organisations.

They suggest that quality management can be a useful tool in the constant endeavour of management to release workers' creativity while at the same time controlling them.

Adebanjo and Kehoe (1998) using a questionnaire survey methodology (sample size 166) and follow-up interviews investigated the quality culture in a number of UK manufacturing organisations. The sample was divided into TQM and non-TQM organisations. Culture was measured by the extent of: senior management leadership; employee involvement and empowerment; teamwork; customer focus; supplier partnerships; effect of the chief executive and openness of corporate culture. The results showed significantly higher scores for TQM organisations on most of the cultural measures. In the overall sample they identified a number of deficiencies in quality culture. In particular very few organisations had reward schemes linked to quality performance.

Abraham, Fisher and Crawford (1997) studied organisations that had been winners of an Australian Quality Award in the years 1989 to 1993. The study explored the change processes that were used to move the organisations towards the state of capability

outlined by the Australian Awards Criteria. Their broad hypothesis was “That in the ‘high quality’ organisations investigated, their award winning status has resulted from actions which accord with Nadler’s principles for successful reorientation” (*ibid.* p. 623).

Results were collected via a self-report questionnaire completed by a range of employees in 14 Australian Quality Award winning companies.

In general the expectations of the researchers were confirmed in particular:

- Having a vision was found to be of critical importance in managing successful complex change. It was accepted that it is difficult to incorporate specific changes, such as the change in middle management’s role, into the visioning process.
- The results supported literature that suggested that intrinsic motivation factors connected with individuals’ ownership of the change process were more important than financial rewards.
- Change leadership should use a wide range of leadership behaviours, involving others through participative dialogue, listening to suggestions and acting on feedback received.
- Communication strategies emphasising action were more effective than those employing media based approaches.
- Continuous vigilance was needed by management to institutionalise the change.

Average responses were calculated for the following groups: senior management; middle line; operations employees; technical support staff and administrative support staff. The researchers considered that the majority of organisations corresponded to Mintzberg’s machine bureaucracy; in this scenario the power resides with top management, the middle line and technical support groups. The researchers found that for a range of items this *power holding* group were significantly more optimistic than the other groups.

Sohal, Samson and Ramsay (1998) investigated the requirements of successful implementation of TQM. They carried out a questionnaire survey of 52 Australian

organisation followed by three case studies. They found that motivation for introducing TQM into organisations fell into three groupings: i) a need to gain a competitive advantage; ii) a need to improve customer focus and iii) a need to improve processes. Some of the barriers to TQM reported were as follows:

Organisational culture issues

- Getting senior management support and effective involvement in TQM.
- Getting middle managers to involve their people.
- Changing middle managers to quality leaders.
- Changing values and culture to align with TQM requirements.

Strategic Issues

- Structural change such as a merger
- Lack of planning for quality
- Lack of functional responsibility for quality

Resource issues

- Quality improvement activities seen as additions to normal working load of managers and supervisors
- TQM competing with other initiatives e.g. introduction of new technology.

Sohal, Samson and Ramsay (*ibid.*) found that middle managers have a pivotal role in fostering a quality culture. In particular communicating the quality vision of senior management through the organisation. They reported that the initial attempt of one of the organisations to introduce TQM was largely unsuccessful principally because it did not have the support of middle management. The organisation's second attempt at introducing TQM experienced similar difficulties. Some middle managers felt threatened by the quality initiatives and a few who believed their power was being reduced were reluctant to pass on information to shop floor workers.

The authors believed that in all three of the case study organisations structural changes such as combining function and flattening organisation structures were conducive to forming a culture compatible with TQM.

Questionnaire respondents believed that a large range of benefits would result from their quality programs. Expected benefits to organisational culture included: improved employee relations; better communications; increased teamwork; a more skilled workforce and improved staff morale and involvement. Anticipated improvements to products and processes included: reduced rework and wastage; improved consistency in product quality; shorter delivery times; quicker introduction of new products and generally less wasteful practices. Expected improvement in competitiveness and market position was also expected to flow from the quality programs as was more effective relations with customers.

Terziovski, Sohal and Moss (1999) reported on the results of three postal questionnaire surveys carried out in 1991, 1993 and 1996. The purpose of the research was to identify practices and attitudes associated with quality in Australian manufacturing organisations.

In their 1991 study they found that larger more profitable companies were more likely to employ quality management practices. The 1993 survey found a higher proportion of companies using TQM than in the 1991 survey. There were also substantial increase in ISO 9000 certification and benchmarking. A significant shift in responsibility for quality away from managers and supervisors to all employees in the organisation was also reported. The focus of quality management practices was still however in the manufacturing function of the organisations. Provision of training in quality management for employees had increased from around one third of employees in 1991 to around one half in 1993. Major impediments to implementing quality management practices were identified as lack of understanding of quality by managers, resistance by managers/supervisors and resistance by employees.

Some trends over the period of all three surveys were reported. There was a significant rise in the percentage of organisations having a corporate quality mission (approximately

80% in 1996). Generally little change in extent of quality deployment between functional areas in the organisations. Operations was the most likely to be using quality management practices and human resource management the least. They found a general trend toward devolving responsibility for quality from quality departments and managers to all employees. Although they did find a resurgence of the quality department during the period 1993 and 1996. They reported that quality management practices, identified as TQM, TQC, SPC and Quality Circles, had declined over the period 1991 to 1996. For example the percentage of responding organisations using TQM was approximately 45% in 1991, rose to a high of around 55% in 1993 and fell to around 35% in 1996. They warn that their results indicate a gradual overall decline in the use of quality management practices. Results show that using a consultant has been the most popular source of quality management training. Over the period 1993 to 1996 there was a significant increase in training by tertiary institutions (TAFE and Universities).

Based on the results of this longitudinal study they suggest that a successful quality organisation would include the following characteristics:

- Middle managers, front-line managers and staff have a positive attitude towards quality.
- A variety of quality management practices are employed, including SPC and Quality Circles.
- Quality initiatives are primarily introduced to improve business performance.
- Responsibility for quality is not assigned to a specialised quality department or person.
- Leadership training is implemented extensively.
- Quality indicators are a crucial part of performance indicators.
- Customer surveys are utilised regularly.
- Customers are involved in the continuous improvement of the business.
- Supplier agreement contracts exist.
- Suppliers are involved in the changing and improving of the system.
- Strategic alliances have been formed with customers and suppliers.

Bardoel and Sohal (1999) using a case study approach researched TQM implementation in seven Australian organisations. The purpose of the research was to explain and identify similarities in implementation approach, benefits achieved, difficulties experienced and the critical success factors. The issues identified were: motivation for starting TQM; planning and implementation; barriers and resistance to implementation and major benefits realised.

A strong belief in TQM by the CEO or external forces such as a directive from the overseas head office were reported as more likely reasons for starting TQM than customer concerns. A number of TQM program benefits were identified. Benefits included improved processes, reduction of waste and an improvement in customer perception of the company.

A number of barriers to implementation were reported. In four of the organisations language and cultural barriers were a major problem in communicating the principles of the TQM program. Some older employees considered TQM as a fad. Some considered TQM to be a threat to their positions of authority.

Other barriers reported were:

- perceived threat to supervisor and manager roles;
- disinterest at workforce level;
- many casual staff;
- fear of job losses;
- inadequate training;
- poorly defined planning;
- employee scepticism and
- resistance to data collection.

Bardoel and Sohal highlight the importance of CEO and senior management support to successful TQM implementation. They suggest line managers rather than those working in staff functions should carry out TQM implementation. They argue that

implementation of TQM can be assisted by the use of cultural audits, for example as outlined by Glover, Shames and Friedman (1994).

Terziovski and Samson (1999) reported the results of a large scale survey of Australian and New Zealand organisations to test the relationship between TQM practices and a number of variables such as company size, industry type and ISO certification. They found that the relationship between TQM and organisational performance was not affected by ISO 9000 certification status. The effects of company size and type were mixed. The main implications of their findings for managers was that a typical manufacturing organisation is more likely to achieve better performance in employee relations, customer satisfaction, operational performance and business performance with TQM than without TQM.

Sohal and Terziovski (2000) reporting on a number of surveys carried out into TQM implementation in Australian organisations identified the following critical areas:

- attitudes towards quality;
- leadership education and training and
- integrating the voice of the customer and the supplier and developing appropriate performance indicators and rewards.

2.4.3.2 Quality Circles

Brossard (1990) reviewed published research on quality circles up to 1989. He states that early research (1975 to 1982) focused on understanding the organisation and objectives of quality circles. A number of researchers also used psychological theories regarding quality circle members' needs to explain their motivation for participating, quality circles participation being generally voluntary. Brossard asserts that the use of Herzberg's theory was popular. Researchers attempted to explain motivation for participation through the possibility of quality circles fulfilling individuals' higher order needs e.g. esteem and self-accomplishment. Brossard points out that later research, due to the many quality circle failures, tended to concentrate on contextual rather than

procedural issues to explain success or failure of circles. There was a general consensus by researchers that management style and middle management support were among the most important factors contributing to quality circle success.

Brennan in her doctoral research identified resistance by middle managers as the most important factor contributing to the failure of quality circles (Brennan 1991). Although not all middle managers involved in her study were opposed to quality circles Brennan found that many were. The managers who opposed quality circles did so for a variety of reasons. Traditional autocratic managers who believed in their management style and felt threatened by the quality management process often showed opposition to quality circles. They saw quality circles as changing the balance of power in their organisations. Middle managers who saw circles negatively considered them a drain on resources. They sometimes used covert tactics to block the progress of quality circles. Brennan considered that only in one of the five organisations she studied was the quality circle program a success. In this organisation quality circles were integrated into a company wide quality program. Middle managers were in charge of quality circles and were accountable for their performance.

Research in quality circles demonstrates how middle management can have a significant impact on the success of a quality program. Middle managers believed that their power and authority was being undermined by the introduction of circles and often resisted their introduction. There was almost certainly a lack of understanding by most organisations that quality circles were part of a larger system of Japanese style management.

2.4.3.3 Research Related to Employee Participation/Involvement

Employee participation initiatives are a development of the quality circle approach. A substantial amount of research has been carried out in the area of employee participation and employee involvement. Fenton-O'Creevy (1998) provides a good review of the literature in this area. Frequently, research in this area includes participation in quality programs. Lawler, Mohrman and Ledford (1992) have demonstrated the often close

relationship between employee participation programs and quality programs. This literature is therefore a useful source for the present research.

Lawler, Mohrman and Ledford (1989, 1992, 1995) are involved with a unique longitudinal study of employee involvement and TQM activities in U.S. Fortune 1000 companies. To date they have carried out three surveys for which data was collected in 1987, 1990 and 1993. This has enabled them to identify changes that have taken place in practice over this period. A major strategy used in employee involvement schemes is the empowerment of employees throughout the organisation, especially at lower levels:

In order to participate in the business, employees at all levels need power, information, knowledge and rewards that are relevant to business performance. (Lawler, Mohrman and Ledford 1995, p. 2)

Employee involvement activities used to achieve this include quality circles, self-managing work teams, gainsharing plans, employee surveys, job design and problem solving task forces. The origins of employee involvement schemes have links with the industrial democracy and quality of worklife movements and employee participation in decision making (e.g. Lock and Schweiger 1979).

Their 1990 survey (Lawler, Mohrman and Ledford, 1992) was the first in the series to include an examination of TQM. This was done because of the increasing popularity of TQM within U.S. organisations. The authors discuss the relationship between EI and total quality. They say that there is a substantial conceptual overlap, but that there are also some key differences in organisational practices. TQM programs often establish quality circles and other participative groups that are clearly a way of creating involvement and sharing power. They point out that a key contribution of the TQM movement has been its emphasis on improving processes that cut across the organisation – from customer to supplier. They consider that the EI literature has focused more than the TQM literature on aligning the motivational system in the organisation through job design and reward systems. The results of the survey clearly

demonstrated the close relationship that exists between employee involvement programs and TQM programs.

Data for their surveys was collected via questionnaires completed by appropriate individuals in participating organisations, usually from the human resource area. The scope of the surveys is very broad, covering issues such as ways of redistributing power, rewarding performance, adoption of TQM (in the 1990 and 1993 surveys), and the relationship between employee involvement and TQM. As well as information on practices data was collected on the impact of these practices on organisational performance and on the impact of the practices on some groups within participating organisations. This enabled the researchers to analyse links between practice and outcomes. Some of the findings particularly relevant to the present research will now be discussed.

The 1990 survey (Lawler *et al.* 1992, pp. 47-48) reported that compared with the 1987 survey there had been a sharp fall in middle management support for employee involvement initiatives. The authors suggest that this is due to middle managers often having to change their behaviour significantly and possibly losing their jobs as fewer supervisors and levels of management are needed with self-managing work teams. They suggest therefore that support from supervisors and middle managers will fall once they realise how employee involvement programs will affect them. Middle management support was ranked second in importance to top management support as a strong facilitator of employee involvement.

Their 1990 survey results also showed that 54% of organisations started with EI first compared with 28% for quality. A large majority of respondents (76%) considered that EI was part of quality (*ibid.* pp. 101-105). They state that a very important finding is that organisations that have integrated quality and employee involvement initiatives are more likely to be transformed into a high-involvement culture than those who have separate programs. The three operational areas where co-ordinating these two approaches has the most impact was in quality, customer service and competitiveness (*ibid.* p. 111).

Many of the results of the 1993 survey (Lawler, Mohrman and Ledford, 1995) are consistent with their previous survey. The authors suggest that although the 1993 survey showed an increase in some forms of power-practices, e.g. quality circles, quality of work life committees, suggestion schemes, none of them were employed throughout most companies. They conclude that this suggests companies are piloting these practices or using them selectively, rather than adopting them organisation wide (*ibid.* p. 31).

They found that 76% of organisations had a TQM program (73% in 1990) covering 50% of employees surveyed (41% in 1990). The percentage of companies having all their employees covered by the TQM program was 25% (18% in 1990). Those working in sales and marketing were less likely to be covered by a TQM program than in a range of other typical functions. Most (80%) organisations reported that employee involvement was part of quality (76% in 1990) (*ibid.* p. 53). A very high percentage (83%) of companies with TQM programs reported that their experience had been positive or very positive. The authors point out that this finding contrasts with negative press reports that many organisations are dissatisfied with their programs. They saw no evidence of this (*ibid.* p. 75).

The results substantiated the close relationship found between employee involvement programs and TQM programs. They suggest that the impact of TQM programs that do not include EI practices will be less positive both for employee outcomes and for performance outcomes (*ibid.* p. 81). Also, both employee and company outcomes are highest if EI and TQM programs are integrated into a single improvement effort (*ibid.* p. 84). The results show both for EI and TQM that the more employees at different levels and in different functions that are involved the better the outcomes of direct performance, profitability and competitiveness and employee satisfaction will be (*ibid.* p. 100).

In terms of barriers to employee involvement efforts opposition by middle management was rated higher than opposition by top management or first-level management.

However, a number of other factors were rated as greater barriers to employee involvement efforts. Some of these were: short-term performance pressure; lack of a long-term strategy; unclear EI objectives; lack of tangible improvements and worsened business conditions (*ibid.* p. 141).

For his doctoral work Harber (1991) studied employee participation at a steelmaking plant of the large Australian company BHP. He carried out a longitudinal empirical study surveying all available employees, approximately 1000. Data was collected by questionnaire prior to a program of extensive formal TQM training and again when the training program was complete, approximately two years later.

Harber hypothesised that the TQM training intervention would lead to an increase in job satisfaction and employee commitment. He argued that this could occur if the management group provided a suitable climate for participation, through for example opportunities for participation and appropriate training. To operationalise his research Harber used a self-report questionnaire which measured four constructs i.e. company climate; employee commitment; job satisfaction and employee alienation, together with a number of demographic variables.

Specifically Harber hypothesised employee participation in the TQC (TQC is equivalent to TQM) program will be strongly associated with (*ibid.* ch.10 p.34):

- a) organisational climate - not supported;
- b) employee commitment - supported but negative!;
- c) global measures of job satisfaction – not supported, and
- d) employee alienation - not supported.

Harber did find some significant differences on some of the variables between levels in the organisation, with the management group - managers, superintendents, professionals and foremen – being most positive on most items (*ibid.* ch.10, p.36). Job level was shown as the single most important influence on all the constructs investigated.

Contrary to the results he found in the literature Harber's results indicated that the 45 to 54 year age group (the older age group) was the most positive on two of the measures of job satisfaction after the TQM intervention. In particular this group scored significantly higher than others on the scale associated with growth needs (recognition and promotion opportunities).

Harber concluded that a major factor contributing to his hypotheses not being supported was a loss of confidence by employees. Both quantitative data and comments collected at the end of the intervention indicated that employees considered that top management and mid-level management lacked commitment to TQC. Employees also doubted top management's understanding of TQC (*ibid.* ch.11 p.14).

Fenton-O'Creevy carried out research into employee involvement and the middle manager (Fenton-O'Creevy 1998). From a review of related literature he identified resistance from lower and middle managers as probably being the most consistently identified barrier to the success of employee involvement (EI) initiatives. His research investigated factors related to middle management resistance to EI initiatives.

A number of issues important to middle management resistance were identified from the literature and hypotheses related to these issues were formulated and tested. Data to test the hypotheses were collected via a postal questionnaire from senior managers in 155 U.K. organisations with 100 or more employees (a 33% response rate). Of these respondents 114 claimed to be making significant use of EI practices.

Fenton-O'Creevy points out that various often overlapping definitions for EI have been presented in the literature. For the purpose of his research he defined EI as any management practice that gives employees influence over how their work is organised and carried out. He defined EI activities as: job redesign; problem solving task forces/project teams; self-managing work teams; small self-contained business units; suggestion schemes and employee attitude surveys.

He found that previous research suggested that EI programs usually do provide some improvements in employee satisfaction. EI programs may have positive impacts on the

organisation, such as improving productivity, quality and customer service. However Fenton-O’Creevy points out that results linking EI programs with outcomes across studies are mixed.

The issues identified by Fenton-O’Creevy as being particularly related to middle management EI resistance and his survey findings are as follows:

a) Relationship between EI success and middle management resistance to EI.

Results supported the hypothesis that organisations reporting middle management resistance to EI would also report lower EI benefits. This result applied to both tangible measures and measures of employee attitudes. Note that the views expressed were those of senior managers. A range of positive outcomes of EI programs was reported. Organisational improvements included, quality improvements (87% of organisations reporting at least a moderate improvement), cost improvements (83%) and improved responsiveness to customers (87%). Employee improvements reported were, greater job satisfaction or commitment among employees (73%) and a greater sense of responsibility for business success among employees (74%).

b) The importance of EI program support by senior management. Fenton-O’Creevy cites Bowers and Seashore (1966) who found a strong relationship between managerial leadership behaviour and subordinate leadership behaviour. Fenton-O’Creevy’s survey results supported the hypothesis that middle management resistance to EI will be lower where there is strong senior management support for EI. Senior management support was the most significant variable related to middle management EI resistance in Fenton-O’Creevy’s analysis.

c) Appropriate performance measures and reward system that reinforce the desired management style. In particular Fenton-O’Creevy argues that alignment between the different subsystems that a middle manager is exposed to is important in reducing their resistance to EI initiatives. The results supported the hypothesis that middle management resistance to EI will be lower in organisations that have made changes to performance measurement and reward systems to align them with the goals of EI.

d) Fenton-O’Creevy identified middle management capability as an important issue. He states that there is ample evidence that many supervisors and middle managers feel relatively powerless with insufficient access to *power tools* i.e. information, control of resources and influence in the organisation. Following Kanter (1982) he argues that middle managers resistance to EI will be reduced if resources are decentralised to them and if they have access to information and to support. Fenton-O’Creevy argues further that EI can redistribute power across the organisation and middle managers may feel threatened by this. They may believe that any increase in the power of their subordinates can only diminish their own. Furthermore there is evidence that suggests middle managers are often poorly trained and may therefore lack confidence. Taking these issues relating to middle management capability into account Fenton-O’Creevy hypothesised that middle management resistance to EI would be reduced by the following: i) if an organisation has decentralised control of resources; ii) if the organisation has taken action to improve internal communications and access to information and iii) if the organisation has provided training and development activities for middle managers to support EI. Items relating to decentralisation of resources, communication and training were subsumed under a common factor (data reduction using exploratory factor analysis was used prior to multiple regression analysis). Fenton-O’Creevy interpreted this factor as a measure of the extent to which middle managers were given capability, or power to take effective action in the organisation. This factor showed a significant negative relationship with middle management resistance to EI.

e) The degree of role strain experienced by the middle manager and the degree of short-term performance pressure. Both of these variables were found to be positively related to middle management resistance to EI.

f) Association between EI initiatives and job security. Middle management resistance to EI was found to be greater in organisations where EI has been associated with job loss, delayering and loss of promotional opportunities.

Factor analysis identified three groups of employee involvement practices:

- self-managing work teams and self contained business units. Fenton-O’Creedy named this group *core EI* because they are team based practices that require significant organisational change to achieve;
- job enrichment, quality circles, consultative committees, team briefing and problem solving task forces. This factor was labelled *parallel EI* as the initiatives can be incorporated into the organisation with only minor structural adjustments and
- suggestion schemes and attitude surveys. This was named *voice* as these ways of communicating enable middle managers to voice their concerns, but offer little involvement in the decision-making process.

2.4.3.4 Middle Managers’ Involvement in Quality in Europe

A recent study of middle managers’ involvement in quality in five European countries was reported by Vouzas (1997). The study involved semi-structured interviews with quality managers, middle managers and senior managers in fifteen organisations. The study suggests that most of the organisations had relatively rudimentary quality cultures. Most private organisations had quality departments but in some quality was viewed as a peripheral function whose role was to monitor product quality. Co-operation between departments in some of the organisations was non-existent. In hospitals studied there were no separate quality departments and in the majority a senior manager was assigned as quality manager. Generally the level of quality in hospitals was low. The main “quality weapon” for most of the organisations was ISO 9000 certification. This was considered by managers as inflexible, time-consuming and not a competitive weapon. The most common reasons for implementing ISO 9000 were intense competition, demand by suppliers and customers, decisions by top management and as a way of organising the quality efforts.

They reported that a number of top level managers argued that whilst the number of middle managers could be reduced with implementation of ISO 9000 that was not the case with TQM. This was because they considered middle managers as key people in TQM implementation.

Middle managers' security seemed not to be at stake in their sample because of the introduction of TQM programs. In fact middle managers in the organisations which were in a TQM stage felt more secure than ever, having more responsibilities and authority than ever.

When ISO 9000 was seen as a first step towards TQM middle managers felt freer to act, had greater authority, said they were part of a team and were sometimes team leaders.

They found that in some cases middle managers who were expected to take an active role in working towards TQM often had good technical skills but lacked management skills. They considered that ISO 9000 needed even more technical skills but less management skills.

In the case of organisations implementing organisation wide quality initiatives top management rather than middle managers generally had the main responsibility for the program. Middle managers had the more traditional middle management role of translating the messages downward to workers. It was clear from their study that in organisations which were implementing TQM or where quality was integrated into processes, middle managers were acting more as *business managers* and less as middlemen from a hierarchical point of view.

Middle managers in organisations implementing TQM were more frequently evaluated and targets were more precisely defined. Generally they were more accountable than before.

The overall conclusion was that the stage of quality implementation plays an important role in the relationship between quality and middle managers. TQM even though it was well known by people in the organisations was often considered a *new management fad*. Only two of the fifteen organisations were moving towards a TQM philosophy. Middle managers that had survived the downsizing and delayering of the 1980s felt closer to the organisation.

There were some national and sector differences. Generally in the health sector there was scepticism about TQM and several barriers to TQM implementation existed. In some organisations with powerful and specialised quality control departments the focus on the *hard*² aspects of quality did not allow middle managers to abandon their traditional role. In the U.K., France and The Netherlands the pace of change was discerned as being faster than in Greece or Portugal. In these former countries the adoption of new roles and the development of the necessary skills from middle management seemed to be prerequisites for a successful implementation of quality improvement programs.

2.5 Attitude Formation and Attitudes Towards Quality

The purpose of this research as explained in Chapter 1 *Introduction* is to investigate *what factors are important in forming the attitudes and beliefs of middle managers towards quality programs in their organisations?* It is impossible to address this research question without having an understanding of attitude formation and attitudes measurement. A key assumption of this thesis is that some types of attitudes and beliefs that middle managers hold with respect to quality programs in their organisations relate to their level of involvement and support. This section addresses the following questions:

What are attitudes and beliefs and what is their relationship?

What is the evidence that attitudes and beliefs are related to behaviour?

How are attitudes formed, particularly in a work environment?

The well regarded work by Eagly and Chaiken (1993) was particularly useful in the construction of this section.

At the end of this section the relatively small amount of literature on attitudes towards quality, that is particularly relevant to the present research, will be discussed.

² Hard quality refers for example to inspection procedures as opposed to soft quality that relates for example to information flow. See for example the article by Wilkinson (1992).

2.5.1 Definition of attitudes

A number of definitions of attitude can be found in the literature:

The conceptual definition used by Eagly and Chaiken (1993, p.1) is: “Attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour”. Eagly and Chaiken assert that an attitude requires a response from an individual based on their evaluation of a particular entity. They say evaluation is always made with respect to some entity or thing that is the object of the evaluation, this is called the *attitude object*. An attitude object can be virtually anything that is identifiable and can be evaluated. Eagly and Chaiken (1993, p. 5) provide the following examples. A chair is a concrete object, liberalism is an abstract object and playing cricket – a class of behaviour, can also be an attitude object

Eiser and van der Pligt (1988, p. 1) define an attitude as: “... not some vague kind of mood or sensation, but a form of experience that: a) refers to specific objects, events, people or issues, and b) is primarily evaluative. ... We regard our attitude as ‘the truth’ at least until someone can introduce new facts or arguments to change our mind”.

Ajzen (1988, p. 4) states that: “An attitude is a disposition to respond favourably or unfavourably to an object, person, institution or event”

Responses to an attitude object that reveal people’s attitudes towards it have often been divided into three kinds: *cognitive responses*, *affective responses* and *behavioural responses* (Eagly and Chaiken 1993, p. 10)

Cognitive responses are thoughts that people have about the attitude object. These thoughts can be conceptualised as beliefs where beliefs are understood to be associated with some attribute(s) of the attitude object e.g. beliefs about the beneficial outcomes of the quality program for the organisation.

Affective responses consist of feelings, moods, emotions, that people experience about the attitude objects e.g. people may feel some sympathy with colleagues who cannot adapt to new way of working prescribed in the quality program or they might feel anger towards a manager who says he / she supports the quality program but does not provide sufficient resources.

Behavioural (or sometimes called *conative*) responses are overt actions that people exhibit in relation to the attitude object. For example people who want the quality program to succeed may be more involved in various forms of continuous improvement activity. People who do not support the quality program may engage in behaviours that obstruct continuous improvement activities.

Examples of the three kinds of responses to the attitude object “playing cricket” are: stating that cricket is a boring game – an affective response, believing that cricket is a game for the upper class – a cognitive response and, joining the supporters club – a behavioural response.

Reviewing the literature Eagly and Chaiken (1993, pp. 12-14) concluded that there was empirical evidence that the three types of attitude could be applied to most attitude objects.

2.5.2 Definition of Beliefs

Eagly and Chaiken (*ibid.* p. 103) define beliefs “...as the association or linkages that people establish between the attitude object and various attributes...”. Eagly and Chaiken point out that evaluative responses of the cognitive type are often conceptualised as beliefs, where beliefs are understood to be associations or linkages that people establish between the attitude object and various attributes. Eagly and Chaiken point out that beliefs are extremely important in attitude theory and there is a common assumption among attitude theorists that beliefs are in some way the basic building blocks of attitudes. They cite in particular the work of Fishbein and Ajzen which is discussed in more detail below. It is evident that there are a number of

unresolved issues related to beliefs. Eagly and Chaiken describe a number of areas of interest to researchers. For example work has been done investigating the relationship between the complexity of beliefs and the extremities of attitudes and on the relationship between beliefs.

2.5.3 Attitude Measurement

Attitudes can be measured directly from cognitive, affective or behavioural responses on an appropriate scale. Attitudes can also be measured indirectly, through for example a person's beliefs about an attitude object. This latter approach, which is particularly relevant to this thesis, is discussed in some detail in Section 2.5.4 below.

There is a considerable literature on the design of suitable scales for attitude measurement and also the issue of reliability of measurement. Scales can consist of a single item or can be made up of a number of items (typically by adding the scores). Many well known psychometric measurement instruments are composed of scales made up from multiple items which are generally more reliable than single item scales. Eagly and Chaiken point out that some single item scales, which have the advantage of low administrative cost, have been used successfully (*ibid.* p. 79-81). Scale selection and design issues are discussed in Chapter 4, Methodology, as they arise. However as the issues of reliability and validity are of general importance in any research these issues will be briefly discussed here.

Himmelfarb (1993, p. 67-68) provides the following definitions and commentary:

Reliability of a measuring instrument refers to the extent to which the instrument yields consistent scores or values over repeated observations. According to Himmelfarb the widely used Cronbach's Alpha statistic is currently the standard measure for assessing the reliability of a scale made up of a number of items.

Validity of a measuring instrument refers to the extent to which that instrument measures what it claims to measure. Himmelfarb compared the process of construct

validity to the validation of whether something is a duck: "... if it looks like a duck, walks like a duck and quacks like a duck, it must be a duck" (*ibid.* p. 68). Validity is clearly not straightforward to measure. Himmelfarb suggests that it is a process that requires an ongoing understanding of the theory involved. He points out that among recent investigators there is general agreement that the best approach is to test validity through structural modelling and confirmatory factor analysis.

2.5.4 The Prediction of Attitudes from Beliefs

According to Eagly and Chaiken (1993, p. 106) there are two established models which have been developed to predict peoples' attitudes about an attitude object from their beliefs about the attitude object. These are the *expectancy-value model* and the *information integration model*.

According to Eagly and Chaiken the expectancy-value model is the most popular framework for predicting attitudes from beliefs. The main idea of this model is that a person's attitude to an attitude object is a function of his/her beliefs about the object. The model requires a person to provide two measures for each belief about the attitude object; firstly, a measure of expectancy of that belief (which can be viewed as a measure of the probability about the belief) and secondly, a measure of the value of that belief. To obtain a measure of attitude the expectancy and value scores are multiplied together for each belief and the products so formed are summed. The model can be represented algebraically as:

$$\text{Attitude} = \sum_{i=1 \text{ to } n} \text{Expectancy} \times \text{value}$$

Where: n is the number of beliefs ₁ about the attitude object

Eagly and Chaiken (1993, p107) point out that expectancy theory models have a well established tradition in a number of areas of psychology including job satisfaction, occupational preferences and effort.

Eagly and Chaiken point out that early users of the expectancy value method limited the attributes about the attitude object to goals, a goal being a specific outcome of a course of action. Fishbein's formulation did not (Eagly and Chaiken, 1993, pp. 108).

Fishbein's generalised expectancy-value formulation is given by:

$$A_o = \sum_{i=1}^n B_i \times E_i \quad \text{where:}$$

A_o is the attitude to the object, action or event o

B_i is the belief i about the event o , this is expressed as a subjective probability that o has the attribute i

E_i is the evaluation of the attribute i and

n is the number of salient attributes

Eagly and Chaiken point out there are other approaches that link beliefs and attitudes.

They describe Anderson's information integration theory (*ibid.* pp. 109-111).

According to Eagly and Chaiken this approach provides a more general model than the expectancy-value model. Similar to the expectancy-value model Anderson's approach assumes that attitudes are formed and modified as people receive and interpret information and then integrate this information with their prior attitudes. Unlike the expectancy-value model the information integration theory does not assume that multiplying expectancies and values necessarily provides an adequate model of the relation between beliefs and attitudes. According to Eagly and Chaiken in this approach there are two basic operations involved in forming or changing attitudes. These are *valuation* of the incoming information and its *integration* into the current attitude. Valuation refers to the determination of the meaning of the information and its importance or relevance for evaluating the attitude object. This valuation is represented in terms of a scale value and a weight. Integration refers to the combining of items of information. The central assumption of the theory is that integration can be described in terms of simple algebraic models.

Eagly and Chaiken (1993, p. 111) point out that a number of questions have been raised about the extent to which people form, and reform, their attitudes from their beliefs and

that most of the criticism has been directed at the expectancy-value model. In particular the assertion by Fishbein and Ajzen (1997) that people derive their attitudes from beliefs. Some researchers point out that although an attitude may be initially formed by evaluating attributes, once the evaluation is stored it may be retrieved from the memory without necessarily retrieving the attribute information. The possibility that attitudes may be directly retrieved from the memory without recalling information about attributes may be counter to some theorist's emphasis on beliefs forming attitudes rather than on direct retrieval of abstract evaluations. The idea that attitudes are initially formed by summing a number of attributes of the attitude object has been questioned. Eagly and Chaiken cite McGuire (1985) who argued that a person may form an attitude on the basis of evaluation of a single, perhaps most important belief.

Although the process of prediction of attitudes from beliefs has been questioned, Eagly and Chaiken (*ibid.* pp. 175-177) point out that researchers have had considerable success with this approach in practice, particularly more recently using the approaches advocated by Fishbein and Ajzen.

2.5.5 The Prediction of Behaviour from Attitudes

A crucial issue in determining the general usefulness of attitude measurement is the degree to which attitudes can be used to predict behaviour. In a much cited study Wicker (1969) (cited in Eiser and Van Pligt 1988) reviewed 42 studies that involved predicting behaviour from verbally expressed attitudes. He found that only in a small number of cases was a close relationship found. This finding had a considerable impact on the credibility of this approach to predicting behaviour and it led to a re-evaluation of the approach to predicting behaviour from attitudes. More recent approaches have been much more successful. The work of Ajzen and Fishbein (1980) and Ajzen (1988) has been particularly influential in re-establishing the credibility of predicting behaviour from attitudes. Their work developed a number of improvements in methodology to predict behaviour from attitudes. One of the common methodological deficiencies that they found in attitude research was attempting to predict a specific behaviour from general attitudes. In a review of attitude-behaviour research they found out of 109

investigations reviewed that 54 assessed general attitudes in attempts to predict specific actions with generally poor results (Ajzen and Fishbein 1997, cited in Ajzen, 1988, p. 39). Ajzen (1988, pp. 43) attributes the generally poor predictive ability of research at the time to lack of behavioural consistency, which had been an embarrassing problem for personality and social psychologists. In improving the attitude-behaviour methodology Ajzen and Fishbein developed two key principles, firstly, the principle of aggregation and secondly, the principle of compatibility.

The principle of aggregation was offered as a solution to the consistency problem. This needs to be seen in the context of the objective of attitude-behaviour research. Ajzen points out that psychologists are rarely interested in an individual's actions on a particular occasion. Of concern to the psychologist are regularities in behaviour, consistent patterns of action and response tendencies. In line with this goal, attitudes and personality traits are concepts designed to capture the dispositional nature of human behaviour (Ajzen 1988, p. 46). Aggregation involves observing a range of different behaviours that are related to the particular disposition, such as attitude towards the church. The behaviours should be observed on multiple occasions and in different contexts. Details of the aggregation process are given by Ajzen (Ajzen, 1988. pp. 48-49).

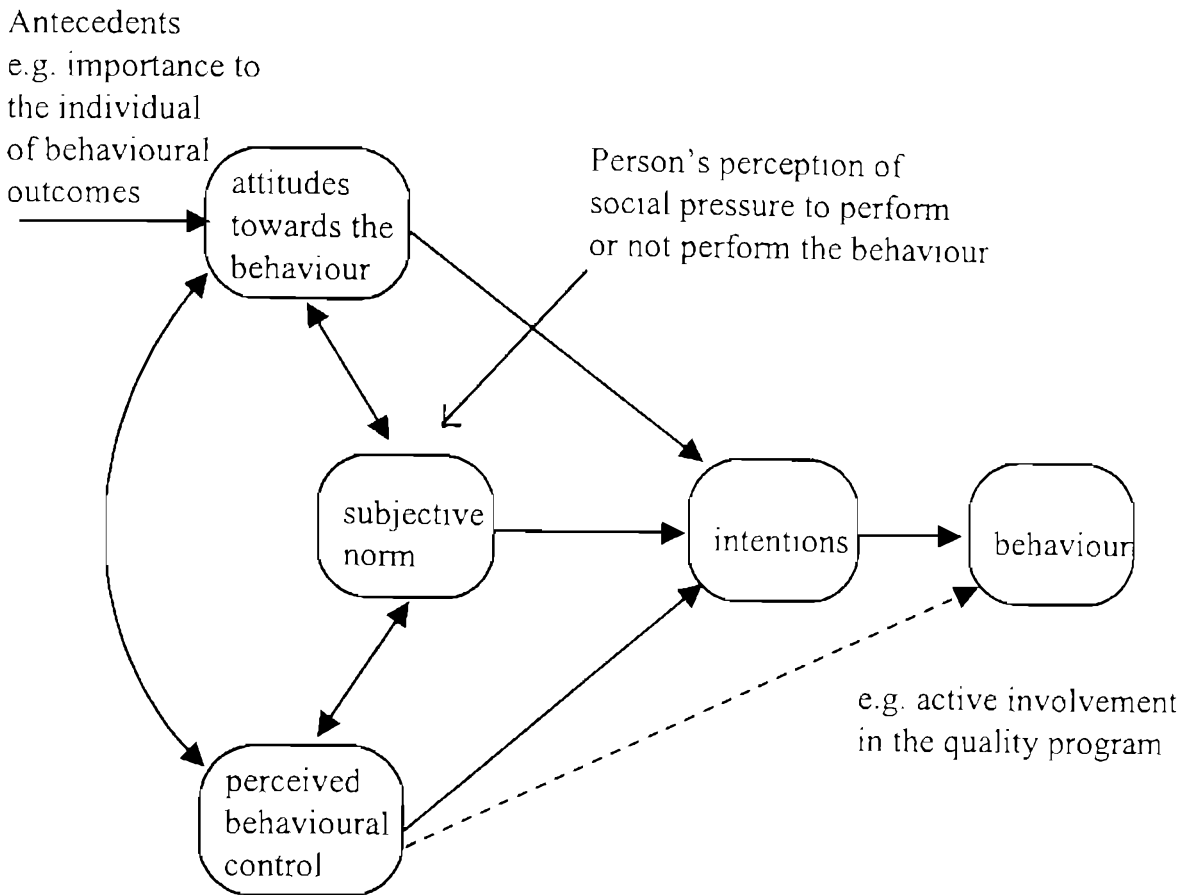
The principle of compatibility is concerned with matching indicators of a disposition in terms of target, action, context and time. The principle can be stated as "two indicators of a given disposition are said to be compatible with each other to the extent that their target, action, context and time elements are assessed at the same levels of generality or specificity" (Ajzen 1988). Eagly and Chaiken (1993, p. 162) explain that this principle means that attitudes and behaviours must be compatible (or correspondent) to ensure a strong correlation. For example, measurement of a person's general attitude to washing the car (car is the target and washing the car is the activity) would probably not be a good predictor of the person's disposition to wash the car in their driveway on Sunday mornings. Here the context (in the driveway) and the time (on Sunday mornings) elements are missing from the attitude measurement.

The principles of aggregation and compatibility are key ideas used by Fishbein and Ajzen in their theory of reasoned action (Fishbein and Ajzen 1980). The theory of planned behaviour was a development of the theory of reasoned action (Ajzen 1988). The Fishbein and Ajzen approach to predicting behaviour uses an attitude towards behaviour approach. The theory of planned behaviour is considered a useful overall framework for the present research and is now discussed.

2.5.6 The Theory of Planned Behaviour

The theory of planned behaviour, see Figure 2.4 is intended to predict an individual's involvement in a particular behaviour or set of behaviours. The behaviour can be very specific (e.g. feeding a baby) or more generalised (e.g. involvement in a political movement or a quality program). The theory suggests that individuals form *intentions* about becoming involved in the behaviour. Intentions are in turn formed by three factors; firstly, *attitudes towards the behaviour*; secondly, *subjective norm* and thirdly *perceived behavioural control*. There can be a more direct link between behaviour and perceived behavioural control, as shown by the dotted line in the diagram. An example might be where the consequences of not performing the behaviour were quite severe e.g. a soldier disobeying a command from an officer. We will now examine the components of the theory in more detail.

The subjective norm uses the notion of *important others*. Important others are those people or groups of people whose views on the particular behaviour under consideration are considered to be important by the individual. For example in the case of determining a suitable feeding method for a baby, the parent's doctor and the midwife would be *important others*. Their views on the pros and cons of baby feeding would be likely to influence the parent's decision on which feeding method to use (Ajzen 1988). Ajzen (1988) prescribes an expectancy-value approach to measuring the subjective norm (see Section 2.5.4 above). To operationalise this, *value* could be described in terms of the motivational importance to the individual of the important others' position on an item. Expectation could be operationalised by obtaining the individual's belief about the view of the *important other* on an item. A composite score is obtained by



Perceived ease or difficulty in performing the behaviour, assumed to reflect past experiences as well as impediments and obstacles e.g. opportunity, resources, facilitating factors.

Figure 2.4 Ajzen's theory of planned behaviour (Ajzen 1988, p. 133)
(explanatory text added)

multiplying the two measures for each item and summing the products. For example in the baby feeding case the doctor, the midwife and the mother's spouse may be considered to be the three *important others*.

Perceived behavioural control is the degree of ease or difficulty that an individual perceives is involved in carrying out the behaviour. According to Ajzen (1988) perceived behavioural control is assumed to reflect past experiences as well as

impediments and obstacles to carrying out the behaviour. So issues such as opportunity to get involved in the behaviour, availability of resources to enable the behaviour to be undertaken and other factors needed to facilitate the individual's involvement in the behaviour need to be considered. It is the addition of the perceived behavioural control component in the model to the theory of planned behaviour that distinguishes the theory of planned behaviour from the theory of volitional behaviour.

It can be seen that according to the model (see Figure 2.3) the formation of attitudes towards the behaviour depends on a relationship with the subjective norm, a relationship with perceived behavioural control and a relationship's number of direct antecedents. In the baby feeding case it is reasonable to expect attitude towards a particular feeding method to be influenced by the mother's perception of what her *important others* believe with respect to feeding methods. An example of a relationship between attitude to a particular feeding method and perceived behavioural control could be the ease or difficulty the mother may have in breast feeding the child.

Ajzen and Fishbein (1980) have demonstrated that important direct antecedents to attitude towards behaviour are the beliefs that an individual has regarding the outcomes resulting from the behaviour. They argue that the outcomes to be considered should be salient to the behaviour in question. Salient beliefs are those beliefs that are accessible (or "come to mind") at a point in time (Eagly and Chaiken 1993, p. 111). The expectancy-value approach to the measurement of outcomes is recommended (Ajzen and Fishbein 1980). For each salient outcome, the *value* to the individual of that outcome resulting *from the behaviour in question* is measured. The individual's expectancy, (which can be likened to a probability) of the outcome resulting from the behaviour in question is also measured. The products of expectancy and value are summed to achieve a single composite expectancy/value measure for outcomes. The expectancy-value approach has been explained in Part 2.5.4 above. Scale construction for behavioural outcomes is a fairly controversial issue and is discussed below.

Ajzen (1988) suggested that there could be a number of other direct antecedents to attitude towards the behaviour under consideration besides beliefs about behavioural

outcomes. Also, he suggested that there could be a rather large number of variables that could moderate the attitude–behaviour relationship. Ajzen (1988), examined published empirical evidence for a number of such variables (including some constructs such as self efficacy) and concluded that only in a few cases was there good evidence of a significant relationship. Some of these variable and constructs, including those used by researchers that are relevant to this research, are discussed in Section 2.5.8 below.

2.5.6.1 Treatment of Expectancy and Value Scales

As explained above Ajzen and Fishbein (1980) recommend an expectancy-value approach to measuring behavioural outcomes. The treatment of the expectancy-value scale is a controversial issue. The controversy is about the way in which the scales are treated for items which may be valued either positively or negatively by people i.e. items that could be considered either desirable or undesirable. Specifically, whether the likelihood scale should be treated as unipolar e.g. from 1 (unlikely) to 7 (likely) or as bipolar e.g. from – 3 (unlikely) to + 3 (likely). On logical grounds Ajzen (1988) prescribes the bipolar approach, suggesting a scale of – 3 (unlikely) to + 3 (likely). When the scales are multiplied together to form products the contribution to attitude, whether negative or positive, is shown in Figure 2.4 below. In particular it can be seen that desirable outcomes that are considered unlikely to occur make a negative contribution to attitude (i.e. positive times a negative), and undesirable outcomes that are considered unlikely to occur make a positive contribution (i.e. a negative times a negative).

Some writers support Ajzen’s view considering the bipolar approach to be more compatible with the theory of reasoned action (e.g. Sparks *et al.* 1990). Others suggest that the expectancy scale should be unipolar (e.g. 0 to 1 as it is supposed to represent probabilities. Hewstone and Young (1988) compared the two approaches and concluded that the unipolar method gave generally better correlations with an overall measure of attitude and that the two methods yielded significantly different results. Reviewing this issue Eagly and Chaiken (1993: 234-236) provide a number of alternative suggestions to improve these scales, such as the procedure proposed by

Holbrook (Eagly and Chaiken 1993: 235) to derive optimal scaling. However they point out that these other methodologies also have their disadvantages. It is therefore clear the scaling of items is a controversial issue and that the scaling method, in particular whether bipolar or unipolar scaling is used, can affect the correlations between an overall attitude score and a composite score formed from the products of evaluations (desirable/not desirable, good/bad) and beliefs (likelihood). Eagly and Chaiken say that on balance research has shown that the bipolar approach produces higher correlation between the product of evaluations and beliefs and an overall attitude measure than does the unipolar method.

		Expectancy Scale		
		- 3 unlikely	0	+ 3 likely
Value Scale	desirable + 3	negative contribution to attitude	positive contribution to attitude	
	0	positive contribution to attitude	negative contribution to attitude	
	undesirable - 3	negative contribution to attitude	positive contribution to attitude	

Figure 2.5 Contribution to attitude object using bipolar expectancy scaling

2.5.6.2 Evidence of use of the Theory of Planned Behaviour

According to Eagly and Chaiken (1993, pp.175-176) the theory of reasoned action, from which the theory of planned behaviour was developed, has been tested in scores of studies and has generally fared well when the terms in the model were carefully operationalised. Examples of research using this approach are: church attendance, smoking marijuana, mothers' infant feeding practices and blood donation. Eagly and Chaiken (*ibid.* 187-189) cite a number of examples in which generally the planned

behaviour model fared well, with the additional perceived behaviour control term improving the predictive ability of the model, e.g. Schifter and Ajzen 1985 (weight loss).

More recently there is evidence that the Fishbein–Ajzen approach has been applied to more complex behaviours than in the past. Hartwick and Barki (1994) used the approach in their study of the role of the user in information system use. Bell, Harrison and McLaughlin (1997) used the Fishbein-Ajzen approach in their study of Asian Americans' beliefs and attitudes towards affirmative action programs.

2.5.6.3 Criticisms of the Theory of Planned Behaviour

Although the contribution of Fishbein and Ajzen, using beliefs to predict behaviour, the development of the theory of reasoned action and its extension to the theory of planned behaviour, have been considerable, a number of aspects of their approach have been criticised.

Eagly and Chaiken (1993, p.111) point out that the extent to which people form their attitudes from beliefs has been questioned. They say the expectancy-value model has been a particular recipient of such criticism as Fishbein and Ajzen specifically claim people derive their attitudes from beliefs. The controversy over scale formation for outcome beliefs is discussed above. Eagly and Chaiken (1993, pp. 177-178) point to criticisms relating to variables omitted from the theory. These include perceived moral obligation (people's personal beliefs about rights and wrongs) and self-identity.

2.5.7 Predicting Behaviour from Attitudes Towards Targets

The theory of reasoned action and its development into the theory of planned behaviour use attitude towards behaviours as an important component in the prediction process. Eagly and Chaiken (1993, p.193) point out that many investigators have maintained the traditional approach of predicting behaviour from attitudes towards targets. They point out that with the attitude to target approach many non-attitudinal variables should moderate the attitude – behaviour relation. They present their own composite model

(*ibid.* p. 209) of the attitude-behaviour relation that includes attitudes to targets and a number of other variables that they consider pertinent. Some of the variables in their model include habits, rewards and punishments that are anticipated to follow from engaging in the behaviour, self-administered rewards and punishment (pride and guilt) that follow from internalised moral rules and issues relating to self-identity. The authors point out that their model has not been tested.

2.5.8 Other Relevant Variables and Constructs

A large number of variables and constructs have been used as moderators of the attitude-behaviour relation or in some way in models related to attitudes. Some of the research reviewed in Section 2.5.9 below examines the relationship between attitudes to quality and job related variables such as organisational commitment and job satisfaction. In the following section variables and constructs of particular importance to the present research will be discussed briefly. Ajzen (1988) provides a good review of variables that may moderate the attitude behaviour relationship. There is an extensive literature on work related variables and constructs. Morrow (1993) provides a good review of variables and instruments used in the area of work commitment.

According to Morrow (1993, p. 71) *organisational commitment* has attracted more attention than any other forms of work commitment. In her review Morrow identifies five types of organisational commitment: calculative; attitudinal; continuance; affective and normative. Attitudinal commitment has been used more extensively than the others and as it is directly related to this research it will be discussed. According to Morrow by far the most used attitudinal commitment instrument is that of Porter, Steers, Mowday and Boulian (1974). Attitudinal commitment reflects an employee's identification and involvement in a particular organisation. It has three dimensions i) a strong belief in and acceptance of the organisation's goals and values; ii) a willingness to exert considerable effort on behalf of the organisation; iii) a strong desire to remain with the organisation (Morrow 1993, pp. 86-87). The full version contains 15 items; a nine item scale, which omits the six negatively worded items has frequently been used. According to Morrow, even though the instrument is still popular it continues to receive

criticism because of the two *intention to leave* items. These items some claim confounds organisational commitment with what it is supposed to be an outcome of organisational commitment i.e. employee turnover. There is a long list of correlates of organisational commitment. Some of the ones more relevant to the present research are: age (generally positively related), organisational tenure (generally positively related), education (generally negatively related), sex (non conclusive), job level, promotional opportunities, group commitment, job involvement, career commitment, organisational climate, job satisfaction (generally positively related), communication, job performance, role ambiguity, role conflict, training, job challenge, participation.

Job satisfaction is one of the most extensively used and important work related measures. The relationship between job satisfaction and rewards has been extensively studied. Porter and Lawler (1968) explain that rewards need to be something that people want. They point out that rewards can be intrinsic to the person's behaviour, such as feelings of accomplishment or extrinsic in the sense that other people provide them. An increase of pay on the basis of a superiors' recommendations is an example of an extrinsic reward (*ibid.* p. 28). In their research Porter and Lawler (1968) measured an individual's job related needs on the following dimensions: security needs; social needs; esteem needs; autonomy needs and self-actualisation needs. Measurements can be made of overall job satisfaction or of satisfaction related to intrinsic or extrinsic motivational factors.

Ajzen (1988, p. 7) explains that *personality traits* describe response tendencies in a given domain such as the tendency to behave in a conscientious manner. Personality traits focus on the individual and can be used to differentiate between individuals and to classify them into different personality types. Ajzen point out that although there are some similarities between personality traits and attitudes, for example they are assumed to be relatively stable enduring dispositions, there are some important differences. Behaviour that reflects a trait does not focus on any particular external target and attitudes are typically viewed as being more malleable than personality traits. Attitudes can change rapidly as circumstances change but basic personality traits are much more

resistant to change. Norman 1963 (in Ajzen 1988, p. 19) identified five basic personality factors:

Factor 1, extraversion -- introversion e.g. talkative-silent, frank-secretive;

Factor 2, agreeableness e.g. gentle-headstrong, not jealous-jealous;

Factor 3, conscientiousness e.g. tidy-careless, responsible-undependable;

Factor 4, emotional stability e.g. calm-anxious, composed-excitabile and

Factor 5, culture e.g. imaginative-simple, refined-crude.

Ajzen (1988, 39) points out that the literature reveals that global personality traits are poor predictors of narrowly defined behaviours.

Internal-external locus of control (Rotter, 1954) is considered by Ajzen (1988, 103-105) as a personality trait which may indicate a disposition to hold certain beliefs. The concept of locus of control refers to the belief that one's outcomes are under the control of one's own behaviour rather than under the control of external factors such as powerful others or chance. Ajzen concludes that research indicates that the results attempting to relate this construct to a broad range of specific outcomes have been generally disappointing.

Role conflict and *role ambiguity* are constructs related to an individual's role in the organisation. An 8 item scale for conflict and a 6 item scale for ambiguity and was developed by Rizzo, House and Lurtzman (1970) from previous work. Working definitions are provided in a later paper by House and Rizzo (1971, p. 474). Role conflict is defined as the degree of incongruity or incompatibility of expectations associated with the role. Role ambiguity is defined as the lack of clarity and predictability of the outcomes of one's behaviour (in a work context). House and Rizzo suggest that lack of policy and philosophy and lack of clear performance standards or feedback and frequently changing directives can lead to role conflict and ambiguity.

According to Eagly and Chaiken (1993, p. 194), studies have shown that the attitudes of people who have had *direct experience* with an attitude object correlate moderately with subsequent attitude relevant behaviours, whereas the attitudes of people who lack direct experience correlate very weakly. One explanation, put forward by Fazio and Zanna

(cited in Eagly and Chaiken 1993 p. 195) is that attitudes based on direct experience have greater clarity and are held with more confidence and certainty than attitudes based on indirect experience. Another possibility, put forward by Fazio, Chen, McDonel and Sherman (cited in Eagly and Chaiken 1993 p. 195) is that attitudes based on direct experience are more easily retrieved from the memory than those not based on direct experience. Senge (1990, p. 23) asserts that “The most powerful learning experience comes from direct experience”.

Ajzen (1988, p. 74) points out that people with a strong *vested interest* in a behaviour are more likely to act on their attitudes than people with little vested interest. Thus vested interest can be a moderator of the attitude behaviour relationship.

2.5.9 Attitude Research Related to Quality Programs

In this section research particularly related to attitudes towards quality is discussed.

Jones, Glaman and Johnson (1993) surveyed 113 geologists, engineers, accountants and support staff working in non-managerial positions in a petrochemical company. Data was collected using a self-report questionnaire.

They investigated the relationship between perceptions of the organisation’s quality program, perceptions of the work environment and job related attitudes. The measurements that they made in these three areas were as follows:

a) Perceptions of the quality program

- Management Commitment - (4 items, not given in the paper) This asked respondents about the extent to which they believed that management accepted the principles of the quality movement and was actively committed to making it work.
- Personal Commitment - (4 items, not given in the paper) This asked about the respondent’s own commitment to the program.
- Understanding. This assessed the extent to which respondents understood how well the procedures of the program applied to their job and understood how to implement them.

- Vision. This measured the extent to which respondents agreed with the vision statement developed by the organisation's management. This statement spelled out not only the goals of the organisation but also the relationship the organisation would like to achieve with its clients.

b) Perceptions of the work environment:

- Role ambiguity and role conflict (8 items adapted from the scales of House and Rizzo 1972).
- Leader member exchange. This measures the overall quality of interactions between leader and subordinates (respondent's view of their bosses). Adapted from Scandura and Graer (1984) scale.

c) Job related attitudes

- Organisational attitudinal commitment (9 items). Used the Porter, Steers, Mowday and Boulian (1974) scale.
- Organisational calculative/economic commitment (4 items). Scale developed by Hrebreniak and Attutto (1972).
- Job satisfaction (2 items).
- Turnover intent (1 item).

Their key findings were:

- a) People in staff positions had lower personal commitment to the program and vision commitment than those in line positions.
- b) Management's ability to communicate clearly its goals is a key factor in program success as is their commitment to the success of the program.
- c) Overall the data showed that personal program commitment and perceived management commitment to the quality program as well as agreement with the vision set forth by management were linked to more positive perceptions about work conditions and to more positive work attitudes.

Morrow (1997) investigated the relationship between some measures of TQM principles and work-related outcomes. She stated that to date literature examining the relationship between the institutionalisation of TQM and work-related outcomes had been mainly anecdotal. Following the work of Dean and Bowen (1994) Morrow developed measures for three key TQM constituents namely: customer focus, continuous improvement and teamwork. In terms of TQM results Morrow (*ibid.* p. 366) states: "Of particular interest are the impacts of TQM efforts on employee attitudes. Establishing such a link would tie TQM processes to such indirect costs as those connected with absenteeism and turnover." Morrow also suggests that in workplaces using TQM principles one might expect enhanced perceptions of job satisfaction, communication and the work environment.

The study used a random sample of 2249 employees in one organisation. Data was collected anonymously using a postal questionnaire. Measures were made of job satisfaction (the job itself, satisfaction with supervision, satisfaction with co-workers), communications (with immediate supervisor, peers, subordinates and personnel), five measures of organisational climate were included. Organisation tenure and TQM exposure (understanding of TQM and TQM training) were used as control variables. TQM exposure was measured using customer focus, continuous improvement and teamwork.

Morrow states that collectively the results suggest that adoption of TQM principles has a desirable impact on work-related attitudes. TQM exposure whether through training in TQM or prior experience appeared to be associated with more favourable work-related attitudes. The three TQM measures had significant positive relationships with work satisfaction, supervisor satisfaction (except customer focus which was not significant), co-worker satisfaction, information quality and most of the measures of the work environment used in the study. Morrow suggests a number of other variables not included in the study should be incorporated in future research. These include further work-related outcomes such as organisational commitment and turnover. Morrow suggest two types of variable that may moderate the relationship between TQM related

variables and work outcomes. Firstly, top management commitment and visionary leadership and secondly the extent to which organisational structure and culture (e.g. decentralised decision making, team-based rewards) may be critical.

Davis (1997) carried out exploratory research into attitudes of part-time graduate students towards change programs, mostly TQM type programs, in their organisations. This research included developing a number of measures including a multiple-choice test to measure quality knowledge. Data was collected from 170 part-time students. Besides demographics measures included:

- a) Individuals' attitude toward the principles of quality management.
- b) Individuals' commitment to quality in their organisations. (The scale consisted of three items measuring enthusiasm for involvement in quality in the organisation. The items formed a group (Cronbach's Alpha = 0.76) during exploratory factor analysis carried out with a larger number of items)
- c) Individuals' commitment to ownership of quality in their job.
- d) Individuals' perception of management support for quality.
- e) A measure of quality knowledge (a multiple-choice test was developed).
- f) Proportion of time spent on quality related activities.

There were significant positive correlations between commitment to quality in the organisation and the following variables: attitude to principles of quality management; ownership of quality in own job and rating of top management support. Quality management knowledge was significantly positively related to attitude to principles of quality management, but not to commitment to involvement in quality in the organisation. There was a strong positive relationship between quality knowledge and whether or not respondents had received training/education in quality. Respondents who said that they were actively involved in programs in their organisations scored significantly higher mean values for attitude to the principles of quality management, perception of top management support for quality, ownership of quality in job and time spent on quality related activities. Overall the results were consistent with a number of other findings e.g. Jones et. al.

(1993), however caution is needed in generalising the results due to the nature of the sample.

Osland (1997) reported results of a case study in a Central American organisation that investigated the relationship between quality training and employees' attitudes towards their supervisors. He reported that generally employees who had received quality management training had better attitudes towards their supervisors. Middle managers who related to their superiors primarily in an hierarchical manner had less favourable views of their superiors.

Wilkes and Dale (1998) reported on a study of attitudes to self-assessment and quality awards at seven small and medium sized organisations (SMEs) in the UK. The research was to supplement the testing of a revised model by various national and regional quality bodies. The research suggests that SMEs are much less equipped to utilise the EFQM model (even in the proposed revised form) than larger organisations. Wilkes and Dale believe that SMEs need to be introduced to TQM. However the process of involving them needs to be simplified and they need more guidance than do large organisations.

Joseph, Rajendran, Kamalanaban and Anantharaman (1999) investigated the relationship between a number of organisational factors and TQM culture. The organisational factors included in their study were: quality of working life, organisational climate and communications. Data was collected via a questionnaire that was completed by 140 managers in 14 business units of Indian organisations. They divided the participating business units into two groups, those with a low TQM scores and those with high TQM scores. They found that the business units in the high level TQM group scored significantly better than the low level TQM group on nearly all of the dimensions of the three organisational constructs used.

Most recently Steensma and Tetteroo (2000) carried out a survey of attitudes towards cross-functional quality teams. They collected data using questionnaires from five different groups: chief executives, quality managers, management team members,

department heads and rank and file. Seven organisations participated. They found that positive attitudes to cross-functional quality teams were associated with perceptions of positive team outcomes. There were only minor between group differences in the perception of cross-functional quality team outcomes.

2.6 Summary of the Literature Review

The concept of the middle manager is a hazy one; there is no generally accepted definition of a middle manager. Middle managers are a diverse group, some considering themselves primarily professionals rather than primarily managers. Until relatively recently there was little interest by academics in researching middle management. This situation has changed with increased research in the last few years. A working definition of middle management is presented in Section 2.2.11 above.

The radical changes in larger organisations in the 1980s led to widespread dissatisfaction among middle managers who saw their status and power within their organisations being reduced and job security and promotion opportunities under threat (e.g. Scase and Goffee 1989). With the introduction of new organisational forms, such as group work, the middle manager's role has sometimes changed from the traditional linking role to that of coach and facilitator. There is clear evidence that middle managers have resisted the introduction of organisational change programs, including quality programs (e.g. Brennan 1991; Fenton-O'Creevy 1998).

Recent research suggests that middle managers, at least those who have survived downsizing and restructuring are more satisfied with their jobs (e.g. Dopson and Stewart 1994). This research suggests also that top management has recognised that middle managers still have an important role to play within the organisation. This role includes involvement in new areas such as knowledge management and involvement in strategic decision making as well as their more traditional role as link between top management and lower levels (e.g. Floyd & Wooldridge 1992; Sayles 1993; Nonaka 1994 and Hilmer & Donaldson 1996). Middle managers are far from being a spent force, at least in larger organisations.

The two most popular approaches to implementing quality are TQM programs and certification to ISO 9000. Many organisations employ both approaches. Frameworks developed as part of quality awards have been a popular approach to implementing TQM. TQM is a popular approach to change management in Australia (e.g. Terziovski, Sohal and Moss 1999) and many other industrialised countries. Although early applications of TQM were mainly in manufacturing industry, the approach has become popular in other types of operations.

It is evident that successful implementation of a quality program is a demanding process. There is reasonable agreement in the literature on a number of the critical success factors for successful quality program implementation (e.g. Wilkinson & Witcher 1991; Wilkinson, Redman & Snape 1994; Mann & Kehoe 1995 and Bardoel & Sohal 1999). These critical success factors include support from all levels of management. Despite much anecdotal evidence of the benefits of TQM there is relatively little statistical evidence to support these claims.

Recently TQM has come under increasing scrutiny from management theorists (e.g. Dean and Bowen 1994). They have questioned the coherence of the TQM approach and have compared TQM with more established management theories. Some writers have questioned managements' motives for introducing TQM, some suggesting that workforce control may be a motive (e.g. Knights and McCabe 1997).

Within Australia quality programs have been popular in recent years. Australia has a well developed (although not always harmonious) quality infrastructure (e.g. Foley 1987 and Foley, Barton, Busted, Hulbert & Sprouster 1997). The Australian Business Excellence Framework has been a popular model used to implement the TQM approach. Australia has had the highest per capita take up of the ISO 9000 approach. The ISO 9000 approach has received significant criticism and is in the process of review.

There appears to have been very little research that has directly addressed the involvement of middle managers in quality programs. Some authors have demonstrated that a close

relationship often exists between quality programs and employee involvement activities (e.g. Lawler, Mohrman and Ledford 1992). There seems to have been rather more literature on middle managements' involvement in employee involvement schemes than their involvement in quality programs. The literature demonstrates that the effective involvement of middle managers is important for the success of quality programs (e.g. Wilkinson & Witcher 1991; Bardoel & Sohal 1999). Middle management resistance to change programs has been reported by a number of writers (e.g. Dawson 1996).

The psychology literature demonstrates that attitudes can be an important component in influencing behaviour. The well respected theory of planned behaviour (Ajzen 1988) provides in the writer's view the most convincing explanation of how attitudes are linked with behaviour. The formations of attitudes is complex and may depend on rather a large number of variables. An important component in forming an individual's attitude towards a quality program are the beliefs that the person has about program outcomes.

Literature searches revealed relatively little research, particularly of an empirical nature, dealing specifically with middle manager's attitudes towards quality and quality programs in their organisations. Other areas of research however provide useful theory for this research. There has been more research in the area of employee involvement much of it aimed at identifying factors that encourage individual involvement (e.g. Fenton-O'Creevy 1998). Overall the literature suggests that there are rather a large number of variables which could influence a middle manager's attitude towards their quality program and quality related activities. These include:

- a) Concerns about changes in job security the quality initiatives may produce (e.g. Edwards, Collinson and Rees 1998);
- b) Concerns about changes in authority and status due to devolution of authority to lower levels in organisations that might result from the quality initiatives (e.g. Bardoel & Sohal 1999; Brennan 1991; Bettenhausen 1991 and Fenton-O'Creevy 1998);
- c) Concerns about changes in various aspects of job satisfaction both intrinsic e.g. growth needs and extrinsic rewards (e.g. Abraham, Fisher and Crawford 1997);

- d) The beliefs that a middle manager has about the commitment of senior management to the quality initiatives. Issues such as providing sufficient resources and giving quality a strategic focus in the organisation (e.g. Jones, Glaman & Johnson 1993 and Wilkinson & Witcher 1991);
- e) The effectiveness with which top management communicates the vision and detail about quality initiatives to the middle manager (e.g. Abraham, Fisher & Crawford 1997; Jones, Glaman & Johnson 1993);
- f) Perceptions the middle manager has about the general work environment e.g. measures such as organisational climate or culture, various measures of organisational commitment (Jones, Glaman & Johnson 1993; Morrow 1997);
- g) Measures related to the middle manager's perception of his or her job role e.g. role ambiguity, role conflict (Jones, Glaman & Johnson 1993; Morrow 1997);
- h) There is some evidence although mainly anecdotal that individuals working in operations type positions generally have more positive views on quality than those in non operations positions (e.g. Terziovski, Sohal and Moss 1997) and
- i) The extent to which a middle manager has a vested interest in quality e.g. middle managers who are quality specialists may have more positive views of quality and quality initiatives than middle managers who are not (e.g. Ajzen 1988, p. 74).

A relationship between attitudes towards quality and measures of personality cannot be ruled out. However there seem to be other variables that appear to be of more importance. Ajzen (1988, p. 39) for example points out that the research has shown that measures of personality are relatively poor predictors of specific behaviours. A limitation of this research is that measures of personality and leadership style are not included in the methodology.

CHAPTER 3
EXPLORATORY INTERVIEWS

3. EXPLORATORY INTERVIEWS

3.1 Introduction to Exploratory Interviews

The literature review has identified a number of issues that are likely to be important in determining a middle manager's attitude towards quality and toward quality programs in their organisation. These issues are summarised in Section 2.6 of the Literature Review. The main purpose of the exploratory interviews was to look for evidence that the issues raised by the literature review in relation to changes in middle management work and in relation to middle managers' participation in their quality programs were relevant to the Australian situation. A large organisation (i.e. Organisation 8 in Appendix 5E) that had a reputation for having a well-established quality program was approached. Permission was given to interview four middle managers who worked in different types of jobs and in different parts of the company. The interviews, which lasted approximately 1 hour each, were tape recorded and later transcribed for analysis. To maintain anonymity the names of the areas in which the individuals worked have been changed. The interviews were loosely structured. To ensure that important issues, as indicated by the literature review, were covered during interviews a list of topic areas was drawn up as follows:

1. Describe your job
2. What is your view of quality, what does quality mean to you?
3. How does quality relate to your job?
4. What training or education in quality have you received?
5. What is your understanding of the organisation's quality program?
6. What is your involvement in the quality program and the involvement of your people?
7. What has been the impact of the program in the organisation on:
 - a) the organisation
 - b) your area of the business
 - c) on yourself e.g. job security, job satisfaction, work load
8. Who or what influences your views on quality?

- 9 Do top management support quality and the quality program? How do you know?
- 10 Other questions e.g. restructuring, downsizing.

Subject “A”

During the recent restructure this person had been promoted with more formal responsibility for quality in the same functional area.

“A” has a strong quality background in quality circles, quality action teams and in some business process reengineering (BPR) teams. He sees BPR as a sub-set of quality. “A” is currently involved as a leader with direction setting teams and support group teams. He had received a significant amount of training in quality assurance and the Australian Quality Awards.

“A” considered himself a middle manager and saw his role much more as a helper, supporter and coach to his people than the traditional management role. His department which was originally made up of three departments had been combined into one which involved a lot of extra work. He considered that the department was unique in the organisation as they had been teaming, data gathering and using control charts for years. He provided evidence of continuous improvement activities in the department. He was pro-active in challenging management when inappropriate ideas were suggested by them. He gave an example of successful opposition to an inappropriate performance measure suggested by top management.

“A” believed that people at all levels in the organisation needed to be involved in everything. He cited the writing of a recent business plan which was written by four teams. When asked if participation was compulsory or voluntary “A” replied that management can try to make participation mandatory but one can’t make anyone participate if they do not want to.

“A” viewed quality as a vast area. He considered the AQA/Baldrige (TQM) approach best. AS 3902 (Australian equivalent of ISO 9002) had been used in his area. He considered the ISO 9000 approach too restrictive. He considered that quality is a good weapon and tool against not knowing where you are.

“A” had a good understanding of his company’s quality program. Since joining the company he had studied TQM in depth. He also had a clear idea of where he fitted in the quality program.

“A” was confident that people in his area when asked about AQA, business plans and continuous improvement would provide fairly similar answers. He pointed out that in a recent business planning exercise in his area a number of teams representing the voice of employees, the voice of the business and voice of customers participated. “A” said this was a very rewarding experience for him as he collated all of the information. He commented on some of the participants, most he thought were committed. Some “A” said do play lip service and some just sit quietly and say nothing.

“A” considered that quality was good for the organisation. He recollected that not all quality initiatives had been successful and some part of the business had suffered e.g. quality circles running for five years was a big mistake.

He considered it important for outcomes to result from the quality approach. “A” saw the “biggest crime” in quality as ignoring recommendations. He considered that the present Managing Director, who had come up through the organisation and strongly supported quality, would recognise these imperatives.

“A” spends a lot of time on quality issues often completing work that others have found too difficult. He said that other people’s apathy towards quality affected him negatively. He was willing to spend his own time on quality issues as he believed that this improved the way his business area ran.

“A” stated that “only a fool would be able to walk around thinking he could never lose his job”. He was of the opinion that it was hard to get sacked if you worked in a hard and diligent way. It was evident that he did not consider the quality program a threat to his security. On the contrary, his activities in quality had strengthened his position in the organisation.

He explained that his involvement with quality had stretched him beyond the norm. In terms of commitment to quality “A” said that the strongest influence on him was his direct boss. People whom he had worked with were also an important source of motivation for quality.

“A” considered that an individual’s sincerity in quality was important, he did not approve of pretenders. He stressed the importance of getting the right skill mix and right dynamics in team-work. He thought that it was important to have a reward system in quality.

Subject “B”

Despite considerable probing by the interviewer “B” did not demonstrate much understanding of different approaches to quality nor was he an active participant in formal quality activities in the organisation.

“B” gave a broad life view perspective of quality but did not seem to be familiar with quality theory. He had received no training or education in quality and this was his own choice.

“B” had attended some meetings on quality but did not seem very familiar with the organisation’s quality strategy. He considered that the program was not clearly defined. His section had not been involved in quality awards, although he was aware of the organisation’s involvement. He said that there were quality groups that he could be actively involved with but did not consider them effective. One group he attended went on too long.

Although ISO 9000 was not considered worth implementing in his division he thought that it may be useful now. He explained that suppliers were accredited and this provided his division with confidence ... “but would the investment be worth it?”.

There had been relatively little impact of formal quality initiatives on “B” as his division seemed to have largely avoided them.

“B” considered team-work important and teams were starting to be formed in his division. There were no quality teams at present.

He believed that his subordinates did not see the quality program applying to them.

“B” seemed to be waiting to assess the impact the new Managing Director would make on the organisation. He said at present there was considerable turmoil. Although it was evident that “B” was not an active participant in formal quality it was also evident that he saw the new M.D. as wanting team orientation and customer involvement. He said he would get more involved in the future ... “have to be seen doing it to go anywhere”. It seemed therefore that “B” believed that the new M.D. would expect participation and that failure to participate could affect his career prospects.

Subject “C”

“C” worked in a technical area of the business, he considered himself definitely a middle manager. He described how quality affected him. People in his group were required to work within a quality system. Each of the locations in Australia was certified to ISO 9000. “C” explained that the Australian Quality Award framework was used in business planning in the organisation. He described his involvement in this activity. “C” considered using the AQA framework forced the organisation to get out of the very internally focused views of the ISO 9000 approach.

With regard to the company's quality program "C" commented ... "I am what you would call a resister I suppose". He explained what he meant by this. He explained that in a previous role quality was forced on them by a policeman approach: "The policeman approach was not business development, it was not planning, it was very structured and narrow approach and did not add a lot of value to my life apart from making things more difficult for me". "C" saw value in the broader AQA approach. He saw some reason for ISO 9000, the approach that had given him some pain, but did not feel it added value to the business. He pointed out that a recent employee satisfaction survey showed that communication with senior management could be improved. This was being addressed and reinforced his view of the benefit of the AQA approach that includes emphasis on top management support, including communications.

"C" was a member of a number of teams and was a conduit between his team (comprising his reports) and other teams he was on. He explained that there were many different kinds of teams in the organisation e.g. marketing teams; product focused teams; functional teams and regional teams.

"C" considered the main impact of the quality program was to focus the company on some issues that had been largely ignored, such as employee satisfaction. The company was also being forced to address senior management leadership.

"C" found overt change the most convincing evidence that there was support for quality in the organisation. He believed that the new M.D. was in favour of team based structures. Answers from management when he asked for resources or put up suggestions was another way in which he gauged management support for quality. He believed that all organisations have corporate gloss, which can be quite negative. The main person he paid attention to was his direct boss although he was influenced by other middle managers.

Certification to ISO 9000 requires "C" to undertake a lot of activities throughout the year. The AQA framework also forces him to address a lot of issues. "C" believes being involved in quality is positive for his career, he thinks it is something that the

business will expect. “I don’t see that the organisation will offer me the opportunity to be a director in the near future (because of flat structure and “C” is relatively young). I do see that I can acquire skills that will help me take on responsibilities for larger organisations”. Surprisingly “C” had received no formal training or education in quality. He had read fairly extensively about the subject.

“C” pointed out that before the recent restructure he would have said that the quality program represented a threat to his job security. He had however been promoted a level and felt much more secure. He viewed the quality program as providing opportunities rather than as a threat.

Subject “D”

“D” had a general management role. He still considered himself a middle manager even though the company had removed a number of levels of management. He had received some in-house training in quality.

He contrasted the time, around six years ago, when the company did not have any formal quality systems, with the current situation. He believed that due to increasing competition quality was becoming especially important.

Quality related to “D’s” role in a number of ways. Facilitating training “D” saw as a key function. He believed that developing a culture in his work area that encouraged subordinates to make decisions was important. He saw his role as support for his people, rather than getting involved in the detail. “D” did not get directly involved with ISO 9000. He pointed out that it was not easy for him to relinquish some of his control over subordinates but he considered that some of his colleagues had found it far more difficult. “D” was actively involved in a number of teams.

“D” pointed out that in the past there had been some criticism that changes in direction of the quality program had not been communicated swiftly. He said there had always been a strong informal communications network in the organisation.

“D” said that his boss supported the delegation approach and since the recent restructure was questioning “D’s” need to refer back to him so frequently. “D” felt that he was given sufficient power and authority to minimise the need for referral.

“D” considered that he had a good understanding of the organisation’s quality program. He pointed out that they had tackled issues of housekeeping etc. and were now shifting to BPR (Business Process Reengineering). “D” considered BPR to be a similar approach to TQM.

“D” believed that the various quality initiatives had resulted in a number of changes for the organisation. After the start of the quality program, around 6 years ago, there was a fairly rapid breakdown in the us and them attitude that existed between some functions. He believed that customers noticed an improvement in staff customer relations. “D” pointed out that suppliers were first involved in teams about three years ago and major customers around two years ago. “D” said he sat on the quality council for his division that was responsible for improving both internal and external processes.

Overall “D” felt that the quality program had been good for him. He explained that his management training had been traditional and that it had been difficult to alter his style, “you can’t really demand and give instructions these days you have to give guidance and encourage people...”. He said that the changes resulting from the quality program had helped him to be more in touch with what was happening in the organisation. “D” believed that his general understanding of business was a lot better than it was two years ago. “D” did not see the changes due to the quality program as a threat to either his job security or authority. He pointed out that his management style was never authoritarian. He thought that the current emphasis was on leadership. “D” mentioned the case of two of his subordinates who would not adapt to the changes required, they left and joined organisations with more traditional structures. He considered that his job had become diverse with perhaps less depth in any particular area. “D” believed that he was managing more on a priority basis than in the past.

“D” said that he was motivated by success. It was also evident that top management support was important to him, “I think our company would come to a grinding halt if our top management did not support quality. I think they do. They have demonstrated their commitment with their time and financial backing”. He considered that the custom in the company was watching the leaders and following what they do.

“D” said that his feedback and experience had led him to believe that most change programs generally fizzle out. Quality is the only program he had seen which survived through a lot of change. He thought that their program had evolved over time but that it had been the longest idea for change he had ever seen in business.

3.2 Summary

Table 4.1 summarises the four interviews. The company has an overall TQM approach to quality that followed the Australian Quality Award Model; some processes had also received ISO 9000 certification. A formal quality program seems to have been in existence in the organisation for approximately six years. A recent reorganisation had reduced the number of hierarchical levels from five to three: directors, managers, team leaders and operatives. Various types of teams existed in the organisation. It is evident that the quality infrastructure has not permeated all areas of the organisation to the same extent. There was little evidence of the formal quality structure in the area in which “B” worked. It seems from the evidence from “B” that there was some volition involved in participation in quality related activities.

All of the interviewees saw themselves as middle managers. Whereas subjects “A”, “C” and “D” all had various levels of enthusiasm for quality initiatives in the organisation and had been involved in them, “B” had little enthusiasm and was certainly not actively involved. Even so even manager “B” seemed to believe that the cultural environment in the company had changed and that he now needed to become more involved in quality.

It was clear that top management support was an important factor in influencing subjects’ views on quality initiatives and encouraging their involvement. In particular

Table 3.1 Summary of four interviews

	Subject "A"	Subject "B"	Subject "C"	Subject "D"
View of quality	Broad view	Vague, ISO 9000 seemed to be his model.	Relatively negative views on ISO 9000 approach. Likes the broader approach of the AQA framework.	Broad view Considered that quality was a resilient approach to change management
Enthusiasm for quality	High	Aware of importance of product quality Not very enthusiastic about formal quality activities	High enthusiasm for broad approach Low for ISO 9000 approach	High
Training/education in quality	Substantial	None – own choice	No formal training or education	In-house training
Understanding of quality program	In depth understanding	Superficial	Good understanding	Good
Evidence of involvement in quality	Considerable involvement, formal involvement.	Marginal involvement	Involved in a number of quality groups. Leads own subordinates in quality.	Involved in various quality groups Leads quality in own area.
Views about devolution of responsibility	Supported team work, did not seem threatened by devolution of responsibility	Tentative	Positive	
Impact of program	Program good for organisation and good for him	Lots of training required, no firm views on general impact	Involves him in a lot of work. Good for business	Brought about cultural change in organisation. Had to change aspects of his management style.
View of top management support for quality	Managing Director strongly supportive	Did not seem to have commitment from his direct boss. Thought new M.D. was supportive	Thinks they are supportive, but not very explicit on this issue.	Strong support. Management are involved in quality and provide adequate resources
Other	Could be described as a quality champion	Generally low enthusiasm for formal quality activities and low involvement This resulted in low involvement of his subordinates	Has fairly strong opinions on most issues related to quality	Takes responsibility for quality in his own area.

the perception of the stance taken by the subject's direct boss seemed particularly influential on them. To some extent also the managers were influenced by the views of their peers.

A broad TQM approach was seen as generally more useful than the narrower ISO 9000 approach.

With the introduction of the quality program the management styles of the three enthusiastic middle managers had changed somewhat. They considered supporting and coaching their subordinates to be important in implementing the quality approach.

The three enthusiastic managers all believed that the quality program had a beneficial impact on the organisation. Processes had been improved as had relationships with suppliers and customers.

It was evident that the three enthusiastic managers had gained personally from the quality program. Various aspects of job satisfaction seemed to be their main gain rather than any financial reward. Motivation to be involved seemed to arise from their belief that the program would improve things for the organisation as well as perhaps for themselves.

The findings from these interviews support many of the issues that the literature review suggests are important in influencing middle managers' attitudes towards quality and quality programs. The level of program enthusiasm expressed by the managers seemed to be related in particular to the value they attached to various program outcomes. Their beliefs about program support from top management and the CEO for quality was also an important component in shaping their own views about quality in the organisation. The position that the middle manager's direct supervisor (boss) took on quality seemed to particularly influence their views on quality. All of the interviewees considered that they were middle managers despite recent restructuring and evidence of a significant amount of group working in the organisation. This supports the utility of the notion of the middle manager.

CHAPTER 4
THEORETICAL FRAMEWORK AND HYPOTHESES

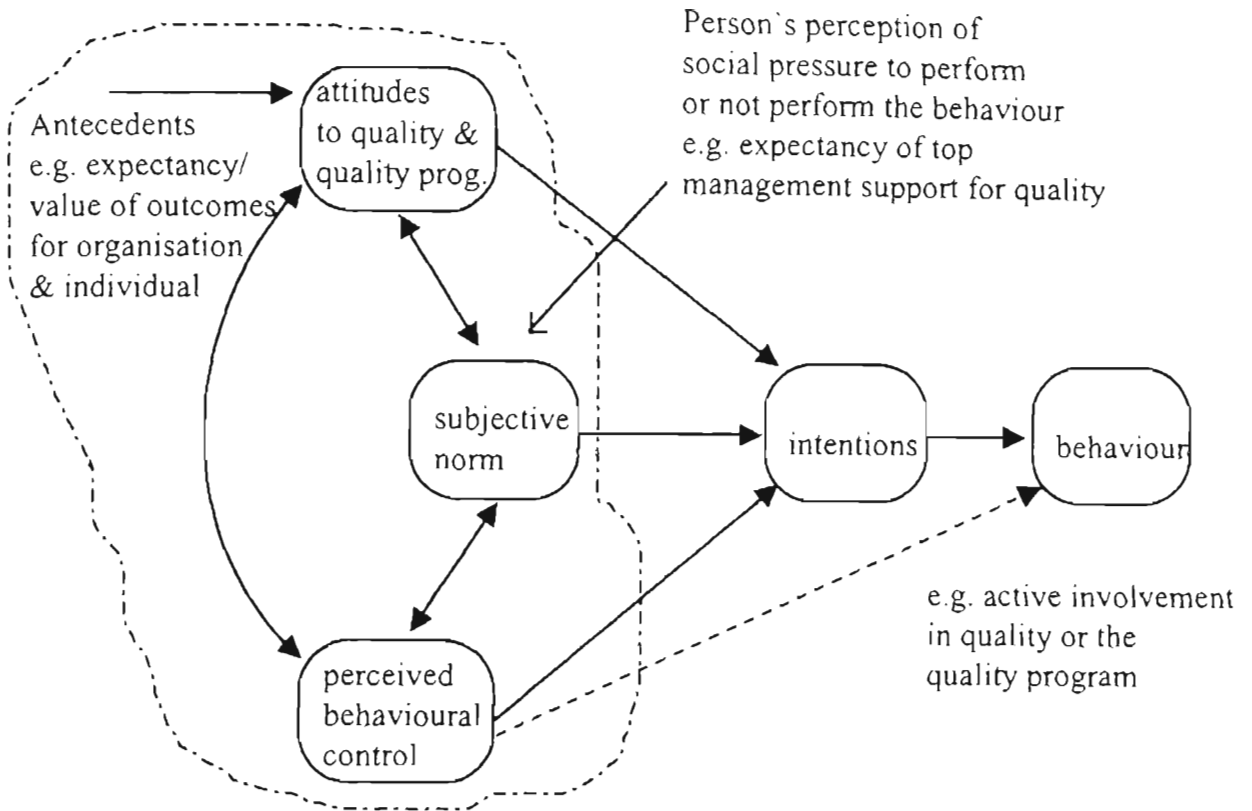
4. THEORETICAL FRAMEWORK AND HYPOTHESES

The literature review (Chapter 2) and the exploratory interviews (Chapter 3) have identified issues that are pertinent to the present research. In this chapter an overall framework for the research is described and specific hypotheses are developed. Details of the research methodology is presented in Chapter 5.

The theory of planned behaviour (see Section 2.5.6 of the Literature Review) is a useful general theoretical framework for this research as it can accommodate many of the variables identified as pertinent to this research. The following explains the utility of this theory in terms of the current research (see Figure 4.1). The area enclosed by the dotted line in Figure 4.1 shows the domain of most interest in this research. At a general level a middle manager's behaviours of interest might be his or her general support for the quality program in the organisation. This may involve a number of possible behaviours e.g. involvement in quality related activities. The theory suggests that an individual's attitudes are likely to be formed by a number of factors. The middle manager's beliefs about top management's support for quality is likely to be a significant subjective norm. Values and expectancies that the middle manager has about outcomes of quality in the organisation would also influence attitudes. The middle manager's beliefs about the ease or difficulty in supporting quality can also influence attitudes.

The level of analysis in this research is fairly broad. It is not concerned with specific behaviours of particular middle managers at a point in time and in a particular context. Rather it investigates the formation and importance of middle managers' attitudes to broad issues in particular their support for quality in their organisation. Also, the research was limited to organisations that had a formal quality program. The quality program provided the quality context for this research.

In the following section an argument is made for major variables that are included in this research and a number of hypotheses are presented. Details of the design of the research including the instruments used is included in Chapter 5, Methodology.



Perceived ease or difficulty in performing the behaviour assumed to reflect past experiences as well as impediments and obstacles e.g. opportunity to be involved in quality related activities, resource provision and other facilitating factors.

Figure 4.1 Overall framework for the research

Based on Ajzen's theory of planned behaviour (Ajzen 1988)

Note: The area enclosed by the dotted line includes factors which are the main focus of interest in the research project.

4.1 Direct Measurement of Attitudes

The primary goal of this research is to identify variables that are important in forming middle managers' attitudes toward the quality program in their organisation. As explained in Section 2.5.3 of the literature review, attitudes towards an attitude object or behaviour can be measured directly. This is useful as direct measurements can be used as dependent variables in multivariate analysis e.g. correlation analysis, regression analysis, in a quest to identify variables (independent variables) that contribute significantly to forming those attitudes. Davis (1997) (see Section 2.5.9 of the Literature Review) developed a three item scale for measuring attitudinal commitment to quality in an organisation. This scale was adapted for the present research. Attitudes can also be assessed by behavioural responses (see Section 2.5.1 of the Literature Review). Behavioural responses can be measured in terms of involvement in quality related activities in the organisation. For example Morrow (1997) (see Section 2.5.9 of the Literature Review) measured customer focus, teamwork and continuous improvement activities.

It was also considered important to measure directly middle managers' attitude towards the TQM approach. This was because middle managers' attitudes to their quality programs may be influenced by their general attitude to TQM. Furthermore, companies were selected for participation in this research on the basis that their programs were based substantially on this approach.

4.2 Attitude towards the TQM approach

The literature review indicated that there are two main approaches that organisations use when implementing quality. Firstly, a broad TQM approach often implemented through the use of a quality award framework, and secondly a quality assurance approach using ISO 9000. It is evident that many organisations combine these two approaches. The utility of the broad TQM is arguably central to the whole *raison d'être* of the quality movement. Some middle managers may believe that TQM is a fad or fashion and does little to improve the efficiency of organisations. Other middle managers may hold a

positive view. Abrahamson (1991), reviewing innovation literature, points out that the labels fad and fashion have often been used to describe the diffusion of administrative technologies, such as quality circles. The prevailing view in this literature according to Abrahamson is that fads and fashions harm organisations because they are either inefficient or inappropriate. The literature review clearly shows that TQM, although difficult to precisely define (Dean and Bowen 1994), is substantially different from quality circles (see Section 2.3.2 of the Literature Review). Also the TQM approach has been remarkably resilient. The literature indicates that TQM is still reasonably popular with large organisations in Australia. The above discussions lead to the following hypothesis:

Hypothesis H1: Middle managers generally believe that the TQM approach to managing an organisation is useful and effective.

4.3 Values and Beliefs about Quality Program Outcomes

The work of Ajzen and Fishbein (see Section 2.5.6 of the Literature Review) suggests that an individual's attitude towards a quality program in their organisation and also their attitude towards becoming involved in the program is (in part) related to the value they place on possible program outcomes and their belief about the likelihood of those outcomes resulting from the program. Ajzen and Fishbein advocate the use of an expectancy value approach to measurement (see Section 2.5.4 of the Literature Review). In this approach individuals evaluate on a suitable scale the extent to which they value a program outcome and their belief about the likelihood of the outcome resulting from the program. In the case of a quality program the literature suggests that there would be a number of possible outcomes that may be of importance to middle managers. These are discussed in more detail below.

The literature review and the exploratory interviews suggest that there are likely to be two broad categories of outcome that can result from a quality program. The first category includes changes that primarily impact within the organisation and on relationships with its suppliers and customers. For example a quality program would be

expected to develop (or develop further) a culture of continuous improvement in the organisation. Many of the program outcomes suggested in the quality literature are likely to be valued in a positive sense by middle managers. The second category are changes that might impact more directly on an individual middle manager. For example will the quality program lead to a change in the middle manager's job security? will it lead to new job opportunities? It is clear that some of the changes that affect the individual middle manager more directly may be valued by them in either a positive or negative sense. It is likely that in some cases these two types of change, organisational and individual, will be interrelated. For example, if a quality program leads to more devolution of responsibility to lower levels in an organisation this might change the role of a middle manager from a more traditional one to that of coach or mentor. Or the middle manager may be in danger (or believe that he or she is in danger) or being retrenched. Never the less these two categories are a useful aid to conceptualising program outcomes. We will now examine in more detail some of the issues that may be included in these two categories.

4.3.1 Organisational Outcomes

A fairly obvious question is why should middle managers' attitudes towards the programs in their organisations be related to their values and beliefs about program outcomes that affect most directly their organisations rather than themselves? The position taken here is that managers as part of their professional responsibilities will generally be concerned about the impact that the quality program has on their organisation. It is argued therefore that a middle manager's attitude towards the quality program in their organisation will be related to their beliefs about the likelihood of a range of pertinent program outcomes and the degree to which they value these outcomes. Some outcomes may be valued in a positive or negative sense by individual middle managers.

Program outcomes can be related to stages in the development of a quality program (see Section 2.3.5 of the Literature Review). For example early organisational impacts might be the setting up of a quality infrastructure and some project work by

improvement teams. Early benefits might be improvement in some processes. Longer term impacts might be improved profitability and competitive position. Detailed items under this category are developed in Chapter 5 Methodology.

4.3.2 Program Outcomes and Impact on the Middle Manager

The literature suggests a number of program outcomes could impact more directly on individual middle managers. Some of these will now be discussed. The literature suggests that the introduction of a quality program typically leads to increased teamwork and other employee involvement activities (see Section 2.3.5 of the Literature Review). These changes can lead to devolution of responsibility in the organisation. Depending on the impact of these kinds of changes on a middle manager he or she may view them as positive or negative. The literature suggests that middle managers sometimes believe that such changes have taken something valuable away from them e.g. authority, autonomy, power, status, interesting and challenging work (Bardoel and Sohal 1999). On the other hand the quality program may provide new and exciting opportunities for the middle manager and perhaps even the possibility of career advancement. The middle manager may have a more strategic role in the organisation (Floyd and Wooldridge 1997) or take on the role of a coach and mentor as a result of the introduction of a quality program. A change in job security could also be an issue for some middle managers. Even if this is not an overt issue in an organisation a quality program can be viewed as an organisational change program and in the mind of a middle manager could result in a change in job security. It is reasonable to assume that depending on the degree to which middle managers value these kinds of changes they could lead to a change in overall job satisfaction for the middle manager. Literature also suggests that a formal reward system linked to an individual's performance or group performance in the quality program may be an important factor in encouraging active involvement (Sohal and Terziovski 2000).

The above considerations lead to the following hypothesis:

Hypothesis H2: The attitude of a middle manager towards his or her quality program (and towards support for the program) will be related to the product of the value he/she places on outcomes (outcomes affecting the organisation and outcomes affecting the individual middle manager) from his/her organisation's quality program, and his/her beliefs about the likelihood of these outcomes. Generally positive program attitudes will be related to the product of a) positively valued outcomes that are believed likely to occur and b) negatively valued outcomes which are believed unlikely to occur.

A detailed explanation of scale construction will be provided in the Chapter 5, Methodology).

4.4 Important Others

Ajzen and Fishbein (Ajzen 1988) have demonstrated that if an individual values the opinion of an important other (individual, group etc.) in relation to a particular issue (or more generally *attitude object*) then the position that the individual believes the important other takes on that issue can influence the individual's attitude towards the issue. Ajzen and Fishbein have demonstrated that the value expectancy approach is an effective way to measure the influence of important others (see Section 2.5.4 of the Literature Review). For example *value* could be measured in terms of how important a middle manager considers an item related to an important other is in affecting their motivation towards the quality program. Expectation could be measured in terms of the middle manager's belief about the likelihood of the important other taking a position on aspects of the quality program. This could be operationalised by designing items (statements), or adapting items from existing constructs, that describe aspects of the important other's disposition towards the quality program e.g. *top management in my organisation provides adequate resources for the quality program*. In this case the important other is top management and middle managers would make the two evaluations (importance and likelihood) on a suitable scale. A measure of the effect of the important other on the middle manager's attitude towards the attitude object would then be made by multiplying the importance and likelihood scores for each item related

to the important other(s) and summing them (see Section 2.5.4 of the Literature Review). In terms of a quality program the pertinent question is who are the individuals or groups that have most influence on the middle manager's attitudes towards the quality program in their organisation?

4.4.1 Top Management

One factor which emerges consistently from the literature as essential for the success of a quality program is support from the top management group (see Section 2.3.5 of the Literature Review). If this support is not present then quality programs are likely to fail. Top management support is seen as top managers taking a leadership role in the quality program. This means being involved in quality strategy and providing the necessary resources. In models of quality management suitable top management leadership is seen also as having a strong element of continuity, or as Deming put it *constancy of purpose* (see Appendix 2A for Deming's 14 points of management). It would therefore seem reasonable that a middle manager's values and beliefs about the support for their organisation's quality program from top management would be important in forming their own attitudes towards quality activities in their organisation and the quality program. Besides commitment to the quality program and leadership in the program the literature suggests that communication between top management and the middle manager is an important issue and likely to influence the middle manager's attitude towards their quality program (Jones, Glaman and Johnson 1993). The above considerations lead to the following hypothesis:

Hypothesis H3a: There is a positive relationship between a middle manager's perception of top management support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the quality program.

4.4.2 The Middle Manager's Direct Boss

The exploratory interviews revealed the importance of the middle manager's direct supervisor (boss) in influencing their own attitude towards the quality program in their organisation. Literature on leader-member exchange in a number of settings also suggests the importance of this relationship (e.g. Murphy and Ensher 1999). Program support from the middle manager's direct boss could be seen as having two components. Firstly, support for the quality program. This might take the form of personal involvement in the program by the middle manager's supervisor. Secondly, support by the middle manager's boss for his or her involvement in activities associated with the program. A middle manager's direct boss may well have some responsibility for monitoring his or her work performance and in influencing his or her progression in the organisation. It seems reasonable that if a middle manager perceives strong quality program support from his or her direct boss then he or she is more likely to have a positive attitude towards the quality program and perhaps to becoming involved in quality related activities. These considerations lead to the following hypothesis:

Hypothesis H3b: There is a positive relationship between a middle manager's perception of his/her direct boss's support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the program.

4.4.3 The Middle Manager's Colleagues

It is likely that the colleagues that a middle manager associates with on a regular basis in the organisation would have an influence on his/her beliefs and attitudes about a significant issue such as quality or the quality program.

Hypothesis H3c: There is a positive relationship between a middle manager's perception of his/her colleagues' support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and

his/her evaluation of the extent of the support) and his/her attitude towards the program.

4.5 Job Type

TQM was developed in Japanese manufacturing industry and the initial applications outside of Japan were also predominantly in manufacturing industry. Also the development of most of the techniques used in quality were developed around manufacturing. A particular focus of TQM is the understanding, control and improvement of processes (see Section 2.3.3 of the Literature Review). TQM could therefore be seen by some employees as being more applicable to the operations function in organisations. Some writers have suggested that individuals working in operations type positions are more likely to have positive attitudes towards their organisation's quality program than those who do not (e.g. Jones, Glaman and Johnson 1993). Middle managers who are quality specialists have a particularly strong vested interest in quality and their organisation's quality program. Therefore it seems reasonable that middle managers who are quality specialists will have more positive views on TQM and their organisation's quality program than other middle management groups in their organisations (Ajzen 1988, p. 4).

A long established functional principle of management is the distinction between line and staff. Line positions are associated with command (action) and staff functions with advisory roles (Mooney 1947, cited in Wren 1994, p. 5). A line role is therefore generally more associated with production of product or service than is a staff role. Given that TQM was developed predominately in the production (action) areas of organisation it can be argued that those holding a line function (operations type roles) will be more likely to have a positive attitude towards TQM and their quality program than those who consider that they hold staff roles. The above considerations lead to the following two hypotheses:

Hypothesis H4: Middle managers who are working in operations type jobs will generally have more positive views on the TQM approach and towards their organisation's quality program

Hypothesis H5: Middle managers who are quality specialists in their organisations will have the most positive attitudes compared with other middle management groups towards the TQM approach and to their organisation's quality programs.

4.6 Active Program Involvement

Some writers have suggested that involvement in quality programs may generally be compulsory for employees. For example, Wilkinson, Marchington, Goodman and Ackers (1992, p. 5) suggested that employee participation in quality programs was compulsory while participation in employee involvement schemes was generally volitional. It would seem important therefore to investigate to what extent in organisations that participate in this research middle managers are compelled to participate in their organisation's quality program. The extent to which middle managers are involved in their organisation's quality program may depend to some extent on the maturity of the program. As was pointed out in Section 2.3.5 of the Literature Review implementing a quality program is a lengthy affair. So it is reasonable to expect that some middle managers may not be actively involved in their quality program at the early stages of its implementation. Pilot interviews for this research (see Chapter 3, Exploratory Interviews) were carried out in an organisation that had a reputation for being a leader in TQM and had what could fairly be described as a mature quality program. However it was evident from the interviews carried out that there was a significant difference in the extent to which the interviewees participated in quality related activities. One middle manager was certainly not actively involved in the quality program. It seems therefore that even in organisations that have a mature quality program and encourage or perhaps require that middle managers should be part of the program, some employees may not be actively involved. These considerations lead to the following hypothesis:

Hypothesis H6: Generally those employees who consider themselves actively involved in their organisation's quality program will have more positive attitudes and beliefs about their programs than those who do not consider themselves actively involved.

4.7 Education/Training in Quality

The TQM approach on which arguably most quality programs are based can be seen as having principles that may well be seen as attractive to middle managers. The TQM approach can also be seen as an ethical and logical way to run an organisation. An important component of the approach is employee development. It is argued therefore that middle managers who have gained some knowledge of TQM through education/training are more likely to have positive attitudes to the TQM approach and also towards quality programs based on TQM in their own organisations.

Hypothesis H7: Middle managers who have received training/education in quality will have a significantly more positive attitude towards the TQM approach in general and to quality programs based on TQM in their own organisations than middle managers with no training/education in quality.

4.8 Middle Managers' Wider Views of the Organisation

A quality program however pervasive it may be will not of course define or control all activities in an organisation. An individual's attitude towards his/her organisation or job may be to some extent based on beliefs and attitudes towards their quality program, but there will be numerous other variables that could be influential in these respects. It is likely however that an individual's attitude towards a particular program in an organisation, such as a quality program, will be to some extent related to his/her more general attitudes towards the organisation as a whole or to his or her job role.

Individuals who hold their organisation in low regard for example are likely to have less positive attitudes towards a particular program in their organisation than individuals who hold their organisation in higher regard. Individuals who are unhappy with their job role in the organisation may be less likely to hold positive attitudes towards a

particular program or initiative than those who are more satisfied with their job role. It is argued therefore that an individual's attitude towards the quality program in their organisation will be influenced to some extent by more general attitudes they may hold within the organisation, in particular their attitudes towards the organisation and towards their job role. It also seems reasonable that the strength of the association between quality program specific attitudes and attitudes to these more general attitude objects may depend on the pervasiveness/maturity of the quality program within the particular organisation. There are rather a large number of constructs that have been developed to measure job-related attitudes (see for example Morrow 1993). From these one measure of organisational commitment and two measures related to the individual's job role have been selected for inclusion in this research as they were considered particularly relevant. These are the *attitudinal organisation commitment* construct (Porter, Steers, Mowday and Boulian 1974) (sometimes called *affective* commitment to the organisation) and the job role constructs *role ambiguity* and *role conflict* (Rizzo, House and Lirtzman 1970). The Porter, Steers, Mowday and Boulian instrument has been widely used in management and is considered a reliable measure of an individual's overall feeling about working in their organisation. The construct has been found to correlate with wide range of variables and is described in Section 2.5.8 of the Literature Review. Recently (since data was collected for this research) Morrow (1997) has suggested that organisational commitment is a construct that should be included in surveys investigating the extent of individual's involvement in quality programs. See Section 2.5.9 for an account of Morrow's research into TQM and work-related outcomes. The two role related constructs, role ambiguity and role conflict were included in the research as the introduction of a quality program can directly affect a middle manager's job. In addition these constructs were included in similar research into attitudes towards a quality program carried out by Jones, Glaman and Johnson (1993).

Hypothesis H8: Middle managers' attitudes towards their quality program will be positively related to organisational commitment and negatively related to both role conflict and role ambiguity.

4.9 Other Variables Included in the Research

Jones, Glaman and Johnson (1993) found in their research (see Section 2.5.9 of the Literature Review) that those employees involved in their organisation's quality program who were clear about their role in the program had more positive program attitudes than those who were not clear.

Hypothesis H9: For middle managers actively involved in their organisation's quality program there will be a positive relationship between their attitudes to the quality program and their perception of the clarity of their role in the program.

The maturity of the quality program in an organisation (see Section 2.3.5 of the Literature Review for a discussion on this and the measurement of quality culture) may be an important variable to explain, at least to some extent, differences in middle managers' attitudes towards quality between organisations participating in the research. Although there are a number of ways in which quality culture can be measured (see Section 2.3.5.2 of the Literature Review), for example external recognition by the receipt of a quality award, it is argued that the middle managers' views on quality maturity are likely to be related to their attitudes towards the program.

The literature clearly shows that knowledge of the context in which change takes place is important in understanding and making sense of the change process (Dawson 1994 see also Section 2.3.5 of the literature review). Variables such as the type of organisation (e.g. manufacturing or service), the number of employees and the way in which the organisation is structured may be related to aspects of the quality program. The approach, or approaches, that the organisation uses towards quality is an important variable. The literature review shows (e.g. Terziovski, Sohal and Moss 1999) that there are two predominant approaches used by organisations namely, TQM and ISO 9000. As stated in the introduction to this thesis organisations using a broad TQM approach were preferred for inclusion in the research. However it is evident from the literature review that organisations using a TQM approach often have some processes certified to ISO 9000 (*ibid.*).

Biographical variables are of general importance in management research e.g. gender and age, and these are included. No hypotheses are put forward regarding these variables. The possibility that an individual's personality is related to his/her attitude to aspects of quality or the quality program cannot be discounted. However these types of variable are not included in this research (see Section 2.6 of the Literature Review).

The major variable groupings are presented in Figure 4.2. No particular interrelationship between the independent variables is assumed in Figure 4.2. Figure 4.2 also shows the main groups of variables related to the hypotheses developed above. Variables are presented in a form that was used as a basis for multiple regression analysis. The purpose of this analysis was to identify variables that contribute significantly to various attitudes towards quality. The independent variables are divided into three groups. These groups can be viewed in terms of their distance from quality specific issues. The most distant is organisational commitment, this is followed by job role variables and lastly quality specific variables. Although it is argued above that all of the independent variables shown will be significantly related to one or more of the dependent variables, it is likely that the quality specific variables will be more highly correlated than the job role or organisational variables. This argument leads to the following hypothesis:

Hypothesis H10: Generally variables which are quality specific in that they related directly to aspects of quality in the organisation will be more powerful predictors of an individual's general attitudes to quality than will more general job role or organisational variables.

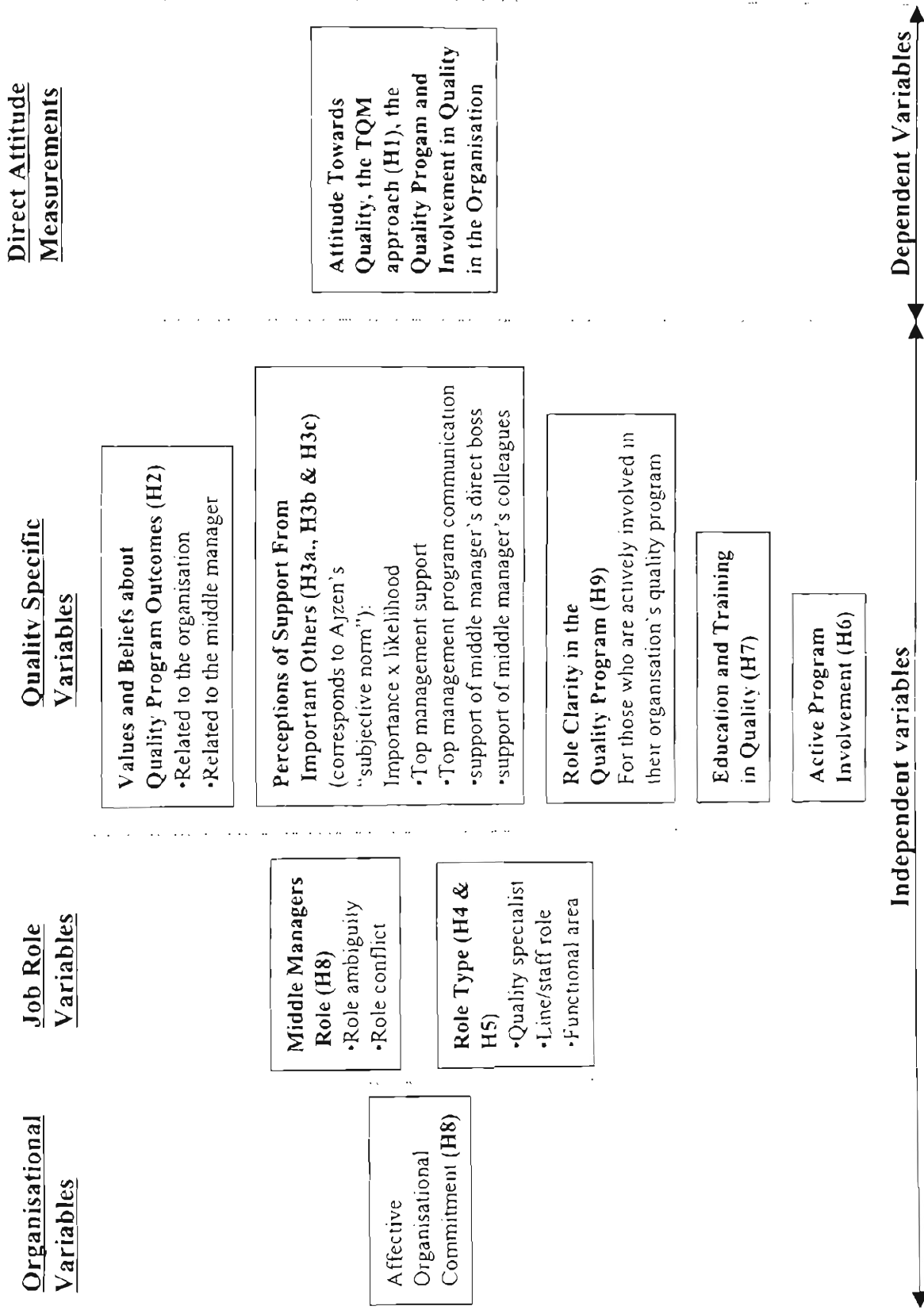


Figure 4.2 Major variable groups in the research

Note: Related hypothesis are shown in parenthesis in bold

CHAPTER 5
METHODOLOGY

5. METHODOLOGY

5.1 Selection of Research Methodology

Methodology needs to be grounded in a framework that encourages good research.

Cooper and Schindler (1995) stress the importance of thorough planning and describe a number of characteristics of good research (*ibid.* pp. 15-18):

- a) The purpose of the research should be clearly defined.
- b) The research should be sufficiently detailed to permit other researchers to repeat the methodology.
- c) The research should be thoroughly planned.
- d) High ethical standards should apply.
- f) Limitations of the research should be frankly revealed.
- g) The amount of analysis undertaken should be adequate for the decision maker's needs.
- h) Findings should be presented in a clear unambiguous way.
- i) Conclusions should be justified.

There are a number of important issues to consider when selecting a suitable research methodology. It is important to select a methodology that is appropriate to address the research question or research issue while taking into account any constraints that may exist. Remenyi, Williams, Money and Swartz (1998, p. 45) identify four major issues affecting selection of a research strategy. These are the nature of the research question or problem, the skills of the researcher, the costs involved and the time required to complete the research. Research can be either theoretical or empirical. Remenyi *et al.* (1998, p. 47) point out that among those undertaking higher degrees in management an empirical approach, in which primary data is collected and analysed, is by far the most popular approach.

Different philosophical approaches towards the research can be taken. Remenyi, *et al.* (1998, pp. 32-35) contrast the positivistic approach with the phenomenological

approach to research. They explain that the positivist approach emphasises observations that lend themselves to statistical analysis. The danger in the positivistic approach is that it is restrictive and shallow and is unlikely to lead to interesting and profound insights into complex problems, especially in the field of management studies. The phenomenological approach, which Remenyi *et al.* explain is also described as the descriptive or interpretative approach, takes the position that every event studied is a unique incident in its own right. The research unfolds as it proceeds. Rich descriptions are sought which are the building blocks of the argument the researcher develops.

Remenyi *et al.* (1998, p. 47-48) point out that a choice of doing either longitudinal or cross-sectional research often presents itself to researchers. Longitudinal research captures changes over time in the subject being studied. Cross-sectional studies essentially take a snapshot of a situation at a particular time. They examine how something is done at the time and generally try to identify and understand differences between the various members of the study population.

Remenyi *et al.* (1998, pp. 48-61) describe fourteen specific research approaches. Nine of the approaches that are more relevant to the present research are shown in Table 5.1 together with an assessment of their philosophical base. A brief explanation of each of the approaches is included in the table.

Table 5.1 Research approaches and their philosophical bases.

Based on Remenyi *et al.* (1998, Table 3.1 p. 59)

Research Approach	Positivistic	Phenomenological
Action research – The action researcher is involved in an organisation. Process involves assessing situation, hypothesising affect of intervention, evaluating results of intervention.		Strictly interpretivist
Case studies – Empirical investigation of phenomenon in its real life context. Valuable in answering who, why and how questions in management research.	Have scope to be either	Have scope to be either
Ethnographic – Social anthropology approach. Field observation in which the researcher becomes fully involved in the situation being studied.		Strictly interpretivist
Field experiments – Laboratory type experiments but carried out in the less controlled environment of an organisation e.g. the Hawthome studies	Have scope to be either	Have scope to be either
Focus groups – Collecting views from a highly specialised group of people through interaction/debate with the researcher.		Mostly interpretivist
Game or role playing – Subject are confronted with a task or situation in a laboratory type setting. Researcher observes behaviour.		Strictly interpretivist
In-depth surveys – Conducting in-depth interviews to obtain evidence from a relatively small number of informants. Usually subjects are allowed to speak freely on subject of interest to researcher and questionnaire generally not used		Mostly interpretivist
Large-scale surveys – Collection of large quantities of data using questionnaires. Approach is useful in answering how much, how long or when. Less useful in answering how or why questions.	Strictly positivist with some room for interpretation	
Participant-observer – Researcher joins team who are part of phenomenon being studied. Takes part in phenomenon but makes observations of the way the group operates.		Strictly interpretivist

In the opinion of Remenyi *et al.* (1998, p. 56-57) large-scale surveys are a quick and convenient way of collecting large quantities of data or evidence. However they point out that evidence gathered using large-scale surveys may be regarded as relatively superficial and there is an increasing feeling that they are limited for researching management issues.

In the present research the phenomenon being studied is complex. The limitations of using a purely quantitative approach in management research are evident from the discussion above. It seems important therefore to include a significant qualitative component in the research methodology. A quantitative approach has the advantage of allowing a reasonably large amount of data to be collected efficiently. Also, if the survey instrument is compatibly designed it allows comparisons to be made with previous research findings. Following this reasoning a mixture of quantitative and qualitative approaches was chosen for this research. There is support for this approach in the research methodology literature. According to Jick (1983, p. 135) there is a tradition in the social sciences that advocates the use of multiple methods. Jick points out that quantitative and qualitative methods should be viewed as complementary rather than in rival camps. According to Jick a major strength of a combined quantitative and qualitative approach is that it provides triangulation. In research methodology triangulation is the process of investigating the subject or phenomenon of interest from different perspectives typically using a number of different research methods. The basic assumption in triangulation is that the weaknesses in each single method will be compensated by the counter-balancing strengths of another (*ibid.* p. 138).

Specifically, the methodology chosen for this research was a questionnaire survey completed by middle managers in a number of organisations that have quality programs. This was followed by in-depth interviews with middle managers, senior managers and quality managers in a number of the participating organisations. Exploratory interviews contributed to the formation of the methodology and are reported in Chapter 3. The rationale behind this methodology is that the survey will provide a significant amount of data facilitating descriptive statistics and hypothesis testing. The interviews will enable issues raised in the numerical analysis to be investigated in more depth and the relevance of context to be explored. It was decided to undertake a multi-company study. This would provide the opportunity to explore the impact of organisational context on beliefs and attitudes related to quality. In view of time constraints it was decided not to undertake a longitudinal study. An overview of the methodology follows.

5.2 Overview of the Methodology

- a) A questionnaire to be completed by individual middle managers was designed. The questionnaire addressed the hypotheses outlined in Chapter 4.
- b) The questionnaire was piloted using a sample of part-time graduate students. Based on the results a number of amendments were made to the questionnaire.
- c) Approval of the research procedures was obtained from the UTS Human Research Ethics Committee
- d) Approximately forty medium to large size organisations that had some kind of formal quality program were approached to participate in the study. These organisations were from a number of different types of industry e.g. manufacturing, service, public sector. Twenty-two organisations eventually agreed to participate in the research.
- e) Questionnaires were distributed to a sample of middle managers in each of the participating organisations. The sample selection depended on the population of middle managers and any conditions specified by participating organisations. Where possible a random sample was taken in organisations with a large number of middle managers. Over 1000 questionnaires were distributed. The exact number distributed was not known because four of the organisations did not provide this data (see Table 5.2 below).
- f) A preliminary analysis was carried out on the data contained in returned questionnaires. Based on the returns from organisations where the number of questionnaires distributed was known the response rate was just over 50%. 562 usable returns were used in the analysis (note returns from organisation 16 were not used in the analysis).
- g) Interviews were conducted with middle managers, senior managers and where present with quality managers in ten organisations. A total of thirty individuals was interviewed. Interview topics included the organisation and history of quality in the organisation, views about the role and performance of middle managers and a number of issues raised by the questionnaire data.

- h) Analysis of the results was undertaken. The qualitative data from the questionnaire survey and from the interviews was subjected to content analysis using NUD*IST software (NUD*IST 1997).
- i) The results of these analyses are presented in Chapter 6, Results, and then are discussed in relation to the various hypotheses and the overall research question in Chapter 7, Discussion of Results.

5.3 Design of Questionnaire

The questionnaire was designed to be completed on an individual basis by middle managers in participating organisations. The structure of the questionnaire is shown in Figure 5.1. A copy of the final questionnaire is in Appendix 5B. The questionnaire was designed, together with evidence gathered during interviews, to address the hypotheses outlined in Chapter 4, Theoretical Framework and Hypotheses. A small number of organisations that were approached to participate in the research requested a minor amount of customisation of the questionnaire. These requests were accommodated without undermining the integrity of the instrument. Also in the course of analysing some of the earlier results it was considered important to test if an alternative wording of the overall attitude items would affect the response. A revision was made to the questionnaire to include these revised items. The original items remained in order to allow a paired comparison of new and revised items to be made. The opportunity was also taken to add a small number of additional overall attitude measures to the revised questionnaire. It was considered that additional length of the questionnaire would have little affect on response rate. In the following description of the questionnaire design the version as shown in Appendix 5B is described. A copy of the earlier version of the questionnaire is in Appendix 5A.

The following were important design considerations and assumptions made in the construction of the questionnaire. In order to achieve a reasonable response rate it was considered important to make the questionnaire easy for the middle manager to complete and not over-long. This was considered particularly important as employees in most of the participating organisations are subject to a large number of surveys.

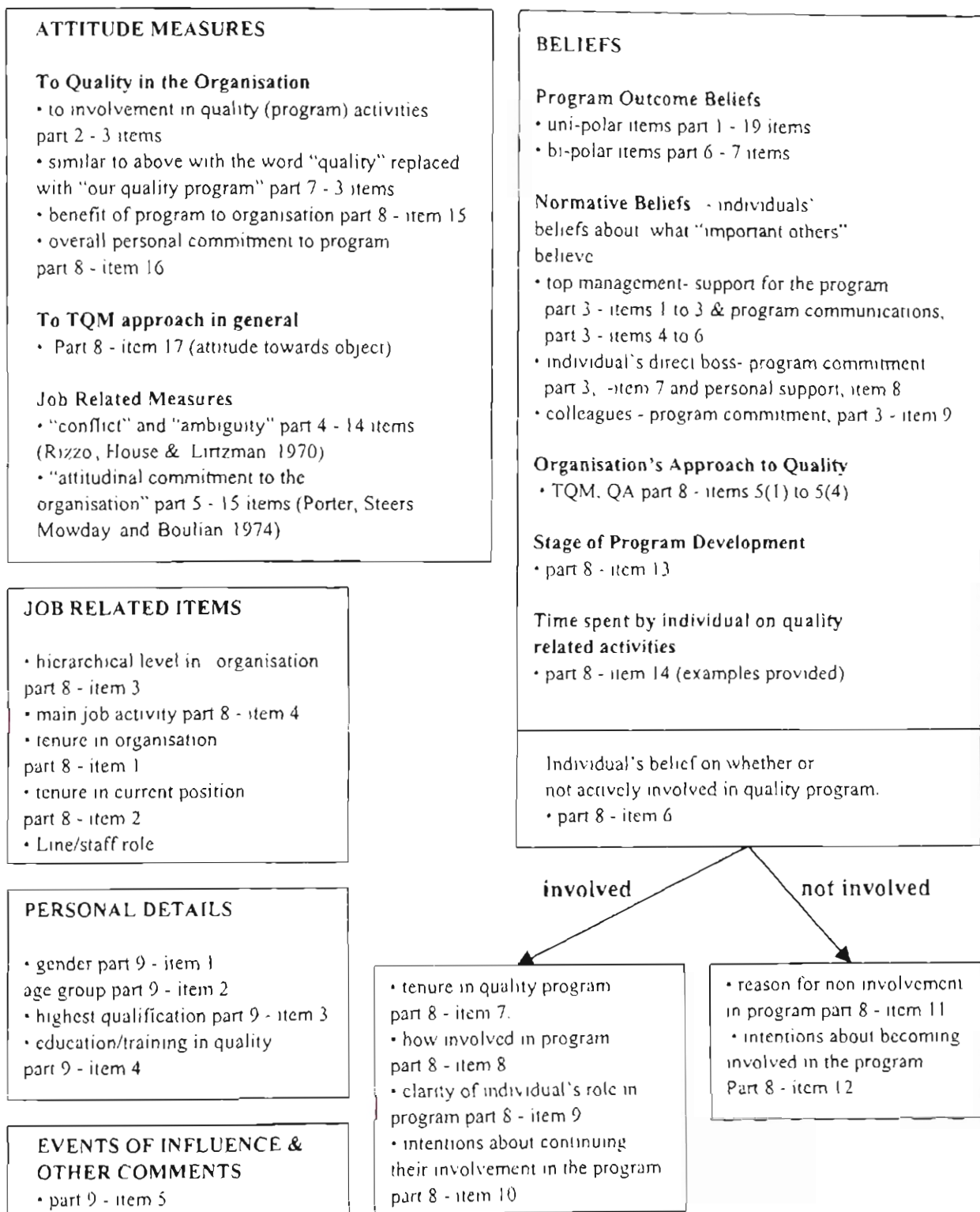


Figure 5.1 Structure of questionnaire

Note: see Appendix 5B for copy of questionnaire.
part numbers and item numbers refer to this questionnaire

A strategy used was to design the questionnaire in such a way that the middle manager would be able to complete it without having to obtain organisational information which he or she may not have readily available. Generally details about each of the participating organisations was collected by the writer, either during company interviews or through the contact person in each organisation. External reliability was addressed by grounding questions in language relevant to the particular issue being investigated. The substantive literature in an area was used as a basis for assessing external reliability. Internal reliability of constructs made up of a number of items was assessed by exploratory factor analysis. A number of well established constructs were included in the questionnaire. Issues of reliability are discussed in Section 2.5.3 of the Literature Review.

Selecting appropriate scales to use in attitudes is an important and complex issue, see for example Himmelfarb (1993). Measurements can be made at different levels of information: nominal (present or absence of an attribute); ordinal (e.g. ranking of items); interval (measures order and size of items) and ratio (relates measurement to a unique origin or zero point). A number of alternative scaling approaches have been used in attitude research e.g. Thurston's judgement techniques; Guttman Scale; Likert scale and the semantic differential scale (*ibid.* p. 31-57). Most of the attitude scales used in the questionnaire are Likert scales (an interval measurement). For example asking a respondent to indicate importance of a quality program outcome on a scale from 1 (not important) to 7 (very important). The standard instruments used in this research to measure organisational commitment, role conflict and role ambiguity use a seven point Likert scale and this practice has generally been used for other attitude measures that have been developed. It is common practice in the social sciences to treat Likert scales as continuous variables and use techniques such as multiple linear regression analysis. This research follows this practice. Scaling practices using the expectancy-value approach are discussed in Section 2.5.6.1 of the Literature Review. Himmelfarb (1993, p. 79-81) points out that attitudes are generally more reliably measured using multiple items rather than single items for evaluation. Never-the-less he also points out that single items are frequently used in practice. In this research a number of single items have been used to help contain the length of the instrument.

The structure of the questionnaire is now explained. Figure 5.1 will be used to describe the instrument. This Figure provides reference to the items in the actual questionnaire, a copy of which can be found in Appendix 5B.

5.3.1 Instructions to Respondents

The front page of the questionnaire provided background information on the project and instructions on how to complete it. A guarantee of confidentiality was given together with the contact telephone numbers of the writer and his supervisor. It was made clear that responses were encouraged from individuals who did not consider they were actively involved in their quality program as well as those who did. The method of returning the questionnaire was explained. Respondents' were provided with the opportunity to be sent a summary of the research findings. They were advised to contact the writer directly if they were concerned about providing their contact details together with their completed questionnaire.

5.3.2 Attitude Measures

To measure the individual's overall attitude to quality in the organisation three items from Davis (1997) were used.

Attitude toward the TQM approach was measured using a single item. Addresses hypothesis H1.

The Porter, Steers, Mowday and Boulian (1974) instrument was used to measure attitudinal commitment to the organisation. All 15 items were used rather than the shortened version using only the positively worded items that is used by some researchers. This instrument addresses hypotheses H8 and H10.

The constructs role conflict and role ambiguity were taken directly from Rizzo, House and Lirtzman (1970). It was considered that the word *buck* in the item: "I have to buck

a rule or policy in order to carry out an assignment”, might not be understood by some respondents in Australia (Australia’s population is drawn from many ethnic backgrounds). An explanation that to buck a rule meant to bend, break or ignore a rule, was added to this item for clarification. The role conflict/role ambiguity construct addresses hypotheses H8 and H10.

5.3.4 Beliefs

Beliefs about Program Outcomes

As explained in Sections 4.3.1 and 4.3.2 of the Chapter 4, Theoretical Framework and Hypotheses, beliefs about program outcomes can be divided into two broad categories, those impacting on the middle manager’s organisation and those impacting more directly on the middle manager. Organisation related outcomes were selected on the basis of what the quality literature suggests can be achieved from a quality program e.g. outcomes related to internal processes, organisational performance, relationships with customers e.g. Deming 1986; Saraph, Benson & Schroeder 1989 and various quality awards, see Section 2.3.5 of the Literature Review. Items related to program outcomes which relate more directly to the individual are drawn from a number of themes discussed in the literature review e.g. job security, job satisfaction, devolution of responsibility to lower levels. The value expectancy approach (see Section 2.5.4 of the Literature Review) was used. Program outcomes tended to form into two groups. Firstly, those outcomes that middle managers would generally be expected to value positively such as various improvements to organisational performance, and secondly changes that may be valued in either a negative or positive way by middle managers e.g. change in extent of group working. This presented some challenges in the construction of the expectancy values scales. The issues and controversy involved in scale construction when using the value expectancy approach were discussed in Section 2.5.6.1 of the Literature Review. A solution was found by grouping items into uni-polar and bi-polar scales. This necessitated a slight modification in the wording of the value scale, see part 1 and part 6 of the questionnaire in Appendix 5B. These items address Hypothesis H2.

Normative Beliefs

The important others included in the questionnaire were: a) top management; b) the middle manager's direct boss and c) the middle manager's colleagues. The expectancy value approach was used. These items address Hypotheses H3a, H3b and H3c.

Organisation's Approach to Quality

The literature demonstrates that quality is difficult to define and individuals often confuse different approaches. Respondents were asked to indicate which one of three options best indicated their organisation's approach to quality, or they could tick a "not sure" option. This item was intended to measure how consistent middle managers' beliefs were about the approach to quality in their organisations.

Stage of Program Development

Respondents were asked to rate the stage of program development in terms of a fully implemented TQM program. This measure is useful for comparing the consistency of beliefs of middle managers in individual organisations. Also it is likely that there will be a positive correlation between a middle manager's belief about the stage of program development and his or her beliefs about program benefits.

Time Spent on Quality Related Activities

This was a single item to measure the proportion of time individuals believed that they were spending on quality related activities. A list of examples of quality related activities were included with this item.

Individual's Program Involvement

Middle managers were asked if they believed that they were actively involved in their organisation's quality program. Addresses hypothesis H6.

Involved

A number of items were addressed to those who believed that they were actively involved in their organisation's quality program. The item on clarity of the middle

manager's role in the quality program addresses hypothesis H9. It was considered important to establish the degree of volition that middle managers had with respect to their involvement in their quality program.

Not Actively Involved

Those not actively involved in their organisation's quality program were asked why they were not.

Job Related Items

It was intended that the questionnaire would be distributed to middle managers in organisations for completion. It was considered important that respondents should provide their own assessment on their hierarchical level in the organisation. The items used were based on Barnwell (2000). Middle managers were asked to indicate their main area of activity in the organisation. There was also an item on earlier versions of the questionnaire asking whether or not respondents believed their role was a line role, a staff role or a combination of both. These latter two questions on job role address hypothesis H4 and H5.

Personal Details

Details of education and training in quality were included to address hypothesis H7.

Events of Influence and General Comments

An open ended question invited middle managers to provide details of any events that had particularly influenced their views on quality or their quality program. They were also invited to provide any general comments relevant to the research.

5.4 Questionnaire Pre-testing

For pre-testing the questionnaire questionnaires were distributed to various groups of part-time graduate students. Students were asked to complete the questionnaires and also to comment on any items that they had difficulty understanding or felt should be made clearer. Twenty five completed questionnaires were returned. A number of

questionnaires contained suggestions for improvements. The data from the questionnaires was entered into SPSS and examined. The mean and standard deviation and range was examined for each variable to ensure a reasonable spread of data over the various scales. A number of minor changes were incorporated into the instrument.

5.5 Approval from UTS Human Research Ethics Committee

It is a requirement at UTS that all research procedures that involve people have to be approved by the Human Research Ethics Committee. Accordingly an application was lodged explaining the research along with a copy of the questionnaire. Approval was given by the committee (approval number UTS HREC 96/57A). A copy of the approval letter is in Appendix 5C.

5.6 Selection of Subjects and Sample

Large organisations, in terms of employees, known to have a quality program or a history of involvement in quality programs were targeted for participation in the project. Large organisations were chosen because they are more likely to have employees at middle management level. A reasonably large sample in each organisation is required to carry out meaningful inter-organisation comparisons. A decision had to be made on the number of organisations to include in the research and which types of organisations should be included. Should for example organisations be selected from a particular sector, say manufacturing? The method of selection of the sample was another issue. A number of possible designs presented themselves (see for example Cooper and Schindler 1998, p. 243). It was decided to include a broad range of different types of organisation in the sample, organisations from service industries and manufacturing and from private and public sectors. There were a number of reasons for this approach. As far as the writer was aware this was the first research in Australia specifically investigating the relationship between middle managers and quality. A broad based sample would be more likely to reveal the extent of diversity of practices related to middle managers' involvement in quality than would a study in say one particular type of industry. The research would necessitate forming a reasonably close association with

participating organisations. Agreement on survey procedures within organisations would have to be negotiated in each organisation. From a practical point of view this suggested that the sample of organisations should be reasonably small. It was considered important to include some organisations that were acknowledged as leaders in quality. Organisations that had won Australian Quality Awards could be considered to be leaders (see Section 2.3.2.6 of the Literature Review) so some of these were considered for inclusion in the research.

The main subjects in this research were middle managers. The literature review (see Section 2.2.1) showed that researchers had used a number of different definitions of middle manager. The Australian research by Miller and Longair (1985) demonstrated the importance of having a definition that can be operationalised. The approach taken in this research followed that of Torrington and Weightman (1987) who allowed organisations in their research to define who were their middle managers. This is consistent with the working definition developed for the research, see Section 2.2.11 of the Literature Review.

5.7 Process used to Recruit Organisations

- a) Initial contact was made by telephone and the project discussed.
- b) If the contact person was agreeable details of the research was sent to him or her. The information included a copy of the questionnaire and a suggested process for carrying out the survey. Organisations were asked for their agreement to carry out post questionnaire interviews as well as the questionnaire survey. The organisation was offered feedback of the results to the organisation in a consolidated form such that the anonymity of individual respondents and participating organisations was maintained. A copy of the invitation to participate is in Appendix 5D. In a number of cases the researcher was invited to visit the organisation to discuss the research before a decision to participate or not to participate was made.
- c) If an organisation agreed to participate the sampling procedure for the questionnaire survey was agreed. In cases where the number of middle

managers was relatively small the organisation usually agreed to all their middle managers being included in the questionnaire survey. In cases where there was a relatively large number of middle managers a sample were usually selected. In some cases a stratified type of sample was taken across the organisation in other cases particular business units were selected. In a number of organisations the writer did not have very much control over the sample selection.

- d) In the majority of organisations the contact person was willing to distribute questionnaires via the internal mail to middle managers. In most of the organisations a letter of support for the research from a senior manager was distributed with the other information. It was anticipated that this letter would encourage middle managers to complete the questionnaire. Responses were mailed directly back to the researcher (in most cases a pre-paid envelope was supplied). In two cases the researcher was provided with a list of middle managers and mailed the questionnaires directly to them.

The recruitment of participating organisations was a time consuming process that lasted several months. Approximately half of the organisations that were contacted agreed to participate in the research. A total of twenty-two organisations finally participated, although the results of organisation 16 were not used. Details of participating organisations are given in Appendix 5E and a table listing information particularly pertinent to this research is in Appendix 5F.

5.8 Questionnaire Response rate

Table 5.2 provides details of the distribution of questionnaires and the response rates. Where the process of distribution had been carried out with care and a letter of support had been sent the response rate was consistently around 50%. The average response rate of 50% was higher than expected and perhaps this reflected respondents' interest in the topic. It can be seen that there are some rather small samples from some organisations. In some cases the researcher did not have very much control over the distribution process and it was difficult to ascertain if the process had been fully understood.

Table 5.2 Questionnaire distribution and response statistics

Org. Ref. No.	Type of Organisation	Quest. Type ^c	Number Distributed	Number of Returns	% Returns	Number used in Analysis
1 (1-4) ^a	Utility	original	99	67	67.7	67
2	Manufacturing	original	36	28	77.8	26
3	Information technology	original	50	27	54.0	26
4	Public sector	original	40	21	52.5	21
5	Finance	original	100	25	25	24
6	Finance	original	?	37	?	37
7	Public sector	original	60	34	50.0	34
8	Information technology	original	22	17	77.3	17
9	Manufacturing	original	35	18	51.4	18
10	Manufacturing	original	35	32	91.4	32
11	Distribution public sector	original	60	29	48.3	29
12	Distribution private sector	slightly modified	36	20	55.6	20
13	Manufacturing	original	30	10	33.3	10
14	Communications	original	15	9	53.3	9
15	Manufacturing	original	?	21	?	21
16	Finance	customised	105	62	59	60
17	Manufacturing	later version	15	6	40	6
18	Manufacturing	original later version	? ?	6 original 4 later	? ?	6 4
19	Transport	later version	20	11	55	9
20	Finance	customised	219	107	48.9	100
21	Manufacturing	later version	?	14	?	14
22	Utility	later version	70	32	45.7	32
	TOTAL including organisation 16		1047+	637 (including 174 revised)	average return ^b 53.0%	622 (inc. 225 revised) average return ^b 51.6%
	TOTAL excluding organisation 16		942+	575 (including 174 revised)	average return ^b 52.3%	562 (inc. 165 revised) average return ^b 51%

a The sample for organisation 1 consisted of four different groups

b Average returns were based on organisations where the number of questionnaires distributed was known

c See Appendix 5A for original version and Appendix 5B for later version of questionnaire. Customised versions used the organisation name and sometimes additional questions.

Organisation 16 was a special case in that it did not have a specific quality program that was identified by them as a quality program. They did have what they called a special initiative that was a change program generally based on quality principles. Because of these special issues the results from organisation 16 were omitted from subsequent analysis.

5.9 Data entry and data checking

A number of questionnaires were eliminated from the analysis because of excessive missing data (see Table 5.2 for details). A total of 562 returns were considered acceptable for analysis. All of the quantitative analysis was carried out using the SPSS statistical package. A coding sheet was developed to aid the data entry process (see Appendix 5G). As three slightly different versions of the questionnaire had been used the cases were merged into a single file. In some cases the same questions had been given a different name on different versions of the questionnaire. This was to achieve a more logical questionnaire layout. In such cases variable names were changed to correspond with the version of the questionnaire in Appendix 5B. The accuracy of the merging process was checked against the questionnaire data. A considerable effort was made to check the accuracy of data entry. Checks were made on the range of data entered for each variable; in addition a large proportion of the data entered was checked directly against the questionnaire data. An estimate of data entry errors and missing data is given below.

5.9.1 Estimate of Data Entry Errors

Errors were first identified by printing out the maximum and minimum values for each question and identifying out of range data. After these errors were corrected data on 310 questionnaires was compared with data entered onto the SPSS spreadsheet. The following estimate of expected data entry errors makes the following assumptions:

- a) No errors occurred during data checking
- b) That data entry errors occurred randomly throughout the data entry process

Number of questionnaires included in analysis = 562

Errors identified by a range check on the data entered into each variable = 17

Number checked against questionnaire data = 310

Number of data entry errors in 310 questionnaires checked = 82

As the 82 errors were corrected it is assumed that only the remaining $(562 - 310) = 252$ questionnaire entries contained errors

Expected remaining errors = $(252/310) \times 82 = 66.6$

As there was approximately 127 pieces of data on each questionnaire (there were two versions of the questionnaire and some conditional items depending on whether individual's considered they were actively involved in the program) an estimate of the error rate is:

$$= \frac{(\text{no. of errors in unchecked entries}) \times 100}{(\text{total no. of questionnaires entered}) \times (\text{data per questionnaire})}$$

$$= (66.6 \times 100) / (562 \times 127) = 0.093\% \text{ or 1 error in 1075 entries.}$$

This would appear to be an acceptable level of data entry error.

5.9.2 Missing Data

Overall 80% of the 562 questionnaires used in the analysis were fully completed and contained no missing respondent data. The number of missing data and the percentage of missing data for each item on the questionnaire is shown in the last two columns of the table in Appendix 6A. The weighted average percentage of missing data, making allowance for different response rates, is 0.43%. The maximum percentage of missing data for any item is 2.5%. This level of missing data would be considered quite low and perfectly acceptable for multivariate analysis. For example Roth and Switzer (1995) investigate the impact of missing data on multivariate analysis using Monte Carlo simulation. Their analysis did not even consider cases with less than 10% missing data.

SPSS provides a number of different options for dealing with missing data, either replacing missing data with an estimate based on available data or omitting the whole case from analysis. After some experimentation and possibly because of the relatively low level of missing data, the omit case option was found to give the best results. Unless otherwise stated the option to omit the whole case was used in analysis.

5.10 Analysis of Quantitative Data

This section explains the main ways in which the quantitative data was analysed. Major assumptions and limitations of the various statistical procedures used are explained. The majority of the quantitative analysis was carried out using SPSS. Graphics were produced mainly using Microsoft Excel. Many time consuming problems were encountered in the preparation of graphics. These problems were due to incompatibility between programs and procedures that did not work properly within the Microsoft suite of programs. An important preliminary analysis involved presentation and interpretation of descriptive statistics e.g. calculation of mean values, counts, graphical presentations. Preparation and analysis of descriptive statistics pointed the way towards appropriate further analysis.

Cross-Tabs and Chi-Squared Tests

In a number of instances cross-tabulations were used followed by chi-squared tests to examine the relationship between two or more variables. For example to test whether there was a significant difference between organisations in the proportion of respondents who had received formal training/education in quality. In carrying out Chi-Squared contingency tests acceptable values of expected cell counts were maintained. According to Berenson and Levine (1992) as a general rule in a large contingency table as long as no more than 20% of cells have theoretical (expected) frequencies below 5 and as long as no cell has a theoretical frequency below 1, the validity of the Chi-Square test is not seriously affected.

Correlation Analysis

Correlation analysis was used to examine the strength of the linear relationship between pairs of variables. Generally, the Pearson Coefficient of Correlation is used and unless otherwise stated two sided probabilities are presented. It is not technically correct to include categorical variables (e.g. where yes/no type responses are required) in standard regression analyses such as the Pearson Coefficient. Therefore these type of variables were excluded from regression analysis.

Data Reduction using Exploratory Factor Analysis

Exploratory factor analysis is a frequently used procedure to assist in a statistical sense in identifying variables that can be combined for use in further analysis. The major benefit of this procedure is in reducing a large number of variables to a smaller more parsimonious set. Each grouping formed in the factor analysis procedure has to be examined to assess whether the items have a combined meaning in the particular research context. If so, the variables are combined into a single new variable and this new variable is usually given a suitable name. Exploratory factor analysis is used also in a confirmatory sense on existing constructs. In this research scales were formed by calculating the mean of the scale scored for each respondent (the scores for negatively worded items being first reversed). Using scale scores was justified because for all the scales used it was found that there was a very high correlation between the two methods of scale formation. The advantage of using actual score is that the scale values can be interpreted in terms of the original scale on the questionnaire (the Z value method normalises items to a mean of zero and variance of 1). The principal axis method was used to extract factors using an Eigen value = 1 criterion. Factor extraction was followed by rotation. Direct oblimin and varimax rotation methods were found to give the most meaningful results.

Reliability of Scales

For scales made up of a number of items internal reliability was measured using Chronbach's Alpha. Cortina (1993, p. 101) points out that Chronbach's Alpha needs to be interpreted with caution. Cortina points out that although a value for Alpha of 0.7 is widely cited in the psychology literature as adequate the number of items in the scale is

seldom taken into account. Given the intercorrelation between items is the same then the value of Chronbach's Alpha will increase with the number of items.

Multiple Linear Regression Analysis

Multiple linear regression is used to explore the relationship between a dependent variable and a number of independent variables. It was used in this research to help address a number of the hypotheses. The use of multiple linear regression could be described as an art. Common problems experienced in multiple regression analysis which transgress the basic assumption of the analysis include multicolliniarity, heteroscedasticity and lack of normality of variable data (Keller and Warrack 1997). Multicolliniarity occurs when the independent variables are correlated with one another (*ibid.* p. 808). Heteroscedasticity is where the variance of the dependent variable changes significantly over the range of values under consideration (*ibid.* p. 771). Keller and Warrack describe methods of identifying these and a number of other problems. These procedures were used in this research. Categorical (e.g. gender- male/female) variables can be included as independent variables in multiple regression. The recommended procedure of establishing dummy variables was used in this research (*ibid.* p. 856-858). SPSS provides a number of different options for the entry of independent variables e.g. forward, backward, in blocks. The stepwise method which allows independent variables to be entered in blocks was found to be a particularly useful method of addressing some of the hypotheses. Results of multiple regression analysis were presented in format generally accepted in the literature.

One-Way Analysis of Variance

This analysis is used to test for differences in mean values between populations (Keller and Warrack 1997, pp. 557-592). This technique was used in this research to test for differences for example between job categories and differences between organisations. SPSS provides a number of tests that have various levels of conservatism. In order of increasing conservatism these tests that assume no significant variance between case data are LSD, Bonferroni and Scheffé (Osterlind 1983). In all cases the Levene test for equality of variance was performed first. In the relative few instances where inequality of variances was indicated by the Levene test the Tamhane's T2 test, an option

recommended for the unequal variance case (Osterlind 1983), was used. Note that these various options are described in the SPSS version 9.

5.11 Visits to Organisations

Follow-up interviews were made to a number of organisations. These were arranged after a preliminary analysis of the questionnaire data. This preliminary analysis uncovered a number of issues which were investigated in more depth through the interviews. There were a number of reasons for carrying out these interviews. Firstly, to find out about the organisation's quality program and the history of quality and to collect demographic data not collected via the questionnaire. Secondly, to interview some middle managers on a range of broader issues than those covered in the questionnaire. Thirdly, to obtain the views of senior management on the role of middle managers in their organisations, particularly related to quality. It was also considered important to explore issues that had arisen from a preliminary analysis of the questionnaire. Interviews with middle managers would also to some extent address the issue of non-respondents to the questionnaire, as some of the interviewees had not completed the questionnaire. Each interview, typically with one employee, lasted approximately one hour. Notes were taken during interviews. A list of interview questions was prepared for each of the following three groups: middle managers, senior managers and quality managers (see Appendix 5H). Although it was considered important to gather certain information e.g. definition of middle manager used for the questionnaire survey, the interviews were conducted in a fairly open ended way to enable fresh insights to emerge where possible. Where possible other useful evidence was collected such as quality related documentation. In one case for example a copy of the organisation's Australian Quality Award submission was provided in another case an individual provided a copy of his job description that included duties related to quality.

5.11.1 Selection of Organisations for Interview Schedule

Due to time constraints it was not possible to visit all organisations that had participated in the study. Organisations were selected for visits mainly on the basis of the number of questionnaire responses received, ones with larger response rates being preferred. It was more difficult than expected to arrange interviews with appropriate staff. One contributing factor was that several of the organisations had experienced major organisational changes since the questionnaire survey had been administered. One organisation for example had been “taken over” and the contact person lost all interest in this project to the extent that even basic biographical details (pertaining to the time the survey was administered) were not supplied. Another participating organisation had experienced the reverse and had taken over an organisation, the contact person was too busy with the “merger” to participate further in this project. It should be noted that the scheduling of follow-up interviews was mentioned in correspondence that was sent to organisations. Never-the-less the majority of participating organisations contacted were very cooperative in arranging interviews. Interviews were carried out in ten of the participating organisations with a total of thirty employees. Organisations were asked to provide interviews with a senior manager, the quality manager if there was one and with two or three middle managers. It was considered particularly important to obtain a top management perspective of quality and the role of middle managers in their quality program. It was not always possible to obtain all the interviews requested. The interviewing schedule is shown in Table 1, Appendix 5H. The writer had little control over who was selected for interview. It was suggested to organisations that, for example, one middle manager with (in the opinion of the contact person) positive views on the quality program and one middle manager with negative views be selected. It is suspected that there was some bias in the selection of interviewees, those with positive program views prevailing. Interviews were conducted in Queensland and New South Wales.

5.12 Analysis of Qualitative Data

Qualitative data from the interviews and from the open ended responses on the returned questionnaires was analysed using NUD*IST (1997) software. Comments were made on 285 of the returned questionnaires, approximately half of the total. Comments ranged in length from one line to over a page.

Using NUD*IST

NUD*IST is specifically designed for analysis of qualitative data and can be interfaced with some other software including SPSS. The general procedure used was as follows. Interviews and short answer questions were transcribed. The format had to be suitable for entry into NUD*IST, for example the smallest unit of text had to be determined, a sentence was selected from the interviews and the total response was used for the short answer question responses. By reading through the data pertinent themes were identified which were later used to code data when performing content analysis. A relationship structure was set up in NUD*IST to which data was coded for content analysis. The relationship structure allowed variables to be linked so that searches could be performed. Once the data structure had been set up documents were examined one-by-one and their content was coded to appropriate nodes. For example comments on the interview transcripts pertaining to quality assurance were coded to a node called *quality assurance/ISO9000*. Coding enabled text to be linked with the source document, either questionnaire or visit transcript, and the individual who made the statement. An example of a NUD*IST print-out is shown in Appendix 5I. Ten variables from the questionnaire were also entered into NUD*IST. These included, gender, age group, whether the respondent was trained in quality and whether the respondent was actively involved in their organisation's quality program. When the database had been set up a wide range of data searches could be easily made. An example of a simple search would be to list all of the comments from a particular node say *quality assurance/ISO9000*. An example of a more complex search would be to list all statements on *quality assurance/ISO9000* made by females in the 25 to 34 age group who were actively involved in their organisation's quality program. Setting up the NUD*IST database took a lot longer than anticipated. It was the first time the writer

had used the software and the clarity of users guide (NUD*IST 1997) in the writer's opinion could be considerably improved.

5.13 Further Analysis of Questionnaire Data

The interviews undertaken and the analysis of the qualitative data suggested some further analysis of the quantitative data. In Chapter 7 – Discussion of Results, relevant data from both approaches is used to address the overall research question and specific hypotheses.

CHAPTER 6
RESULTS

6. RESULTS

6.1 Introduction

The quantitative results using the data collected by the questionnaire survey are presented first. As explained in the methodology there were some minor changes made to the questionnaire during the conduct of the research. However with the exception of one item the version of the questionnaire in Appendix 5B contains a complete set of questions and will be used to guide the reader through the results. Questionnaire part numbers and item numbers are provided in the results where it is thought that this will aid the reader. The questionnaire is divided into nine parts and the following convention will be used: Q {part number}, {question number}, {sub question number} e.g. Q8,4,2 refers to part 8, question 4, sub question 2 i.e. *Marketing/sales* on page 4 of the questionnaire in Appendix 5B. Questions in parts 1, 3, and 6 each require two responses, the first a value response the second an expectancy response. To identify these two parts *a* will be used for the first response and *b* for the second, e.g. Q3,5b is the response to *to what extent does this happen in your organisation?* to the question *top management provides useful feedback on how the quality program is going*. In some of the analyses the product of the value and expectancy scales is used; this will be indicated by the descriptor *product* e.g. Q1,2 (product) is the product of the importance and likelihood scores for the question *improved competitiveness* in part 1 of the questionnaire. Appendix 6A provides summary statistics for each of the variables on the questionnaire.

As data were collected from a number of organisations interpretation of the overall results was aided by an understanding of the variation of key variables across the participating organisations. Therefore descriptive statistics by organisation and a statistical comparison of organisations is presented. It was decided to exclude organisations with a small number of returns from the inter-organisation comparison although their responses were included in the overall results. An arbitrary cut off point of seventeen responses was used. Seventeen or more responses were received from

fifteen of the participating organisations. The 504 usable questionnaire returns from these fifteen organisations represent 90% of the total response.

A number of analyses based on the quantitative data is presented. Data reduction using exploratory factor analysis was carried out on responses to questions in parts 1, 2, 3, 4, 5, 6 and 7 of the questionnaire. Data reduction is useful in reducing the number of variables to a more manageable size and in reducing multicollinearity in multivariate analysis (see Section 5.10 of the methodology). Exploratory factor analysis is also routinely used in a confirmatory sense on established constructs such as those included in parts 4 and 5 of the questionnaire. Further analysis included an exploration of differences between the fifteen organisations mentioned above. Differences on a number of key variables between respondents' job category were explored for the whole sample. Correlation analysis and multiple regression analysis were used to identify variables that were significantly related to attitudes towards quality and participation in quality related activities.

The second major section of the results presents an analysis of the qualitative data. Qualitative data was obtained from two main sources, firstly, an open ended item on the questionnaire (Q9,5 in Appendix 5B), and secondly data was collected during visits to ten of the participating organisations. Some relationships between the quantitative data and the qualitative data are discussed in this section where appropriate.

The overall results are discussed and the research questions and hypotheses addressed in the following chapter (Chapter 7, Discussion of Results). In Chapter 7 the findings are also compared with relevant published research.

6.2 Quantitative Results

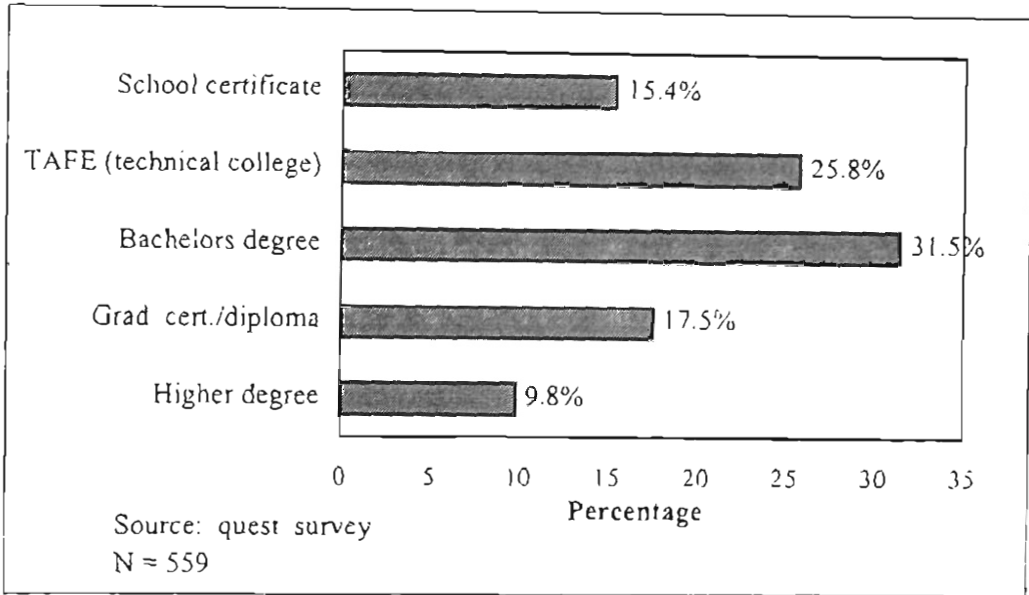
6.2.1 Profile of Respondents

Of the 562 respondents 107 (19%) were female (Q9,1). The average age of respondents was approximately 41 years, with most (36.8%) being in the 35 and 44 year age group (Q9,2). There were no respondents over the age of 64.

6.2.1.1 Formal Education (Q9,3)

Figure 6.1 shows the highest qualification that respondents hold. It can be seen that the most usual highest qualification is a bachelors' degree. There is a significant proportion of respondents whose highest qualification is the school certificate.

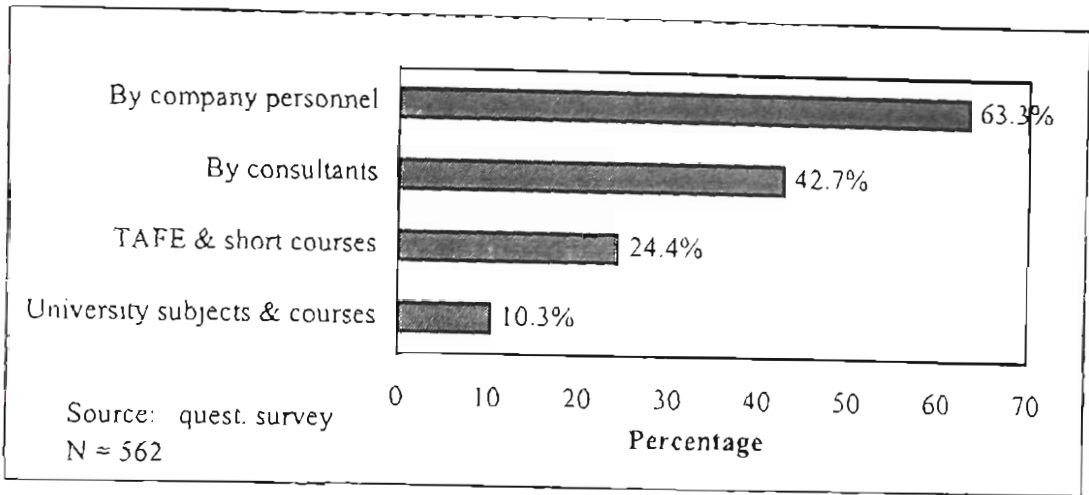
Figure 6.1 Highest qualification of respondents



6.2.1.2 Education and Training in Quality (Q9,4)

A sizeable minority of respondents (22%) reported that they had received no formal training or education in quality. For those who reported receiving training/education in quality Figure 6.2 provides a comparison of the popularity of different types of training. The figures show percentages based on all respondents. Note that the percentages in Figure 6.2 add up to more than 100% as many of the respondents had received more than one type of training. It is evident that in-house training/education is the most popular type for respondents. Most of the training/education provided appears to be through customised in-house or external consultant run programs, rather than through award type courses at TAFE or university.

Figure 6.2 Types of education/training in quality received



An analysis of the number of types of training received by respondents was undertaken. This showed that 34% of respondents received one type of training, 26% two types, 15% three types, 2% all four modes and as mentioned above 22% said they had received no formal training/education in quality.

6.2.1.3 Tenure in Organisation and in Current Position (Q8,1 and Q8,2)

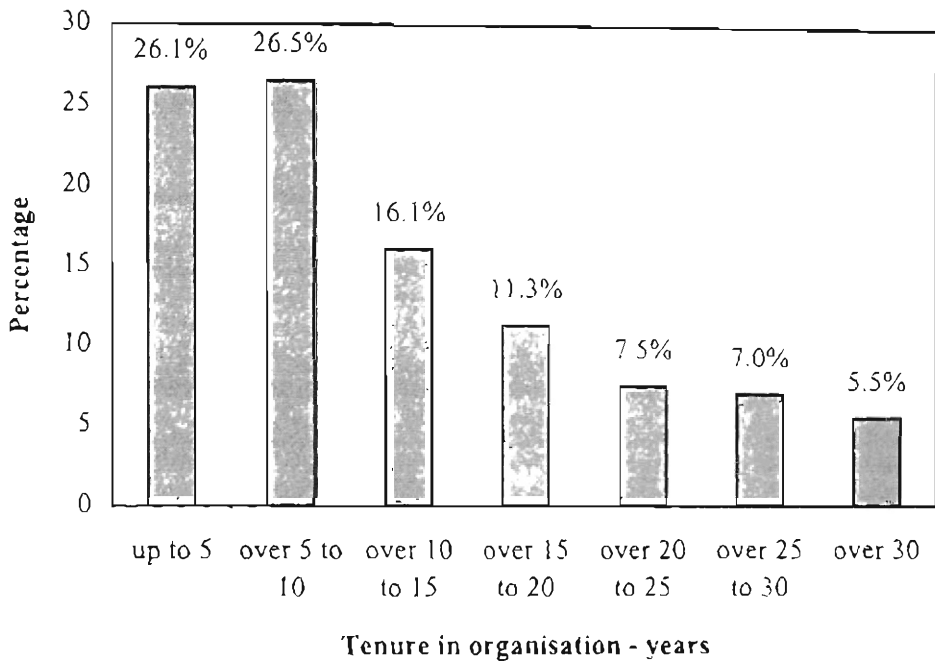
Figures 6.3 and 6.4 show respectively the distribution of organisational and job tenure. Mean organisation tenure is relatively long at 12.6 years with 47.4% of employees with service of over 10 years. In contrast the mean tenure in current position is short at 2.9 years with only 18.3% of respondents reporting being in their current position for greater than 4 years.

6.2.1.4 Level in Organisation (Q8,3)

As discussed in section 5.6 of the Methodology participants in the questionnaire survey were identified as middle managers in the context of their own organisation's management structure. Individuals to whom questionnaires were sent therefore came from the middle management group as defined by participating organisations. The only exception was in the case of organisation 20 who specifically requested that two levels of management should be included in the survey¹.

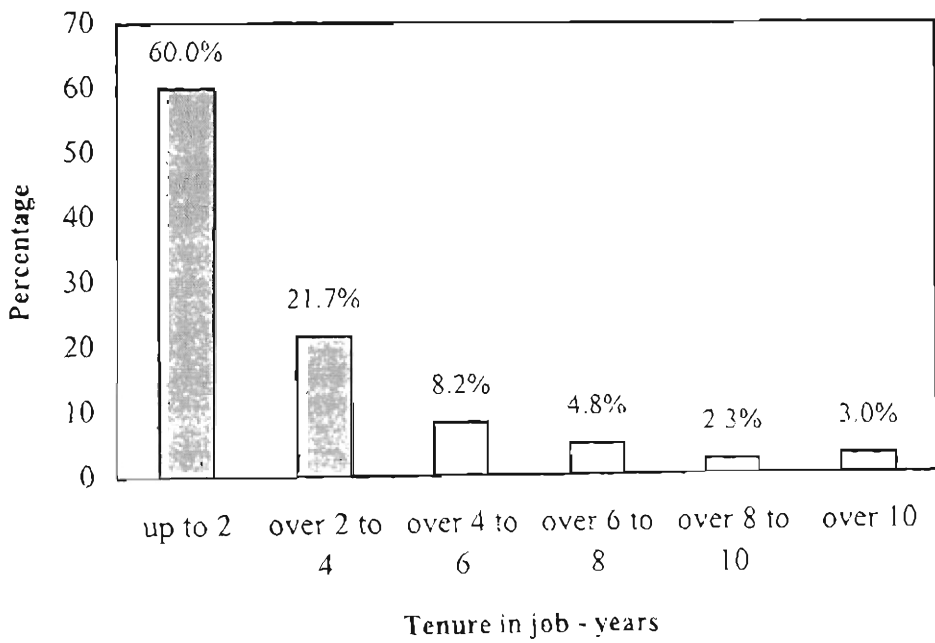
¹ Analysis of the data for organisation 20 revealed no significant differences in key variables between these two job levels. The higher level was called senior managers.

Figure 6.3 Tenure in organisation



Source: quest. survey
N = 559

Figure 6.4 Tenure in job



Source: quest. survey
N = 560

Table 6.1 Respondents' views on their hierarchical level

Item	Number	Percentage
No management or higher level administrative/professional responsibilities	28	5.0
Lower level management, i.e. managing those doing routine work in the organisation	59	10.5
Middle level management, i.e. supervising lower level management or undertaking higher level administrative/professional duties	383	68.0
Senior level management, i.e. responsible for managing middle level managers or for strategic matters in the organisation	92 ^a	16.5
Total	562	100

^a This includes 30 respondents from organisation 20 who were officially categorised as senior managers. No significant differences in mean values on important variables were found between the groups classified as middle managers and senior managers in organisation 20.

Table 6.1 Show respondents' views on their hierarchical level, using more generic items on the questionnaire. It can be seen that the majority of respondents (68%) considered that they were middle managers in terms of the definitions given on the questionnaire. As was discussed in Section 2.2.1 of the Literature Review there is no one agreed definition of a middle manager. Employees considered middle managers in one organisation may be categorised differently in another. However it is likely that the majority of respondents, perhaps with the exception of those in the "no management..." category, are somewhere in the middle of their organisations' hierarchy and in this broad sense can be designated as middle managers.

6.2.1.5 Main Job Activity (Q8,4)

Table 6.2 provides details of the main job activity of respondents listed in order of frequency. It can be seen that 38 of the respondents described themselves as quality specialists.

Table 6.2 Main job activities of respondents

Category	Number	Percentage
Production, operations, purchasing	115	20.5
Design, R & D, engineering, information technology	100	17.9
General management	93	16.6
Marketing, sales	66	11.8
Quality specialist	38	6.8
Accounting, finance	32	5.7
Human resource management	27	4.8
Other (e.g. customer service, maintenance)	89	15.9
Total	560^a	100

^a There were two non respondents

6.2.1.6 Line or Staff Responsibility

This item was on an earlier version of the questionnaire (see Appendix 5A, Q7,5). This item was included to test the hypothesis that those working in line positions have a more positive attitudes toward quality and their quality program. This question was not included on the revised questionnaire as it was considered that sufficient data had been collected on the original version. The question was “Is your job mainly a support role, sometimes called a staff role; or a more direct operations role, sometimes called a line role?”. A line role was reported by 92 respondents (23%), a staff role by 138 (35%) and both line and staff by 166 respondents (42%).

6.2.2 Individuals’ Views on Their Quality Programs –Whole Sample

This section presents the results of respondents’ views on their quality programs for the whole sample.

6.2.2.1 Organisation’s Approach to Quality (Q8,5)

Table 6.3 shows that the majority of respondents considered that their quality programs were based on a TQM approach or a combined TQM and ISO approach. Relatively few indicated that their programs were mainly based on an ISO 9000 approach or indicated that they were unsure of their organisations’ approach to quality.

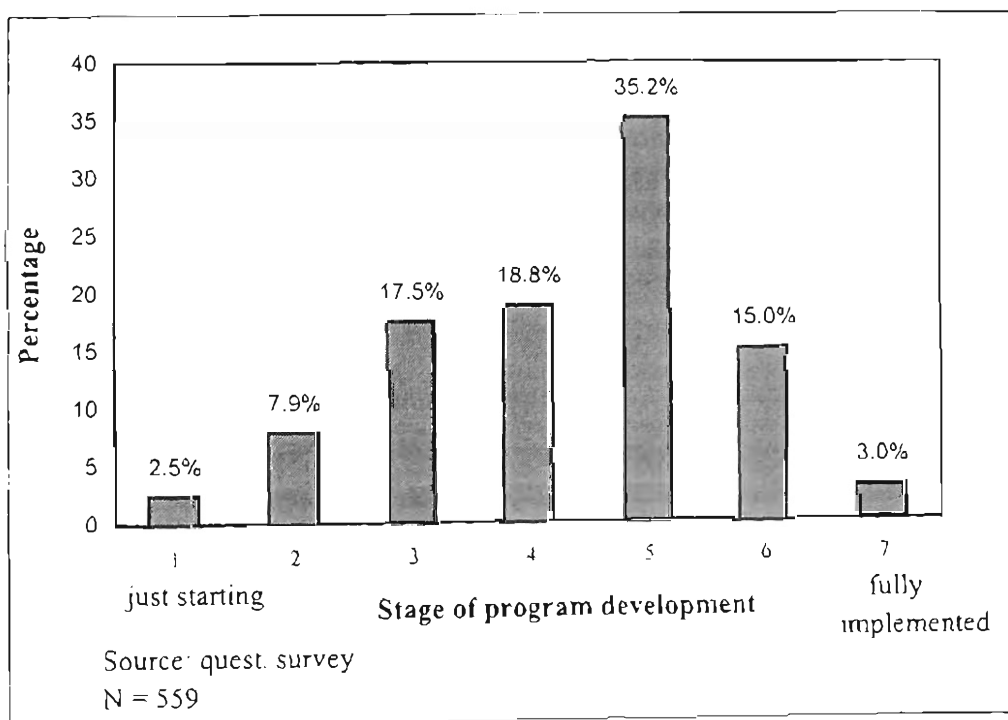
Table 6.3 Approach to quality in the organisation – respondents' views

Approach	Number	Percentage
An approach based on quality assurance/certification to quality standards such as ISO 9000	53	9.4
A broad approach based on TQM/quality management principles such as employee involvement and continuous improvement and described by various quality award models e.g. the Australian Quality Award Model	193	34.3
Both of the above approaches	274	48.8
Not Sure	42	7.5
Total	562	100

6.2.2.2 Stage of Program Development (Q8,13)

Respondents were asked to rate the stage of development of their quality program on a 7 - point scale in terms of their idea of a fully implemented TQM program. Figure 6.5 shows the results for all respondents. Of note is that very few respondents believe that their organisation has a fully implemented TQM program.

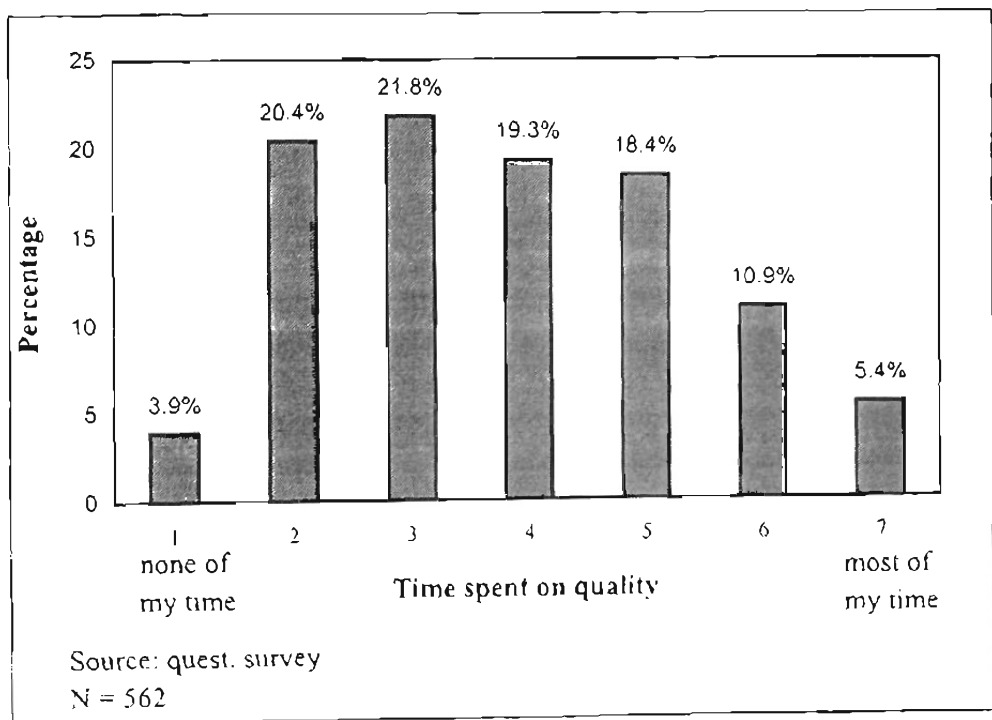
Figure 6.5 Perceived stage of quality program development



6.2.2.3 Time Spent on Quality Related Activities (Q8,14)

Examples of quality related activities were given on the questionnaire e.g. improving products/services and processes, working with improvement teams, learning more about quality, training and coaching others in quality improvement methods and planning for quality. The mean time spent by respondents on the 1 (none of my time) to 7 (most of my time) scale is 4.34. This suggests that in general individuals in the sample spend a significant amount of their time on these kinds of activities. The sample includes 38 quality specialist out of 562 respondents who would be expected to spend a significant amount of their time on such activities. It can be seen from Figure 6.6 that very few respondents indicated that they spent none of their time on these activities.

Figure 6.6 Time spent on quality related activities

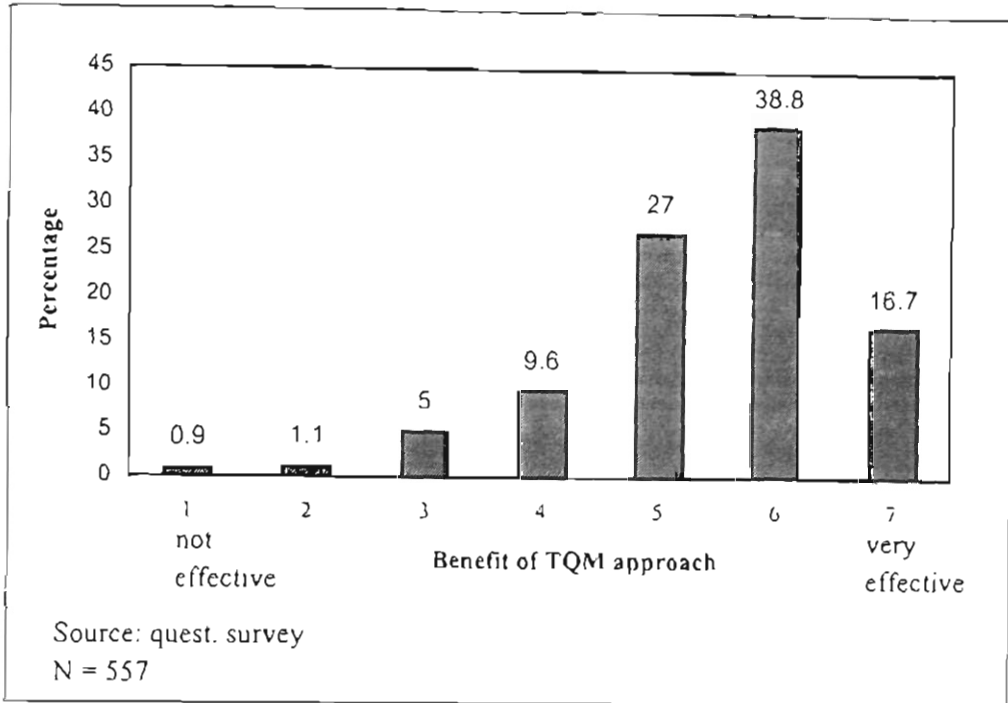


6.2.2.4 Beliefs about the Benefits of the TQM Approach (Q8,17)

Respondents were asked to what extent they considered the ideas of TQM an effective way to run an organisation. The mean value of 5.46 on the scale from 1 (not effective at all) to 7 (very effective) clearly shows that respondents generally consider the TQM

approach to be of value. Figure 6.7 shows that only a small proportion of respondents scored the TQM approach below 4.

Figure 6.7 Benefit of the TQM approach

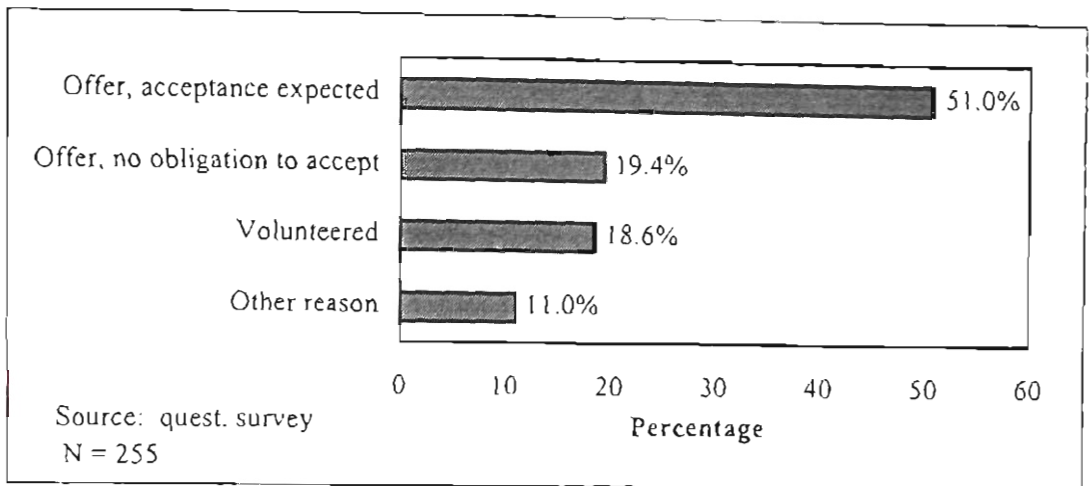


6.2.2.5 Active Involvement in Quality Program (Q8,6, Q8,8 and Q8,11)

Out of the total of 562 respondents 360 (64.1%) said that they were actively involved in their organisation's quality program and 202 (35.9%) said that they were not actively involved. Those actively involved in programs were asked how they came to be involved and those who were not actively involved were asked why they were not.

For those actively involved in their organisations quality programs Figure 6.8 shows that the in the majority of cases an offer of involvement was made which the respondents' believed that they were expected to accept.

Figure 6.8 Initial program involvement



Appendix 6B contains a list (List a.) of miscellaneous reasons for active program involvement. It can be seen that of the 38 individuals who gave miscellaneous other reasons for their involvement 5 (13%) were quality specialists and 18 (47%) indicated that quality was part of their job e.g. *"It is part of my role as I perceive it"* (Middle Manager Organisation 20); *"Part of job description"* (Middle Manager Organisation 7). Of those who believed that they were not actively involved in their organisation's quality program the majority (85.4%) indicated that the reason was that no offer had been made. No respondents said that they had declined an offer to become involved. Twenty nine respondents gave miscellaneous reasons why they were not actively involved in their programs. A wide variety of reasons were given (see Appendix 6B, List b). Four respondents (13%) indicated a lack of time as the reason e.g. *"Can't do everything!"* (Middle Manager Organisation 6).

6.2.2.6 Preparedness for Active Program Involvement

It would seem that training/education in quality would be an important requirement for active involvement in an organisation's quality program. A cross tabulation between active program involvement and training/education in quality is shown in Table 6.4 below.

Table 6.4 Cross tabulation of training/education in quality and active program involvement

	Not received train./education in quality	Received train/education in quality	Row Total
Actively involved in program	57 (15.9%)	302 (84.1%)	359 (64.2%)
Not actively involved in program	66 (33.0%)	134 (67.0%)	200 (35.8%)
Column Total	123 (22.0%)	436 (78.0%)	559 (100%)

It can be seen that a relatively high percentage of respondents who indicated that they were actively involved in their organisation's quality program have received some training/education in quality. A significantly smaller percentage of those not actively involved had received education and training in quality ($p < 0.001$ Chi-square test). A relatively high number of respondents (134) who were trained were not actively involved in their organisation's quality program.

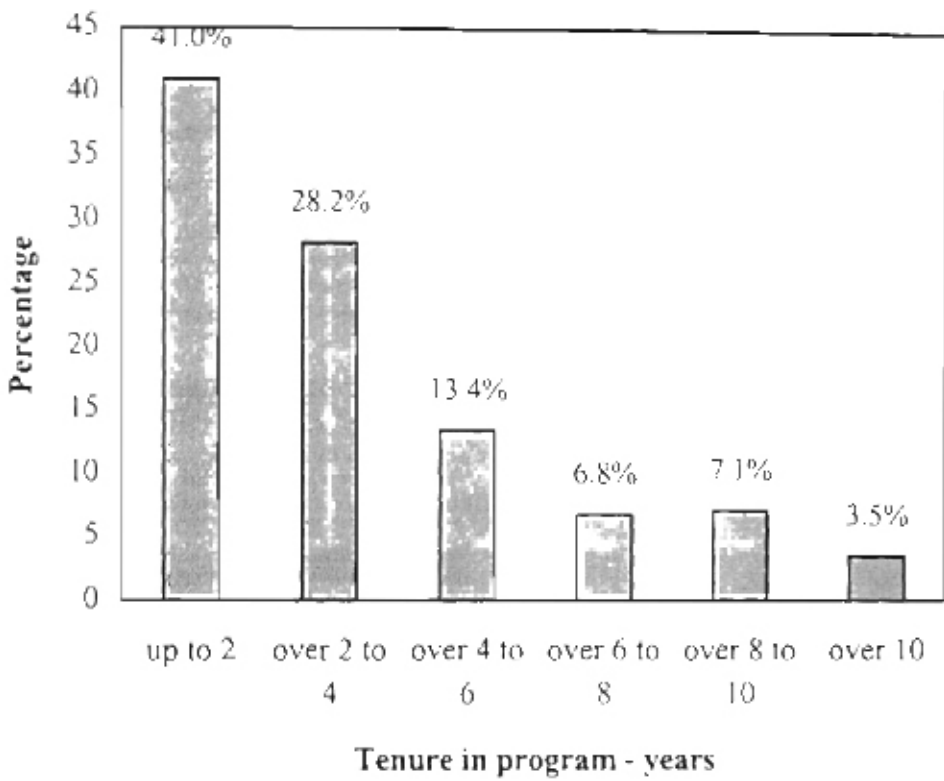
6.2.2.7 Tenure in Quality Program (Q8,8)

Figure 6.9 shows the distribution for tenure in the quality program for those who indicated that they were actively involved. Of note is that the majority of those actively involved in their quality programs have 4 years or less program tenure (59.2%) and only a small minority (3.5%) have over 10 years tenure.

6.2.2.8 Clarity of Role in the Quality Program (Q8,9)

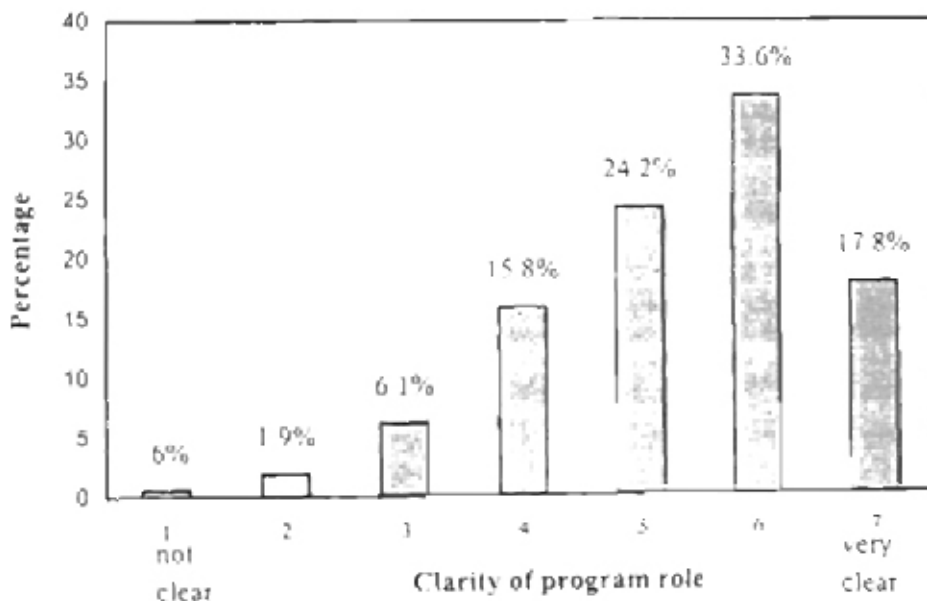
Those who said that they were actively involved in their organisation's quality program were asked to indicate the clarity of their role in the program. The results are shown Figure 6.10. It can be seen that the data is skewed towards the high end of the scale with a modal value of 6. It is clear that there is a spread of data across the scale with a significant minority (8.6%), scoring below 4 on the 7- point scale.

Figure 6.9 Tenure in quality program



Source: quest survey
N = 351

Figure 6.10 Clarity of role in the quality program



Source: quest survey
N = 360

6.2.2.9 Intentions about Continuing Program Involvement (Q8,6)

For those respondents actively involved in their organisation's quality program Figure 6.11 presents their views about remaining actively involved. It can be seen that the majority have strong intentions to continue their involvement, perhaps because involvement is compulsory or expected in many cases.

6.2.2.10 Intentions about Becoming Involved in the Quality Program (Q8,12)

Figure 6.12 shows for respondents not actively involved in their organisation's quality program, the strength of their intentions to become involved. There is a spread of data over the 1 to 7 scale with a moderately positive modal value of 5. A significant proportion are either undecided or express negative feelings about their future involvement in their organisation's quality programs (42.2% with scores of 4 or less).

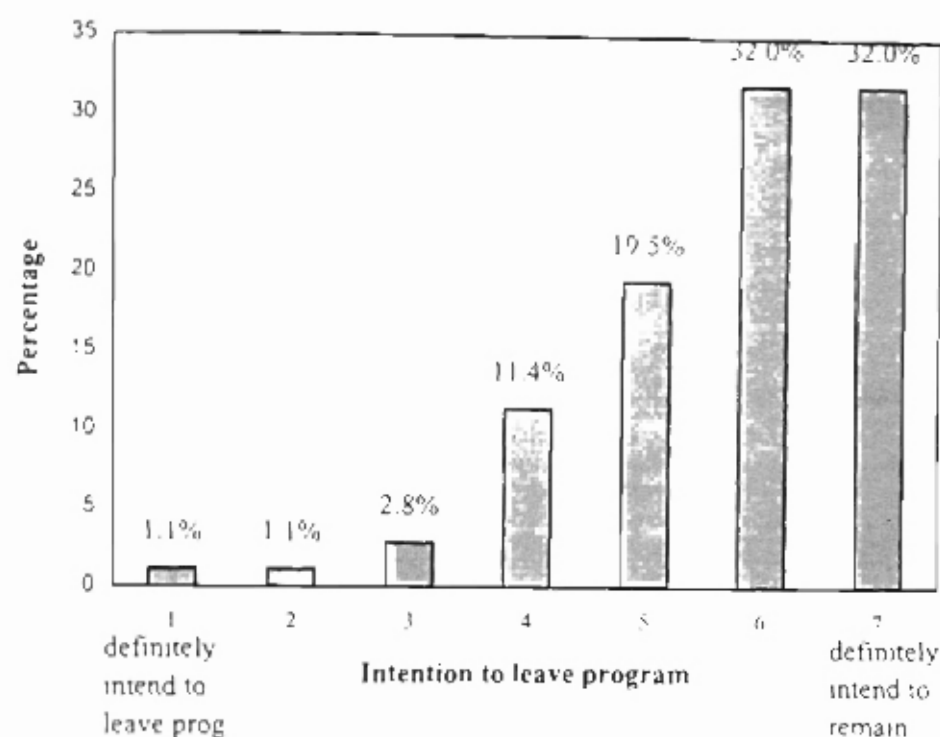
6.2.2.11 Commitment to Quality in the Organisation (Part 2 items)

Figure 6.13 shows the distribution for the three items in Part 2 of the questionnaire, which are measures of attitudinal commitment to quality in the organisation. It can be seen that the distributions of the various items are very similar, skewed towards the high end of the scale with a modal response of 6 in each case.

6.2.2.12 General Comments (Q9,5)

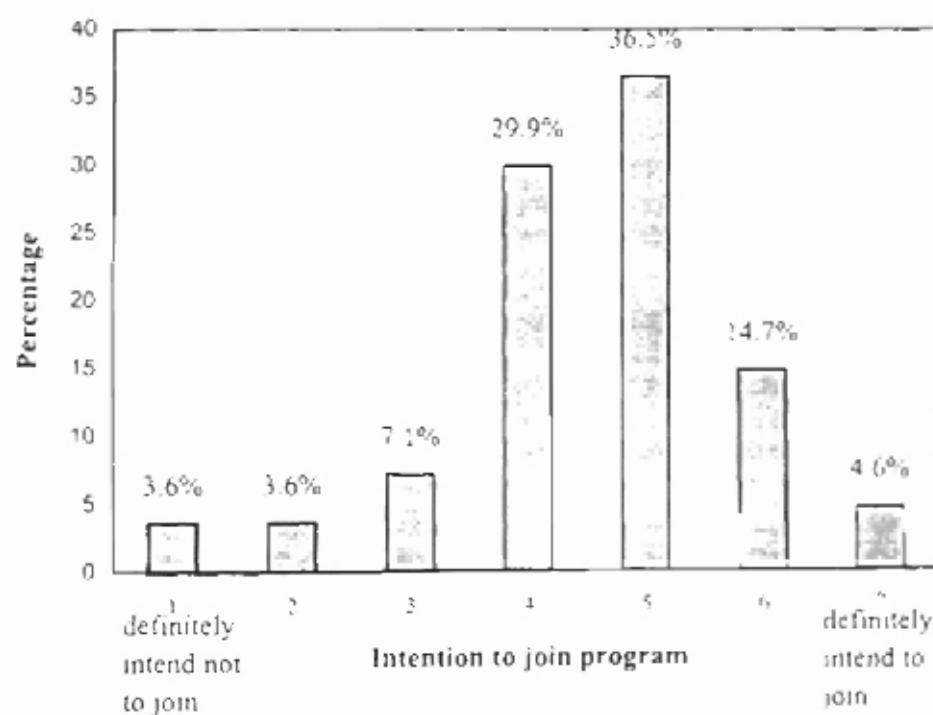
This question asked respondents to describe any events that had particularly influenced their views about quality or their quality program. Also they were invited to make any other comments about quality in general or their involvement in quality activities at work; 268 respondents made comments. These ranged in length from a few words to a page. The information provided by these comments was wide ranging and appeared to be frank. This data together with other mainly qualitative information collected during company visits was subjected to content analysis, the results of which are presented in Section 6.3 below.

Figure 6.11 Intentions to leave the quality program



Source: quest. survey
N = 359

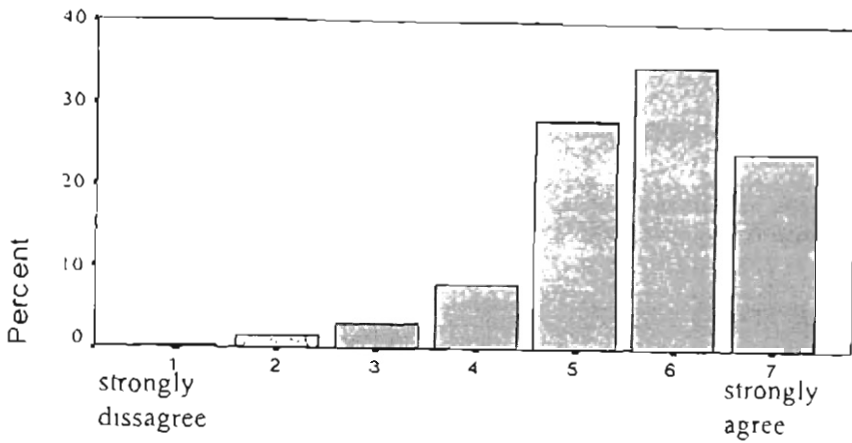
Figure 6.12 Intentions to join the quality program



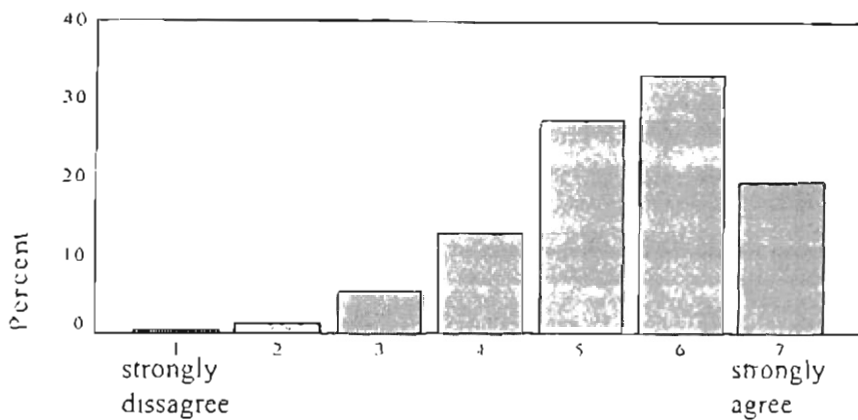
Source: quest. survey
N = 197

Figure 6.13 Attitude towards quality in the organisation (Items from part 2 of quest.)
 (Sample size = 559 for all three figures)

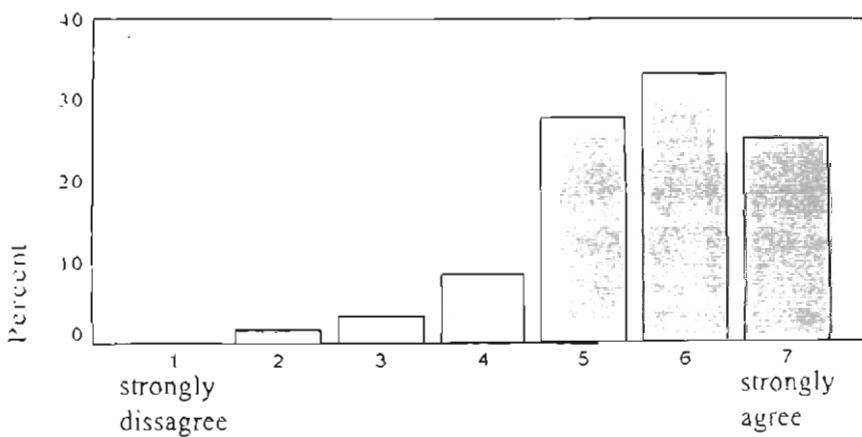
a) Q2,1 – I am very enthusiastic about applying quality principles in my organisation



b) Q2,2 – I actively encourage others in my organisation to take an interest in quality issues



c) Q2,3 – I am very willing to provide leadership in the area of quality in my organisation



6.2.3 Program Outcome Values and Beliefs (Parts 1 and 6)

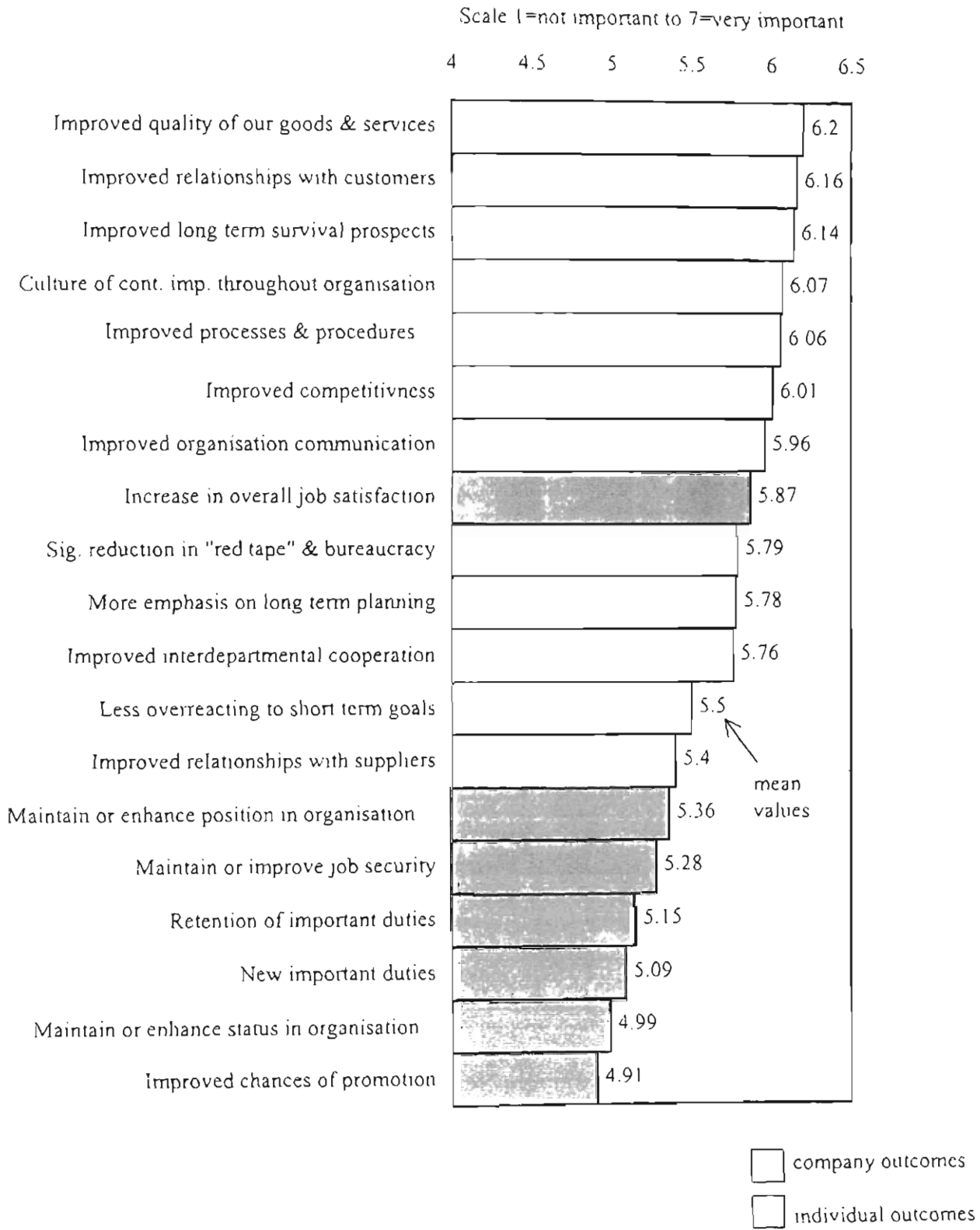
This section addresses the results relating to the values and beliefs that respondents indicated regarding the outcomes of their quality programs. The items are contained in Parts 1 and 6 of the questionnaire. These two parts of the questionnaire were designed to measure values and beliefs of middle managers about outcomes from quality programs in their organisations. Part 1 consists of 19 items that were considered to be valued by respondents as positive program outcomes. For each outcome statement respondents provided two measures, firstly, a measure of the importance of the item to themselves and secondly a measure of the likelihood that the outcome has resulted or would result from the quality program. Part 6 consisted of 7 items each describing a possible program outcome that could be considered either as desirable or undesirable by respondents.

6.2.3.1 Importance of Program Outcomes (Part 1 items)

Figure 6.14 shows, for the whole sample, the responses to the question “how important is it to you personally that this outcome is achieved” for items in Part 1 of the questionnaire. This is a measure of the value that respondents place on each outcome. Figure 6.14 shows the mean values for each item and items have been ranked in order of their mean values. The larger the mean the greater the value that the sample collectively places on the particular outcome. It can be seen that these items form two groups. One group consists of items related to various aspects of organisational performance. The other group consists of items related to program outcomes that benefit the individual. The mean scores of items in the organisational performance group are, with one exception, higher than those in the group of items related to individual outcomes. The one exception is the item “increase in overall job satisfaction” which has a mean value significantly higher than the other individual outcomes. It should be noted however that even for the lowest ranked item i.e. “improved chances of promotion” the mean score of 4.91, on the scale of 1 (not important) to 7 (very important), is relatively high.

Paired t tests were carried out for significant differences in the mean values of items. In general a difference between any two means of approximately 0.15 is significant at the

Figure 6.14 Importance of program outcomes to individuals – ranked list



Notes: These items are from part 1 of the questionnaire (see Appendix 5B)
 Sample size from n = 557 to N = 562

$p = 0.05$ level (sample sizes and variances of items are similar). Therefore the means of items relating to individual outcomes with the exception of “increase in overall job satisfaction” are all significantly lower (at least at the $p < 0.05$ level) than all but two of the “company outcome” items. These two are “less overreacting to short term goals” and “improved relationships with suppliers”. Of particular note is that the individual outcome item “increase in overall job satisfaction” has a mean value that is significantly higher than the next highest ranked individual outcome item i.e. “maintain or enhance position in the organisation” (paired t-test $p < 0.001$ $N = 560$).

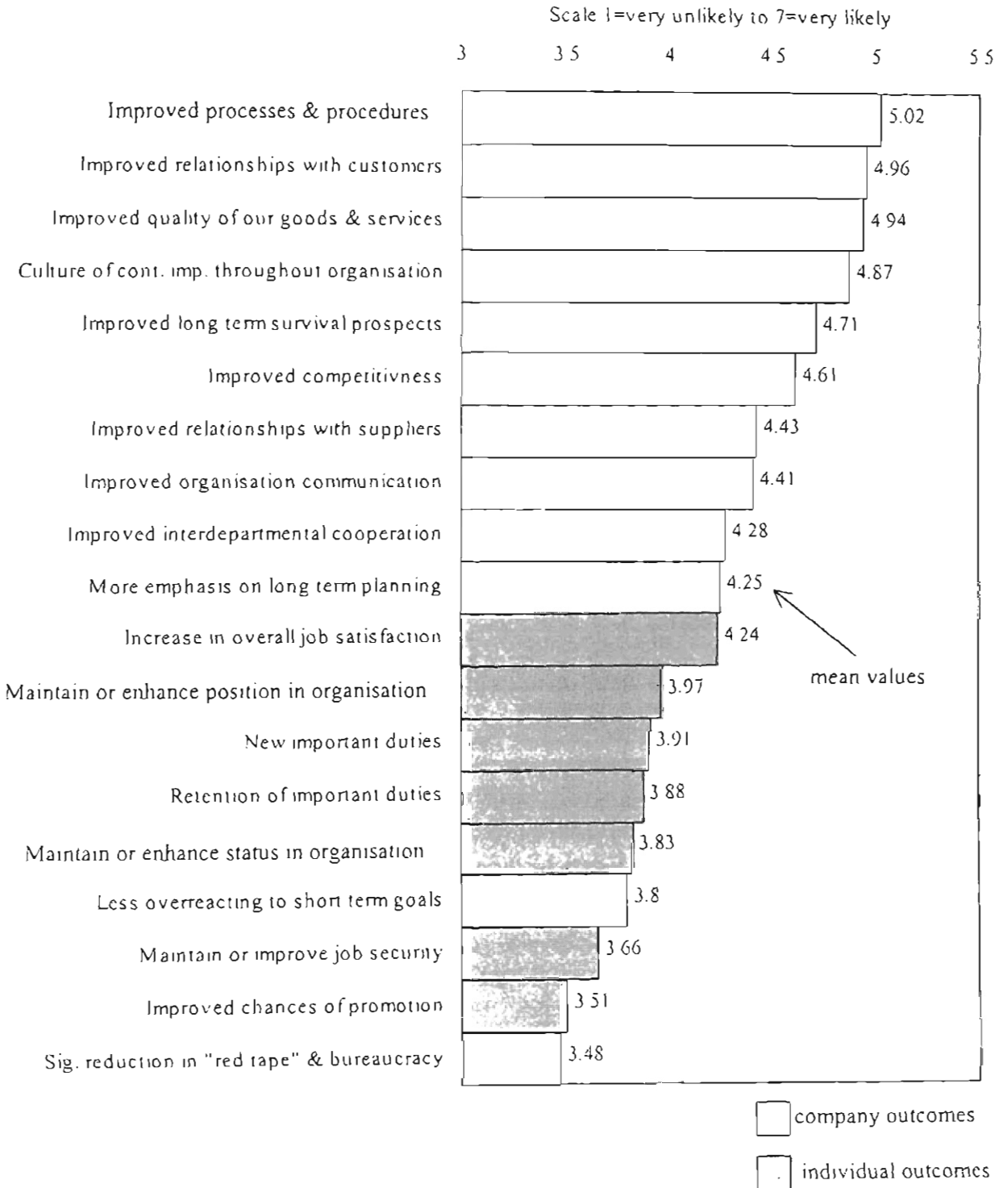
Therefore for the overall sample individuals are indicating that they place more value on organisational outcomes resulting from their quality programs than they do on the range of personal outcomes, an exception being an increase in overall job satisfaction.

6.2.3.2 Beliefs about Likelihood of Program Outcomes (Part 1 items)

Figure 6.15 shows responses for each of the items in Part 1 to the question “how likely is it that this outcome has or will result from your quality program?”. All respondents are included and items have been ranked in order of their mean values. It can be seen that apart from two items namely “less overreacting to short term goals” and “significant reduction in ‘red tape’ and bureaucracy” the mean values of company outcome items are higher than outcomes related to individuals. In general a difference between any two means of 0.15 is significant at the $p < 0.05$ level (sample sizes and variances are similar, see Appendix 6A).

It can be seen from Figure 6.15 that the kinds of outcomes that respondents most expected to result from quality programs are those related to core TQM values. These include “improved processes” (mean of 5.02 out of 7), “improved relationships with customers” (4.96), “better quality of goods and services” (4.94) and “a culture of continuous improvement” (4.87). There is also a relatively high overall belief that programs will improve longer term business results e.g. “improved long term survival prospects” (4.71) and “improved competitiveness” (4.61). Two company outcomes that have a significantly lower score than the rest of the company outcomes are “less overreacting to short term goals” (3.8) and “significant reduction in ‘red tape’ and

Figure 6.15 Individuals' beliefs about the likelihood of program outcomes



Notes: These items are from part I of the questionnaire (see Appendix 5B)
 Sample size from N = 556 to N = 562

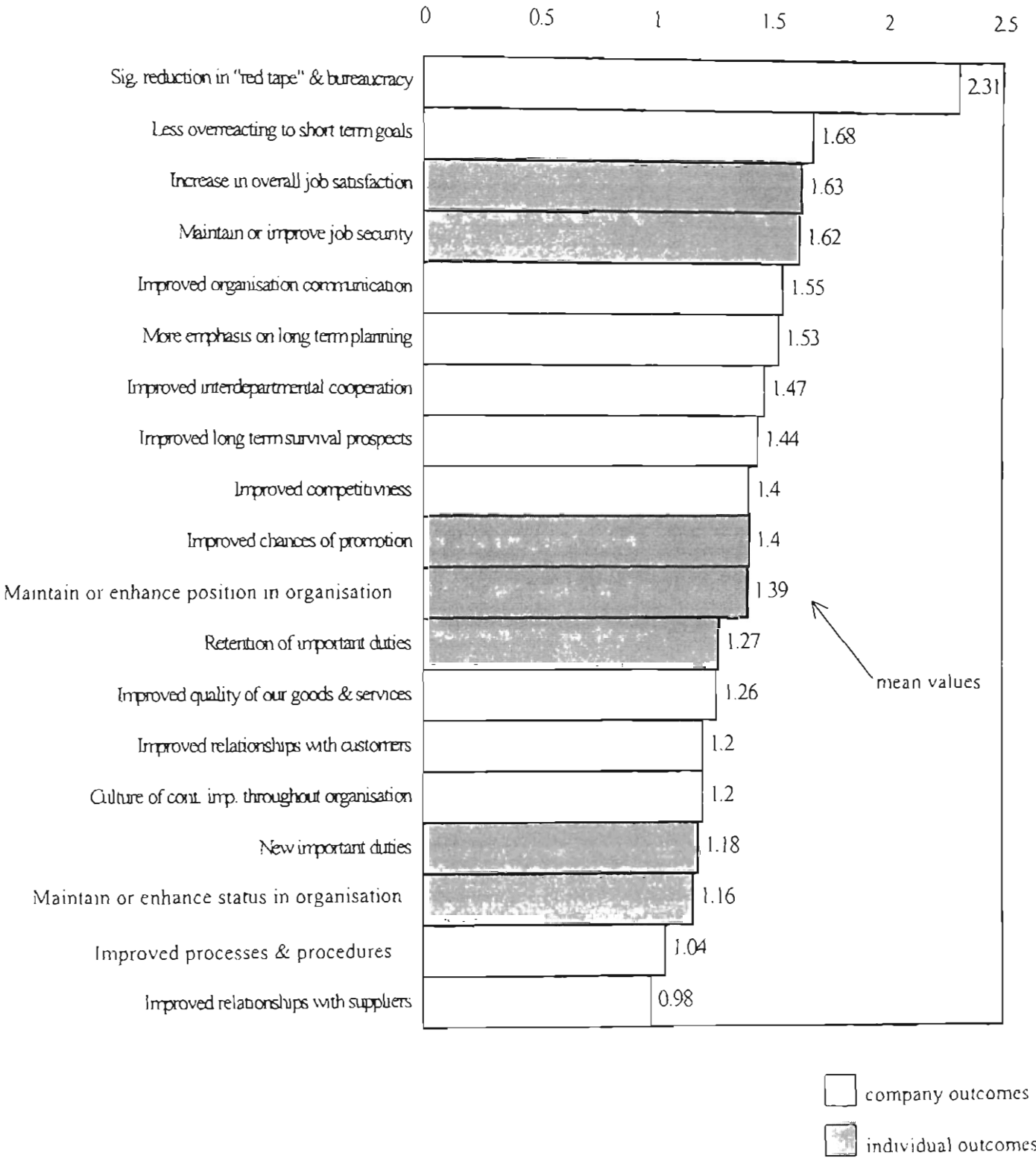
bureaucracy” (3.48). Respondents believe generally that these outcomes are not likely outcomes of their quality programs. The individual outcome “increase in job satisfaction” is the highest ranked individual outcome with its mean value significantly greater than the next ranked individual item “maintain or enhance position in organisation” (paired t-test $p < 0.001$ $N = 559$). These results suggest that whereas individuals collectively believe that individual beneficial outcomes for themselves will not result from their quality programs an increase in overall job satisfaction is an exception. Their beliefs that an increase on overall job satisfaction will result from their programs are on average moderately positive (4.24).

Figure 6.16 shows for each of the outcome items in Part 1 of the questionnaire the mean difference between the importance and likelihood values ranked in order of gap size. The relative size of the gaps between importance and likelihood for the 19 items is of interest, rather than the absolute value. Company and individual items do not form neat groupings as was the case for individual and company items when analysed separately above. The most striking feature of Figure 6.16 is the item “significant reduction in ‘red tape’ and bureaucracy” which has a significantly larger gap than any other item ($p < 0.001$ $N = 555$ compared with next highest ranked item). Respondents value a reduction in red tape and bureaucracy as an important program outcome but believe that the likelihood of this occurring is relatively low.

6.2.3.3 Desirability of Program Outcomes – Bimodal Items (Part 6 items)

It was considered unlikely any respondent would value the outcome items in Part 1 in a negative way. The items in Part 6 were considered likely to be valued as positive program outcomes by some respondents and negative program outcomes by other respondents. Thus a desirability scale was used instead of an importance scale. Bar charts for each of the seven items in Part 6 are shown in Figure 6.17. The mean values for both desirability and likelihood for each of the 7 items is shown in Figure 6.18. In Figure 6.18 the scales for desirability and for likelihood have been transformed so that the mid-point is made zero, i.e. the 1 to 9 desirability scale becomes -4 to $+4$ and the 1 to 7 likelihood scale becomes -3 to $+3$.

Figure 6.16 Difference between importance & likelihood of program outcomes



Notes: These items are from part one of the questionnaire (see Appendix 5B)
 Horizontal scale from -6 (importance less than likelihood) to +6 (importance greater than likelihood).
 Mean values are calculated from differences between responses of each individual.
 Sample size between N = 556 and N = 562

The distribution of desirability responses is shown in the diagrams on the left-hand side of Figure 6.17. It can be seen that apart from two items data was spread across the 1 to 9 scale. The items shown in Charts a), b) and g) are concerned with quality program outcomes resulting in devolution of responsibility in the organisation to lower levels or to groups. It can be seen that a relatively small number of respondents consider these initiatives undesirable (i.e. score less than 5 on the 1 to 9 scale). There is a generally strong desirability for the quality program to result in a reward system that is based on quality performance (Chart c). Also there is a strong desirability for the program to result in more accountability for respondents' job performance (Chart d). There is a mixed response to the quality program resulting in an increase in individuals' overall workload with a surprisingly large proportion scoring this in the desirable (6 to 9) range (Chart e). A large proportion of respondents were ambivalent about the program resulting in a reduction in the monitoring of their performance (Chart f). Figure 6.18 shows that only two items "a reduction in monitoring your performance" and "an increase in your overall workload" had a negative mean value for desirability.

6.2.3.4 Beliefs about Likelihood of Program Outcomes – Bimodal Items (Part 6 items)

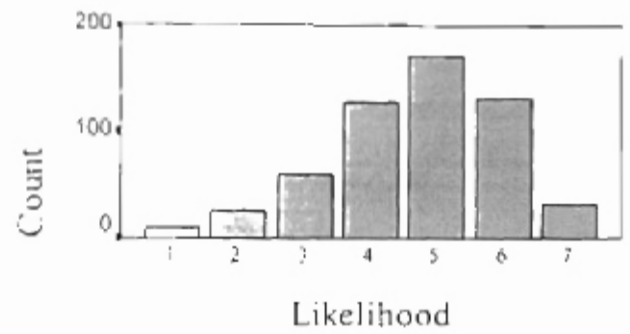
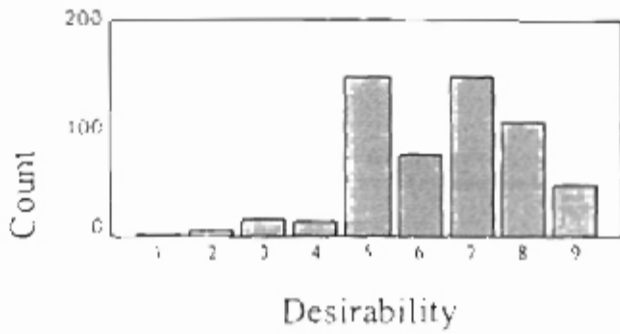
The likelihood distributions for items are shown on the right hand side of Figure 6.17. The mean values are shown in Figure 6.18. It can be seen from Figure 6.17 that for all of the items scores are distributed across the seven point scale. Figure 6.18 shows that respondents on average believe that their quality program have or will result in greater accountability for their performance, more group work and more decision making opportunities for lower levels, and an increase in their overall workload. They were evenly divided on the likelihood of reward based on quality performance and lower level employees taking over some of their duties. They do not collectively believe that their programs have or will result in a reduction in monitoring their performance.

6.2.3.5 Comparing Desirability and Likelihood for bipolar items (Part 6 items)

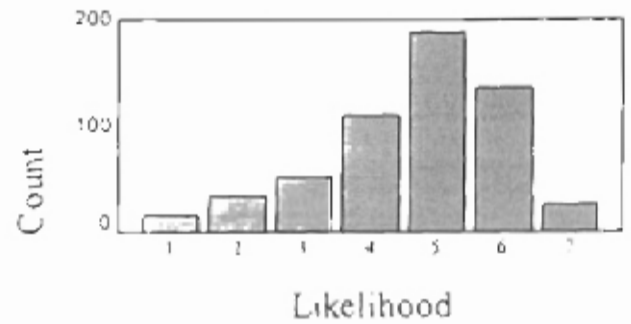
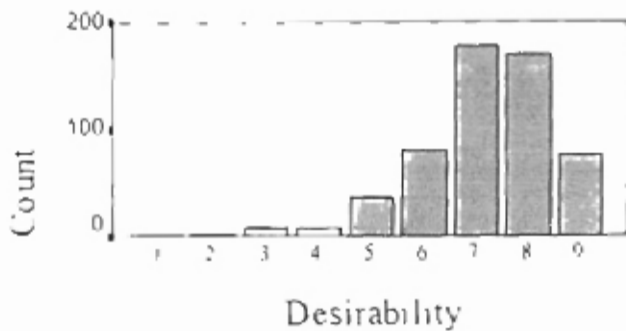
Figure 6.19 shows the gap between the mean values of desirability and likelihood for the seven items. The relative size of the gaps between items is of interest. It can be seen that the largest gap is for rewards based on quality performance.

Figure 6.17 Bar charts for bipolar program outcome items

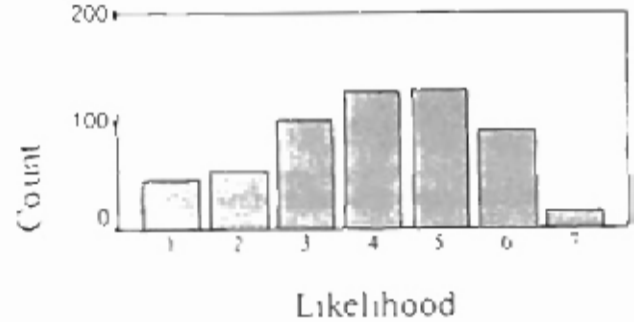
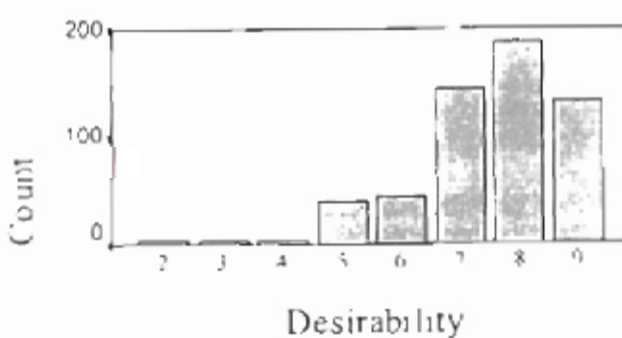
a) Q6.1: More group work in the organisation



b) Q6.2: More opportunities for lower level employees to get involved in decision making



c) Q6.3: Rewards (pay etc.) based on quality performance

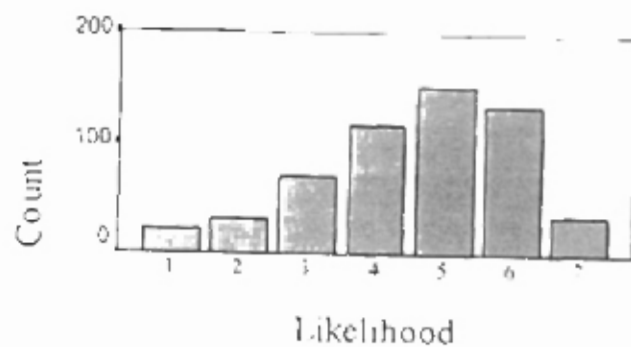
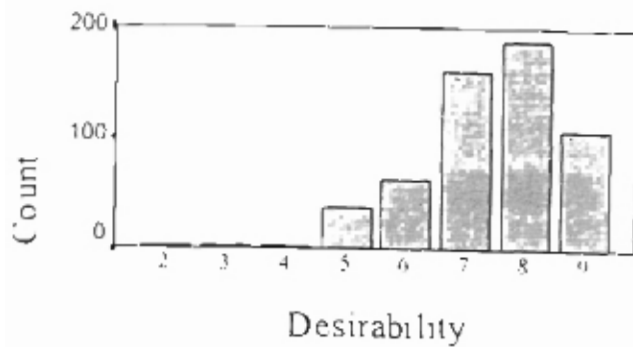


Notes: desirability scale from 1 = very undesirable to 7 = very desirable
 Likelihood scale from 1 = very unlikely to 7 = very likely
 See Appendix 5B for questionnaire
 Sample size between N = 558 and N = 562

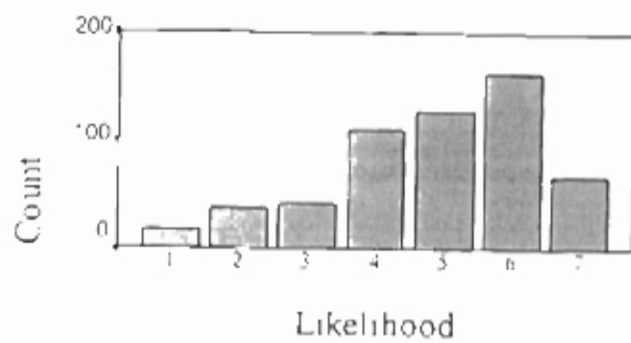
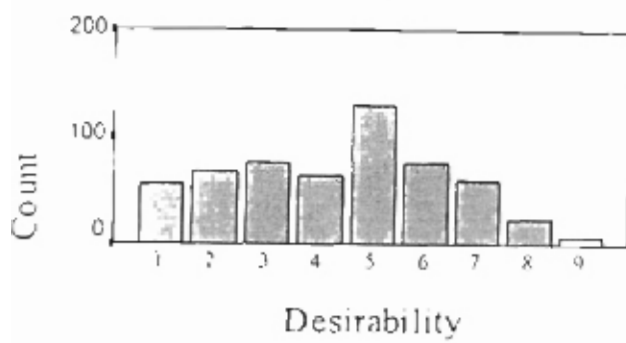
cont. over

Figure 6.17 continued

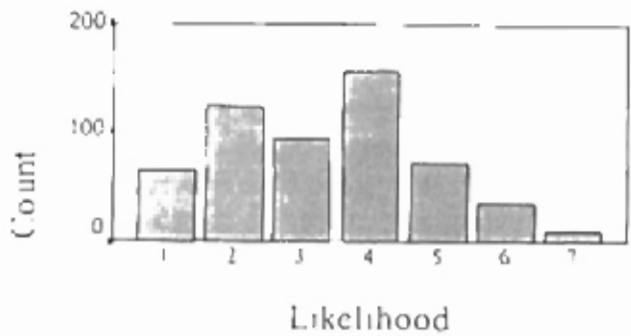
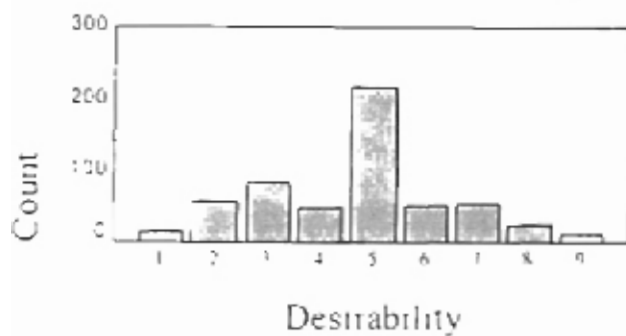
d) Q64. Greater accountability for your job performance



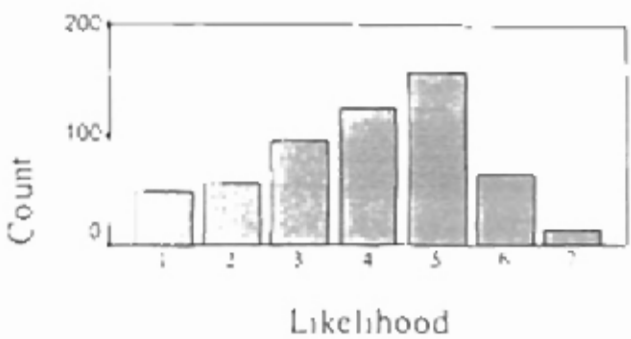
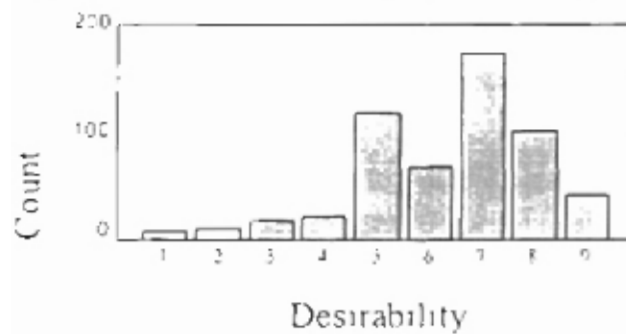
e) Q65: An increase in your overall workload



f) Q66: A reduction in the monitoring of your performance

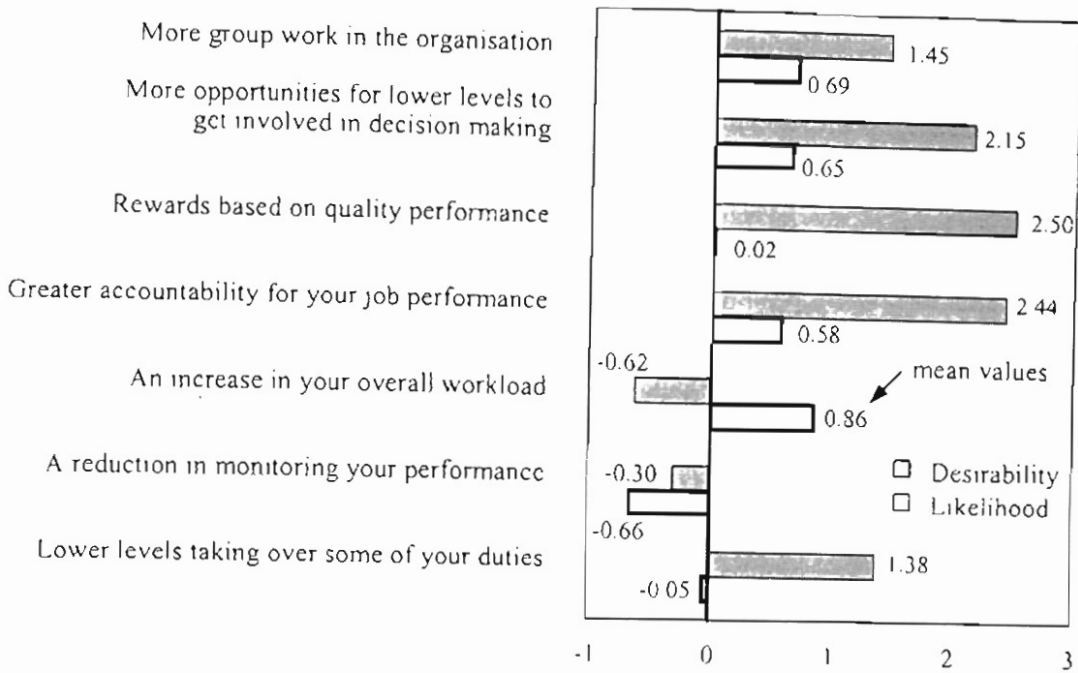


g) Q67: Lower level employees taking over some of your duties



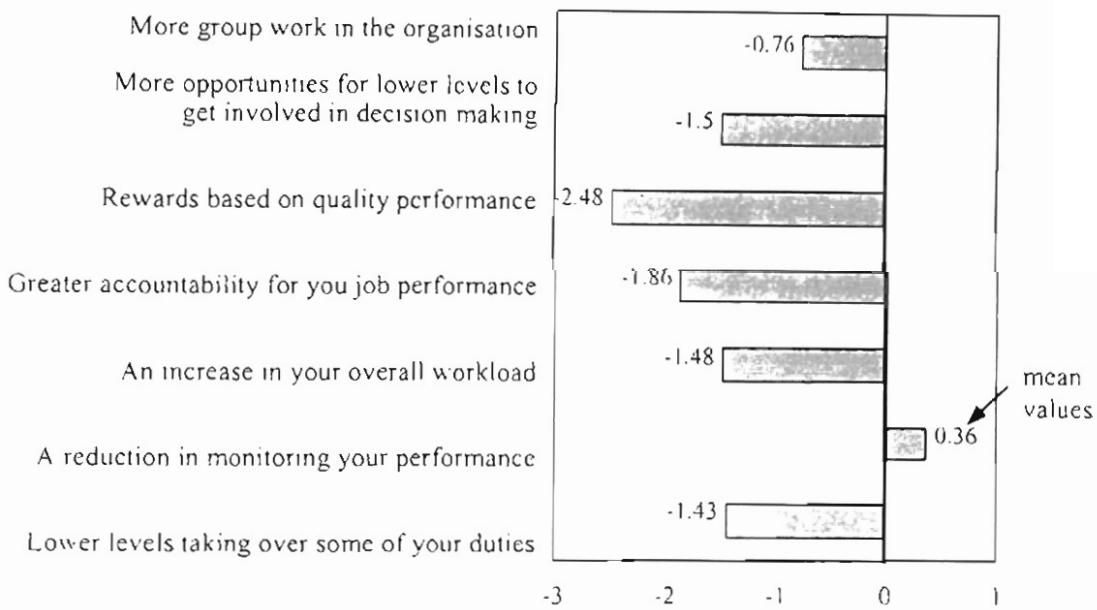
Note desirability scale from 1 = very undesirable to 7 = very desirable
Likelihood scale from 1 = very unlikely to 7 = very likely

Figure 6.18 Desirability & likelihood of outcomes - bipolar items



Scales : Desirability from -4 (very undesirable) to +4 (very desirable)
Likelihood from -3 (very unlikely) to +3 (very likely)

Figure 6.19 Likelihood/desirability gap - bipolar items



Note: Difference between desirability and likelihood based on bipolar scales as in the figure directly above. Positive numbers indicate likelihood greater than desirability. Items from part 6 of the questionnaire (see Appendix 5B). Sample size from N = 558 to N = 562.

Respondents generally value this as a desirable program outcome but are have fairly neutral beliefs about its likelihood.

6.2.3.6 Likelihood of Program Outcomes - unipolar and bipolar items (Part 1 and Part 2 items)

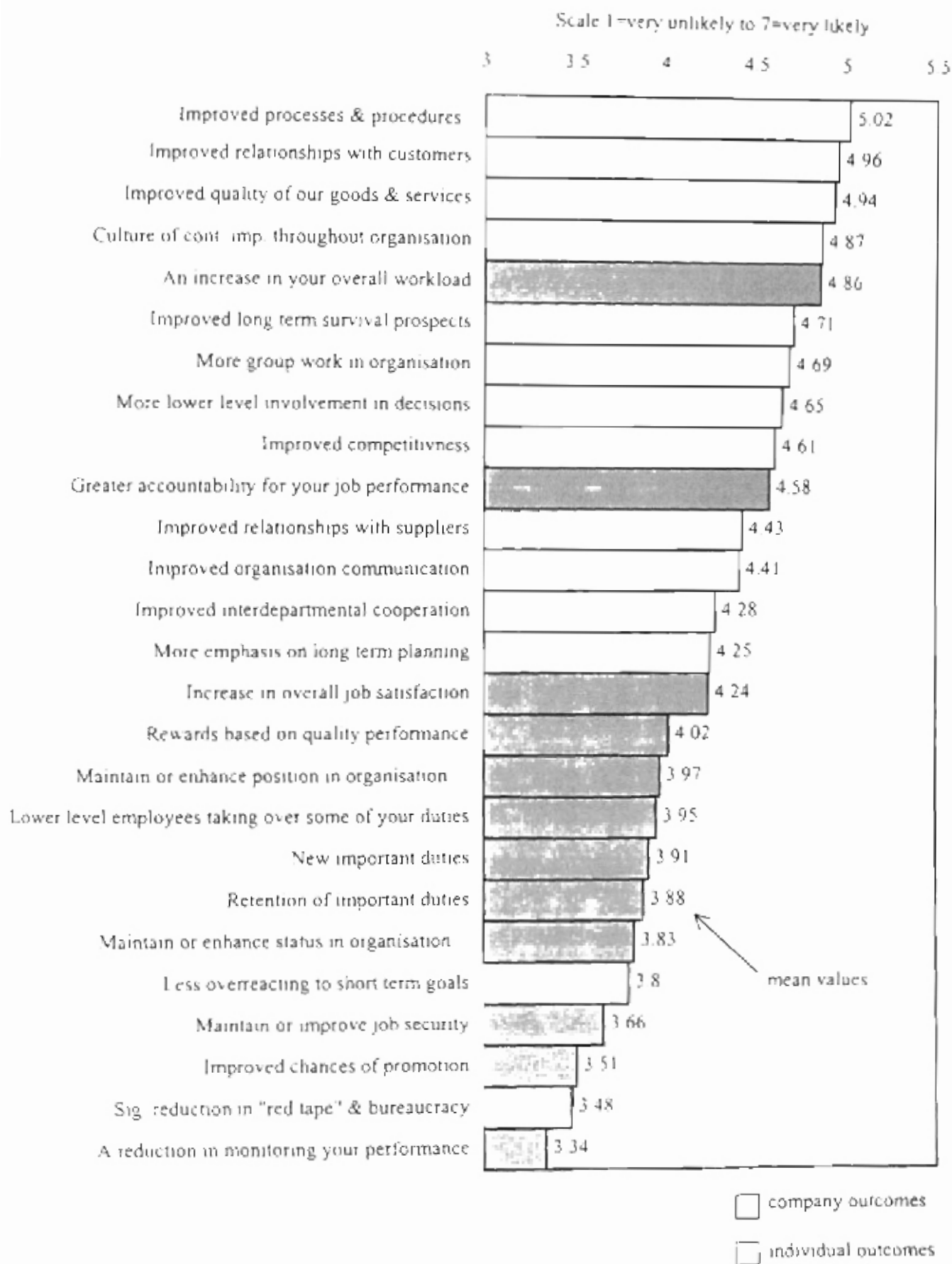
Figure 6.20 shows mean values of respondents' beliefs about the likelihood of program outcomes for all items in parts 1 and 6 of the questionnaire. Of note are the two individual items that have relatively high means i.e. "an increase in your overall workload" (4.86 and fourth highest mean) and "greater accountability for your job performance" (4.58).

6.2.4 Values and Beliefs about Important Others (Part 3 items)

Part 3 of the questionnaire contained a number of items related to respondents' beliefs about the support of "important others" for their quality programs. The groups of important others included in this study were: top management, the respondent's direct boss and the respondent's colleagues. It was hypothesised that respondents' attitudes towards their programs and their participation in programs were related to how they valued program support from these groups and to what extent they considered these groups provided program support. For each item respondents were asked to rate firstly, its importance in increasing their commitment to the quality program and secondly, their belief about the extent of the activity in their organisation.

Table 6.5 shows the means and standard deviations for each of the nine items. It can be seen that the mean values on the importance scales are located near towards the "very important" end of the scale. Modal values for items are either 6 or 7 on this scale. This indicates that in general respondents believe all the items are important in increasing their own commitment to quality programs. There is however a spread of data across all of the scales, a typical standard deviation being 1.15. Likelihood data is much more normally distributed, with item mean values within one point of the midpoint of the 1 to 7 scale. Variability is quite high with standard deviations being typically around 1.5.

Figure 6.20 Individuals' beliefs about likelihood of program outcomes
(unipolar and bipolar items)



Notes: Items from part 1 and 6 of the questionnaire (see Appendix 5B)
Sample size from N = 556 to N = 562.

Of note is that respondents rated the extent of the three items on communications significantly lower than extent for any of the other six items. (paired t-tests were carried out on extent scores between each of the three communications items and all of the other six items minimum p (max of all tests) < 0.005 , N minimum = 554)

Table 6.5 Importance and extent of program support from “important others”

Item	Importance (Scale from 1 – not important to 7 – very important)		Extent (Scale from 1 – not at all to 7 – to a great extent)	
	Mean	Std. Dev.	Mean	Std. Dev.
Top management in our organisation is committed to the quality program	5.98	1.17	4.68	1.48
Top management in our organisation provides strong leadership in the quality program	5.85	1.19	4.38	1.52
Top management’s actions clearly show that they support the quality program	5.90	1.18	4.32	1.59
Top management keeps us informed of their plans regarding the quality program	5.67	1.16	4.02	1.55
Top management provides useful feedback on how the quality program is going	5.64	1.13	3.81	1.54
Top management makes it easy for me to communicate my feelings about the quality program to them	5.47	1.22	3.80	1.61
My direct boss is committed to the quality program	5.87	1.18	4.76	1.63
My direct boss encourages and supports my involvement in the quality program	5.80	1.61	4.82	1.61
Most of my colleagues support the quality program	5.53	1.24	4.21	1.46

Notes: Source questionnaire survey data. Sample size N = 554 to N = 562
Items from part 3 of questionnaire (see Appendix 2B).

6.2.5 Data Reduction using Exploratory Factor Analysis

To facilitate multivariate analysis by reducing the number of variables data reduction using exploratory factor analysis was undertaken on items in parts 1, 2, 3, 4, 5 and 6 of the questionnaire. The procedure used is described in Section 5.10 of the Methodology. Exploratory factor analysis used Principal Axis extraction and an Eigen value of 1 criterion. This was followed by Varimax and Direct Oblimin rotation. Generally the

results of Varimax and Direct Oblimin rotations were similar. Where the results of exploratory factor analysis indicated logical groups of items these were formed into sub-scales that were used as variables in subsequent analysis. Sub-scales were constructed by calculating the mean values for items. This approach aided interpretation of sub-scale values. If the variances of items making up a sub-scale are sufficiently different then it is usual to convert item values into Z values prior to calculating mean values. To check this all sub-scales were constructed using scale values and Z scores and for each scale the results obtained by both methods were compared using correlation. In all cases high correlations of the order of 0.99 were obtained thus validating the use of scale values in sub-scale construction. Internal consistency (Cronbach's Alpha) values were calculated for all sub scales. As 38 of the respondents were quality specialists, data reduction was carried out for the whole sample and for the whole sample less the quality specialists. There was negligible difference in the results. The established constructs used in the questionnaire namely, organisational commitment and ambiguity/conflict were also subjected to exploratory factor analysis. SPSS enables the Kaiser-Meyer-Olkin (KMO) test to be carried out to check the sampling adequacy of the data for factor analysis. The higher the KMO the more suitable the data. Remenyi *et al.* (1998, p. 223) states that a KMO value of below 0.5 indicates that the data is unsuitable for factor analysis. Results indicated in all cases that the data was suitable for factor analysis.

Table 5 in Appendix 6C contains a list of all of the sub-scales formed in this procedure together with values of Cronbach's Alpha. It can be seen that the values for Cronbach's Alpha are generally satisfactory (greater than 0.7). Where the values are marginal they are discussed below. Each exploratory factor analysis is now discussed. Details of the factor analysis are presented in Tables 1 to 4, Appendix 6C.

6.2.5.1 Enthusiasm for Involvement in Quality in the Organisation (Part 2 items)

The three items measuring attitudinal commitment to quality in the organisation formed a single factor (Cronbach's Alpha = 0.908). A sub-scale was constructed from the mean of these three items and this was called "enthusiasm for involvement in quality in organisation".

6.2.5.2 Role Conflict and Role Ambiguity (Part 4 items)

Two factors formed (see Appendix 6C, Table 2). Items loading on these factors were exactly as predicted by Rizzo, House and Lirtzman (1970) i.e. six items forming the ambiguity scale (Chronbach's Alpha = 0.834) and the remaining eight items forming the conflict scale (Chronbach's Alpha = 0.799). The two variables formed from the scales (by calculating the mean value of scale items) are called "role conflict" and "role ambiguity".

6.2.5.3 Organisational Commitment (Part 5 items)

Instead of the expected single factor three factors formed using the Eigen 1 criterion (see Appendix 6C, Table 4). The four negatively worded item loaded cleanly onto a common factor and six of the positively worded items loaded onto a second factor. Two items had significant loadings on more than one factor. The item "I would accept almost any type of assignment in order to keep working for this organisation", loaded cleanly onto the third factor. A possible explanation for this latter is that the suggestion of taking almost any assignment to remain with the organisation could be seen as being relatively a more extreme thing to do now than say 25 years ago when the instrument was designed. There is evidence that suggests that attitudes to worklife in relation to other interests such as home life and leisure have changed significantly in recent years (Scase and Goffee 1989). It is not uncommon to find in the literature reports of separate factors forming for the negative and positive items. Never-the-less, as discussed in Section 4.8 of the Theoretical Framework and Hypotheses, this is a widely used construct and after reversing the scores of the negative items (i.e. 1 becomes 7, 2 = 6, 3 = 5, 4 = 4, 5 = 3, 6 = 2 and 7 = 1), scores for the instrument were made by calculating the mean value of the 15 items for each respondent. Cronbach's Alpha for the construct was 0.889. The name "organisational commitment" was used.

6.2.5.4 Scaling Considerations for Parts 1, 3 and 6 of the Questionnaire

Following the expectancy/value approach (see Section 2.5.4 of the Literature Review) products of importance and likelihood or desirability and likelihood are regarded as influencing attitudes. Consequently products were calculated for the items in parts 1, 3 and 6 of the questionnaire and exploratory factor analysis was used to achieve data

reduction. In the case of part one items the products were importance multiplied by likelihood, for part 3 items importance multiplied by likelihood, for part 6 items desirability multiplied by likelihood. As mentioned earlier (see Section 2.5.6.1 of the Literature Review) there is controversy in the literature on how the expectancy/value scales should be constructed. In order to assess the impact of different scale transformations a number of different transformations were tried and results compared. For each method of scale transformation products of expectancy and value were calculated and exploratory factor analysis was carried out. New variables formed from the exploratory factor analysis were then used in regression analysis to assess the overall impact on regression results. Details of this analysis are presented in Appendix 6D. Although this was a time consuming analysis it was considered necessary in order to clarify the impact of the different scaling methods on the overall analysis. The results show that in general whichever scale transformation is used both the formation of sub-scales from exploratory factor analysis and the results of subsequent regression analysis did not change significantly. For example regression analysis identified the same independent variables as significant whichever scale transformation was used. Therefore only one of the analyses is presented in results that follow. That analysis uses unipolar scales for items in parts 1 and 3 of the questionnaire and bipolar scales for items on part 6 of the questionnaire. The bipolar scaling method used conforms to the recommendations of Ajzen and Fishbein (1980).

6.2.5.5 Exploratory Factor Analysis of Program Outcomes – Part 1 and 6 of Questionnaire

As items on parts 1 and 6 of the questionnaire solicited respondents' views on the outcomes of their quality programs these parts were factor analysed together. The results of the factor analysis are shown in Appendix 6C Table 1. Five factors formed and the results of varimax and oblimin rotations were similar, the varimax results are presented in Appendix 6C, Table 1. The rotated matrix was examined for interpretability. The following grouping emerged:

- a) Twelve items (loading onto factor 1) related to organisation changes resulting from the quality program.

- b) Six items (loading onto factor 2) related to changes affecting the individual as a result of the quality program.
- c) Three items (loading onto factor 3) related to an individuals' view on devolution of responsibility in their organisation i.e. "more opportunities for employees at lower levels to get involved in decision making", "lower level employees taking over some of your duties" and "more group work in the organisation".
"Devolution of responsibility" is considered a suitable descriptor for a variable formed from these items. This is because the items relate to the individual's beliefs about a redistribution of responsibility and the possible consequences of this for possibly affecting their own power and control in the organisation.

The item "an increase in your overall job satisfaction" loaded onto factors 1, 2 and 3 almost equally. Clearly there are high correlations between this item and items relating to the three sub-scales listed directly above. This item where appropriate was used as an individual variable in subsequent analysis. Other items which did not form with others into interpretable sub-scales were also, where appropriate, used as individual variables in subsequent analysis. Table 5 in Appendix 6C details the variables formed in this analysis.

6.2.5.6 Exploratory Factor Analysis of Important Others – Part 3 of Questionnaire

The results of the factor analysis are shown in Table 3, Appendix 6C. The following two groups emerged:

- a) The items relating to top management program support and the items relating to top management program communications loaded onto a single factor. This was named "top management program support and communications"
- b) The two items relating to the individual's direct boss loaded onto a factor together with the item relating to the individual's colleagues. A variable formed from these items was called "boss and colleagues program support".

6.2.6 Correlation Analysis

Prior to carrying out regression a correlation matrix (Pearson correlations) of the variables was produced (see Table 1, Appendix 6J) and examined. As this type of correlation analysis measures the strength of the linear relationship between variables it is not suitable for use with categorical variables e.g. program involvement, education and training in quality, and these kinds of variables were omitted from the analysis. A list of variables used in this analysis and in regression analysis is shown in Table 6.6. It can be seen that the majority of pairs of variables are significantly related at the $p < 0.001$ level (two sided probabilities). The polarity of the correlations is as expected e.g. positive for boss and colleagues support and enthusiasm for quality. This indicates that in general the greater an individual perceives support for the quality program from his/her direct boss and colleagues the greater his/or her enthusiasm for getting involved in quality in the organisation. It can be seen that a number of variables correlate highly with enthusiasm for involvement in the quality in the organisation, in particular, direct boss and colleagues support, top management support and communications, organisational benefits, increase in overall job satisfaction and devolution of responsibility. Variables that correlate most highly with time spent on quality related activities are direct boss and colleagues support, individual benefits, perceived stage of program development, top management support and communications, devolution of responsibility, increase in overall job satisfaction, rewards based on quality performance and greater accountability for job performance.

Table 6.6 Guide to variables used in correlation and regression analysis

Name of variable	Comments	Questionnaire questions (see Appendix 5B)
Enthusiasm for quality in organisation	Measure of individual's attitude to involvement in quality in their organisation. Used as dependent variable	Mean value of questions Q2.1 Q2.2 and Q2.3
Effectiveness of quality management approach	Individuals belief about the effectiveness of the TQM approach to managing an organisation. Used as dependent variable.	Q8,17
Increase in (overall) job satisfaction	A measure of the overall increase in job satisfaction for individual resulting from program.	Q1,16b (used as dependent variable) Q1.16 product (used as independent variable)
Time spent on quality related activities	An overall measure of the time spent by an individual on activities particularly related to quality. Used as a dependent variable.	Q8,14
Gender		Q9,1
Age group		Q9,2
Organisational tenure		Q8,1
Job tenure		Q8,2
Job level	Dummy variables used	
Organisational commitment	A measure of an employee's identification and involvement with their organisation.	Mean of part 5 items (negatively worded items reversed)
Role conflict	Degree of incongruity or incompatibility of expectations associated with the role.	Mean of Q4,3 Q4,5 Q4,7 Q4,8 Q4,10 Q4,11 Q4,12 Q4,14
Role ambiguity	Lack of clarity and predictability of one's behaviour in a work context.	Mean of Q4,1 Q4,2 Q4,4 Q4,6 Q4,9 Q4,13
Top management program support & communications	An overall measure of program support from the top management group	Mean of products of Q3,1 Q3,2 Q3,3 Q3,4 Q3,5 and Q3,6
Boss and colleagues program support	Program support from individual's direct boss and colleagues	Mean of products of Q3,7 Q3,8 Q3,9
Organisational benefits	Program benefits related to the organisation	Mean of products of Q1,1 to Q1,12 inclusive
Individual benefits	Program benefits related to the individual	Mean of products of Q1,13 Q1,14 Q1,15 Q1,17 Q1,18 Q1,19
Devolution of responsibility	A measure of willingness to devolve responsibility	Mean of products of Q6,1 Q6,2 and Q6,7
Rewards based on quality performance		Q6,3 product (bipolar version)
Overall workload increase	Workload increase resulting from program	Q6,5 product (bipolar version)
Accountability for job performance	Increase in accountability for job performance as a result of quality program	Q6,4 product (bipolar version)
Perceived stage of program development	Scale from just starting to fully implemented	Q8,13
Program type	Dummy variables used	Q8,5
Active program involvement		Q8,6 (yes/no)
Education/training in quality		Q9,4 (yes/no)
Program tenure		Q8,7
Program role clarity	Scale from not clear to very clear	Q8,9

Notes: Further details, including details of dummy variable, are shown in Tables 5 & 6, Appendix 6C.

6.2.7 Regression Analysis

Multiple regression analysis is a useful procedure to investigate the relationship between a dependent variable and a number of independent variables. An explanation of multiple regression and of the procedures used in applying it in this thesis can be found in Section 5.10 of the Methodology. The purpose of linear regression was to explore the relationship between the variables in more depth, in particular to investigate which variables may be related to the following attitudes and beliefs of respondents:

- a) “Enthusiasm for involvement in quality in organisation” (Mean of three items in Part 2 of questionnaire).
- b) Belief about the “effectiveness of the quality management approach” to running an organisation (Q8,17).
- c) Likelihood of “increase in job satisfaction” resulting from the quality program (Q1,16b).
- d) “Time spent on quality related activities” (Q8,14).

As stated above actual data rather than Z scores were used. Regression runs were made using the different options for missing data and the “exclude cases listwise” was selected as the most appropriate. Data was also examined for suitability for regression analysis. Table 6.6 provides a guide to the variables used in the regression analysis. A more comprehensive guide to variables is presented in Tables 5 and 6 in Appendix 6C.

SPSS provides a number of different options for running multiple regression, such as backward and forward elimination of independent variables to arrive at a parsimonious solution. That is identifying a small number of independent variables that best explain the variability of the dependent variable. On the other hand the entry method is the most general, here independent variables are entered and retained in the regression equation. Data can be entered in blocks and this is a very useful way of determining the change in the fit of the regression model caused by the addition of more variables into the model. The regression results presented use the entry method with a number of blocks. Blocks have been entered in order of their generality, biographical details first

followed by blocks of variables more specific to individuals' jobs and finally variables specifically related to quality.

Regression runs were made for the whole sample and for the whole sample less those respondents who described themselves as quality specialists. Generally, as might be expected, given the relatively small proportion of quality specialists in the sample, the results were generally similar. The results presented in Tables 1 to 4 in Appendix 6L are for the sample excluding quality specialists. It is shown in Section 6.2.12 below that in general quality specialists have significantly stronger beliefs than other groups on a number of key variables.

In order to examine the generality of the regression results across participating organisations Pearson correlation coefficients were calculated between the each of the dependent variables and the independent variables used in the regression. This regression analysis was carried out for the fifteen organisations that are compared in Section 6.2.10 below (see Tables 1 to 3 in Appendix 6K). Quality specialists were excluded from this correlation analysis.

Appendix 6L shows the results of the regression runs using the enter method. Results for each of the dependent variables will now be described.

6.2.7.1 Enthusiasm for Quality in the Organisation (Part 2)

Table 1, Appendix 6L presents the regression results. In the first block of variables "age group" is significant. Reference to Table 1, Appendix 6K which shows Pearson's correlations by organisation indicates that the generalisation of this result should be treated with caution. It can be seen that there are two organisations with significant positive correlation with age group and one organisation with a significant negative correlation. The introduction of organisational commitment in block 3 makes a significant difference to the model. Six of the fifteen organisations in Table 1, Appendix 6K have a significant positive correlation between "enthusiasm for quality in organisation" and "organisational commitment". "Role ambiguity" entered in block 4 shows a significant inverse relationship with "enthusiasm for quality in organisation".

Table 1, Appendix 6K shows a fairly consistent inverse relationship between “enthusiasm for quality in organisation” and “role ambiguity” across organisations, with a significant inverse relationship for six of the organisations. With the introduction of variables more specifically related to quality and the quality program in blocks 5 and 6 “organisational commitment” and “role ambiguity” are no longer significant in the regression equation. It is evident that the variables which best predict “enthusiasm for quality in organisation” according to the regression are, in order of beta values (beta is the standardised slope of the regression line):

- a) Organisational benefits, positive beta
- b) Boss and colleagues program support, positive beta
- c) Education/training in quality, positive beta
- d) Increase in job satisfaction (from program), positive beta
- e) Top management program support and communications, negative beta
- f) Age group, positive beta
- g) Rewards based on quality performance, negative beta
- h) Active program involvement, positive beta (significant for whole sample only)

It should be noted that excluding “increase in job satisfaction” from this regression analysis did not significantly affect the results.

Table 1, Appendix 6K shows that there are generally strong positive correlations between these variables and “enthusiasm for involvement in quality” across organisations. It is likely that there is a some interaction between some of the independent variables. For example there are generally strong positive correlations between “top management support and communications” and “enthusiasm for quality in organisation” (see Table 1, Appendix 6K). However the beta value in block 5 is small and negative and in block 6 significant but negative. Examination of correlations between “enthusiasm for quality in organisation” and “top management program support and communications” in Table 1, Appendix 6J shows as might be expected that all of the significant correlations and the correlation for the overall sample are positive. The negative beta in the regression analysis is a result of the interaction of the independent variable “top management support and communications” with other

independent variables. This interaction can easily be demonstrated by examining partial correlations as follows (results are for the whole sample):

Corr.(“top management support” and “enthusiasm”) = 0.384, $p < 0.001$

Corr.(“boss and colleagues program support” and “enthusiasm”) = 0.522, $p < 0.001$

Corr.(“top management support” and “enthusiasm”) controlling for “boss and colleagues” = 0.050, $p = 0.252$

Corr.(“boss and colleagues program support” and “enthusiasm”) controlling for “top management support” = 0.387, $p < 0.001$

Corr.(“top management support” and “enthusiasm”) controlling for “organisation outcomes” = 0.019, $p = 0.669$

Corr.(“top management support” and “enthusiasm”) controlling for “support from boss and colleagues” and “organisation outcomes” = -0.126, $p = 0.004$

This indicates that these independent variables in the regression interact in such a way that “organisation benefits” and “boss and colleagues program support” subsume the power of “top management program support and communications” to explain the variability of the dependent variable “enthusiasm for quality in organisation”. The negative beta for “top management program support and communications” does not mean that there is a negative correlation between “top management program support and communications” and “enthusiasm for quality in organisation” it indicates that the predictive power of the regression equation is improved with the inclusion of this variable with its negative beta. The result of the regression suggests that in general individuals’ beliefs about their direct work environment i.e. the importance and extent of program support from their direct boss and colleagues is a better indicator of enthusiasm to get involved in quality activities in the organisation than are beliefs about the importance and extent of top management support.

A similar situation of interaction of variables to predict unexpected regression results also applies to the relationship between the independent variables “organisational benefits” and “individual benefits”. It can be seen from correlation analysis in Table 1, Appendix 6K that both of these variables have significant positive correlations with

“enthusiasm” for the overall samples and for the majority of the fifteen organisations listed in the table. In the regression, Table 1, Appendix 6L, it can be seen that the beta value for individual benefits is -0.3 . The interaction can be demonstrated by calculating the partial correlations:

Corr.(“individual outcomes” and “organisation outcomes”) = 0.614 , $p < 0.001$

Corr.(“individual outcomes” and “enthusiasm”) = 0.365 , $p < 0.001$

Corr.(“organisation outcomes” and “enthusiasm”) = 0.549 , $p < 0.001$

Corr.(“individual outcomes” and “enthusiasm”) controlling for “organisation outcomes” = 0.042 , $p = 0.340$

Corr.(“organisation outcomes” and “enthusiasm”) “controlling for individual outcomes” = 0.444 , $p < 0.001$.

It can be seen that the correlation between “individual outcomes” and “organisation outcomes” is quite large. Also, it can be seen that when the correlation between “individual outcomes” and “enthusiasm for quality in organisation”, which is significant and positive, is controlled for by “organisation outcomes” the correlation becomes quite small and is no longer significant. These results therefore suggest that although “individual outcomes” are significantly positively related to enthusiasm, the variable “organisation outcomes” is a better overall predictor of “enthusiasm for quality in organisation”.

It can be seen from Tables 1 and 2 in Appendix 6L that the beta value for “active program involvement” shows a significant positive relationship for the whole sample but is not significant once quality specialists are removed from the sample.

The correlation between “overall workload increase”, see Table 1, Appendix 6L, and the regression results suggest that generally this variable is not a strong predictor of “enthusiasm for quality in organisation”.

6.2.7.2 Effectiveness of the Quality Management Approach (Q8,17)

Table 2 in Appendix 6L shows the regression results. It can be seen from the correlations in Table 1, Appendix 6J and from blocks 3 and 4 of the regression results that the two less quality specific measures of “organisational commitment” and “role ambiguity” are significantly related to “effectiveness of quality management approach”. With the introduction of variables in blocks 5 and 6, “organisational commitment” is no longer significant, however “role ambiguity” remains significant. From the results of block 6 the variables which best predict individuals’ belief about “effectiveness of TQM approach” are, in order of their beta values:

- a) Organisational benefits (product), positive beta
- b) Boss and colleagues program support, positive beta
- c) Education/training in quality, positive beta
- d) Role ambiguity, negative beta
- e) Organisational tenure, negative beta
- f) Gender, females more positive than males

These results suggest that individuals’ beliefs about the general effectiveness of the TQM approach are to at least some extent formed by their experiences and beliefs relating to the application of quality in their own organisation and in their own job role. Some theoretical grasp of quality through formal training and education would also seem to be important in forming their beliefs about the general usefulness of the TQM approach. It is noted that whether or not individuals believe that they are actively involved in their organisation’s quality program does not seem to be a significant factor in shaping their beliefs about the usefulness of the TQM approach.

6.2.7.3 Likelihood of “Increase in Overall Job Satisfaction” (Q1,16b)

The dependent variable here is a measure of the extent of an individual’s belief that an increase in their overall job satisfaction has resulted (or will result) from their quality program. It can be seen from the regression results, see Table 3, Appendix 6L, that in blocks 3 to 5 “organisational commitment” has a significant positive beta. Although “role conflict” and “role ambiguity” are both significantly correlated with “increase in job satisfaction” (see Table 1, Appendix 6K) the interaction with “organisational

commitment” nullifies their significance in the regression. In block 5 it can be seen that both types of support from important others – top management and boss and colleagues have significant positive betas. In block 6 the explanatory power of “organisational commitment” “top management support” and “boss and colleagues program support” are substantially reduced with the introduction of “organisation benefits” and “individual benefits”. This is not surprising as “individual benefits” includes some items directly related to job satisfaction and is therefore to some extent measuring the same thing. During data reduction using factor analysis “increase in job satisfaction” loaded onto both “organisational benefits” and “individual benefits”. In block 6 significant independent variables in order of their beta values are:

- a) Organisation benefits, positive beta
- b) Individual benefits, positive beta
- c) Devolution of responsibility, positive beta
- d) Top management program support and communications (product), negative beta
- e) Role conflict, negative beta

for the sample including quality specialist the variable “rewards based on quality performance” was also significant at the $p \leq 0.05$ (positive Beta).

6.2.7.4 Time Spent on Quality Related Activities (Q8,14)

It is shown in Section 6.2.12 below as might be expected that quality specialist spend significantly more time on quality related activities than do other job categories. The regression results for the sample excluding quality specialists is show in Table 4, Appendix 6L. “Organisational commitment” is a modest predictor, see block 3 and “role ambiguity” is also, see block 4. The following are the significant predictors in block 6 listed in order of size of beta:

- a) Perceived stage of program development, positive beta
- b) Individual benefits, positive beta
- c) Boss and colleagues program support, positive beta
- d) Gender, females spending more time than males
- e) Job Tenure, negative beta

It should be noted that removing the variable “perceived stage of program development” did not significantly alter the regression results. The relatively modest R squared value (0.19) is to be expected as respondents to the survey would be engaged in a wide range of different jobs. An important result is that “individual benefits” seems more important than “organisation benefits” in predicting the amount of time individuals spend on quality related activities. It should also be noted that whether or not individuals indicated that they were actively involved in their organisation’s quality program was not a significant predictor.

6.2.7.5 Regression Analysis for those Actively Involved in their Quality Programs

Regression runs were made using the enter method for the sample of respondents who indicated that they were actively involved in their organisation’s quality program (see Tables 5, 6, 7 and 8 in Appendix 6L). Two additional independent variables were included in the analysis. These were “program role clarity” and “program tenure”. Quality specialists were excluded from the sample. Regression runs were made using each of the four dependent variables discussed directly above.

The regression results with “enthusiasm for quality in organisation” as the dependent variable is shown in Table 5, Appendix 6L. It can be seen that the introduction of “program role clarity” in block 5 makes a significant difference to the predictive ability of the regression model. The beta value for the non quality program specific variable “role ambiguity” becomes not significant. The results in the final block are quite similar to those for the whole sample less quality specialists. The main difference is that the beta value for the newly introduced variable “program role clarity” is significant. “Program tenure” is not significant. Note that removing the variable “increase in overall job satisfaction” produced only minor changes in the regression results. Further removal of “perceived stage of program development” made no significant change to the results.

The regression results with “effectiveness of quality management approach” are shown in Table 6, Appendix 6L. The results are similar to those for the whole sample less quality specialists with two notable exceptions. Firstly, when “program role clarity” is

introduced in block 5, beta for “role ambiguity” becomes not significant. Secondly, beta for “education/training in quality” is not significant. As shown in Section 6.2.2.6 above 84% of respondents actively involved in their organisation’s quality program had received education/training in quality. The variable “program tenure” is not significant.

The regression results for “increase in overall job satisfaction” are shown in Table 7, Appendix 6L. It can be seen that the results are similar to those for the whole sample less quality specialists, with “organisational benefits”, “individual benefits” and “devolution of responsibility” all having significant positive beta values. Neither “program role clarity” or “program tenure” are significant.

The regression analysis results for “time spent on quality related activities” is shown in Table 8, Appendix 6L. It can be seen that “program role clarity” does not make a significant contribution to the regression equation, but “program tenure does”. “Role ambiguity” appears to be a more important predictor of “time spent on quality related activities” than does “program role clarity”. Therefore for this sample “job tenure”, “role ambiguity”, “program tenure” (has high correlation with “job tenure”), “perceived stage of program development” and “individual benefits” are the most powerful predictors of “time spent on quality related activities”. It should be noted that the R squared value is relatively small at 0.21. Note that removing the variables “program tenure” and “perceived stage of program development” reduced the R squared value to 0.20 but did not significantly alter the significance of other remaining independent variables.

6.2.8 Comparisons between those Actively Involved and those not Actively Involved in their Quality Programs (Q8,6)

Only in one of the regression analyses above in which the whole sample and the whole sample less quality specialists were examined was “active program involvement” revealed as a significant independent variable. This was using the whole sample with “enthusiasm for quality in organisation” as the dependent variable. To examine the impact of this variable in more detail independent t tests were carried out comparing

mean values for those who indicated that they were actively involved in their quality program with those who said they were not. Quality specialists were omitted from the tests. As expected there were significant differences between the two groups on most of the variables considered e.g. “organisation benefits”, “individual benefits”, “devolution of responsibility”, “top management program support and communication”, “boss and colleagues program support”, “role ambiguity”, “organisational commitment”, “enthusiasm for quality in organisation”, “time spent on quality related activities” and “effectiveness of quality management approach. In all cases, except that of “role ambiguity”, the mean value for the involved group was significantly greater than for the non-involved group. There was no significant difference for the variable “role conflict”.

This analysis using the whole sample can be misleading as can be seen from Table 7a in Appendix 6F that there are significant differences between organisations in the proportions of respondents actively involved in their quality program. Organisation 1 and organisation 20 had large enough samples of involved and not-involved to compare these two groups in each organisation. In the case of organisation 1 there was found to be a significant difference between the groups for the following variables: “role ambiguity”, “organisational commitment”, “enthusiasm for quality in organisation”, “time spent on quality related activities” and “effectiveness of quality management approach”. In all cases, except that of “role ambiguity”, the mean for the involved group was significantly higher than for the non-involved group. For organisation 20 for which the sample size was 97, there were significant differences for all of the variables tested except for “role ambiguity”. The results were similar to those given above for the whole sample excluding quality specialists.

6.2.9 Comparison of Items in Parts 2 and 7 of questionnaire

Part 7 of the questionnaire consisted of three items similar to those in Part 2, except the wording was slightly altered, the word “quality” was replaced with the words “quality program”. This item was included on a later version of the questionnaire and was used to check if the change in wording of the three items would elicit a significantly different response. As the original three items were retained on the questionnaire it was possible

to do a paired comparison between the two sets of questions. It can be seen from Table 6.7 that the correlations between the individual questions and the means of the three items is high. As would be expected from this result data reduction using factor analysis formed one factor when all six items, i.e. three from Part 2 and three from Part 7 were input (Cronbach's Alpha = 0.95). When the three items in Part 7 were subjected to factor analysis they formed a single factor Cronbach's Alpha = 0.94. These results suggest that whichever wording was used the results using these variables in multivariate analysis e.g. multiple regression analysis would be essentially the same. To test this multiple regression analyses were carried out using "enthusiasm for quality in the organisation" and "enthusiasm for the quality program" as dependent variables. The independent variables were the same as shown in Table 1, Appendix 6L. Only those respondents who had completed both parts 2 and 7 of the questionnaire were included in the regression. The regression results revealed only minor differences.

Table 6.7 Correlation between questions from parts 2 and 7 of questionnaire

Corresponding Items	N	Correlation
Q2,1 and Q7,1. I am very enthusiastic about applying [quality principles/our quality program] in my organisation	160	0.79
Q2,2 and Q7,2. I actively encourage others in my organisation to take an interest in [quality issues/our quality program]	160	0.74
Q2,3 and Q7,3. I am very willing to provide leadership [in the area of quality/in the quality program] in my organisation.	160	0.84
Mean of Q21, Q22 and Q23 and Mean of Q71, Q72 and Q73	159	0.84

A comparison between mean values for Part 2 and Part 7 was also carried out. The mean values of corresponding items were compared and also the means of three items in each part. A paired comparison was used that is the difference for each case was calculated and tested against the null hypothesis that the mean difference is zero. The results showed that comparing individual pairs of items i.e. Q2,1 with Q7,1; Q2,2 with Q7,2 and Q2,3 with Q7,3 (paired comparison using a t-test) only the means of Q2,1 and Q7,1 were significantly different (at the $p < 0.001$ level). Comparing the mean value of Part 2 questions with the mean value Part 7 questions there was a significant difference at $p < 0.01$ level (paired t-test). The mean values for "enthusiasm for quality in the organisation" were higher than those for "enthusiasm for the quality program".

6.2.10 Analysis by Organisation

In this section a comparison is made between the organisations which contributed data to the research. As discussed in section 5.6 of the Methodology the sample of participating organisations was to an extent a convenience sample. Therefore examining differences between organisations is useful in aiding the interpretation of the results. Organisations from which the questionnaire response was small were not included in this analysis. The analysis includes fifteen of the participating organisations, the minimum response being 17. This section presents descriptive statistics and statistical tests that explore differences between the fifteen organisations. Appendix 6E contains descriptive statistics and figures for these fifteen organisations. Statistical tests between organisations are presented in Appendix 6F. Appendix 6G presents results which test for the consistency of beliefs about organisational/individual program outcomes between respondents from the different organisations. In Appendix 6J the fifteen organisations have been ranked on a number of key variables. These results are now explained. Correlations between key variables for the fifteen organisations presented in Tables 1, 2 and 3 in Appendix 6K, have been discussed in Section 6.2.7 above.

6.2.10.1 Descriptive Statistics

These are contained in Appendix 6E. Table 1 shows some large differences in mean organisational tenure with a range from 8.2 years in organisation 10 to 25.6 years in organisation 4. Mean job tenure on the other hand is relatively consistent across organisations, the maximum being just 3.5 years. Table 2 shows that mean organisational commitment is relatively high in all of the organisations. For all of the organisations mean role conflict scores are higher than mean role ambiguity scores. Table 3 and Figures 3, 4, 5 and 6 show the extent of various kinds of support for the quality program. It can be seen that there are considerable differences between organisations on all of the four variables. For example, the extent of program support for the quality program from top management ranges from a high of 5.76 on the 1 to 7 scale to a low of 3.64. It can be seen from Table 3 that except for organisation 4 the mean values for the extent of top management support is higher than the mean values

for the extent of top management communications. Figure 5 shows that organisations with the exception of organisation 12 have generally positive beliefs about program support from their direct boss. Figure 6 shows the extent of program support from respondents' colleagues. It can be seen that apart from organisations 5 and 12 respondents are less positive about program support from their colleagues than they are from their direct bosses.

Table 4 clearly shows that the quality programs in the various organisations, as perceived by their employees, are at quite different stages of development in terms of a fully implemented TQM program. Table 4 also shows that for all of the organisations there is a strong belief that TQM is an effective approach to managing an organisation. The lowest average score for this item is 5.12 for organisation 20. There was also a generally high degree of enthusiasm for quality in the organisation across all of the organisations, the lowest mean being 5.15 for organisation 12. Table 5 shows that there are some quite large differences between organisations in the percentage of respondents who had received formal training/education in quality. Only in organisation 8 did all of the respondents indicate that they were actively involved in their organisation's quality program.

Figure 1 Appendix 6E shows that there are considerable differences across organisation regarding the likelihood that the quality program has or will result in positive outcome for the organisation. Respondents from organisation 2 clearly have the most positive beliefs about this program outcome. However, no organisational mean is below 4, the mid-point on the 1 to 7 scale, suggesting that there is a general belief across the organisations that quality programs will result in benefits for organisations. Figure 2 Appendix 6E shows by organisation, respondents' beliefs about positive outcomes for themselves resulting from their quality programs. It can be seen that there is considerable variation between organisations. Furthermore, the mean values for individual positive outcomes are lower than beliefs about positive company outcomes for all of the fifteen organisations (a more rigorous analysis of the relationship between beliefs about company outcomes and individual outcomes is presented in Section 6.2.9 below). It can be seen that there are a few organisations in which there is a modestly

strong mean belief that their quality program will result in positive benefits for respondents i.e. organisations 2, 9, 11 and 22. For the majority of these fifteen organisations the mean scores are below 4 which indicates that respondents from these organisations generally believe that it is not very likely that they will benefit personally from their quality programs.

6.2.10.2 Tests for Differences Between Organisations

Statistical tests for significant differences between organisations were carried out. These results are presented in Appendix 6F. Two types of test were used as appropriate. A one way analysis of variance (Oneway ANOVA) was used to test differences between mean values where variables had a suitable scale e.g. Likert scale. In cases where ANOVA indicated no significant difference in variance between means of organisations Bonferroni and Scheffé tests were used to report multiple comparisons of mean values. The Scheffé test is more conservative than the Bonferroni test. In some cases results of the less conservative LSD test are reported. In cases where ANOVA indicated a significant difference in variance between the means of organisations the Tamhane's T2 test was used to report multiple comparisons of mean values. Where variables are dichotomous, e.g. gender, a chi-square test was used to test for differences in cell counts.

6.2.10.3 Comparison of Mean Values

Tables 1 to 6 in Appendix 6F present the results. Tables 1 to 5 deal with variables on the questionnaire, Table 6 presents results of variables formed as a result of data reduction. The results confirm in a statistical way what appears to be the case when the company data is inspected. That is One-way ANOVA shows there are significant differences between organisation means at least at the $p < 0.05$ level for nearly all of the variables tested.

Those items for which there are reasonably consistent beliefs across the fifteen organisations i.e. the One-way ANOVA test was not significant, are worthy of emphasis. These items are “more emphasis on long-term planning”, for both importance (Q1,8a) and likelihood (Q1,8b), see Table 1. This outcome is considered of

relatively high importance across all the fifteen organisations with the likelihood mean ranging from slightly below 4 to modestly positive. The results for “more emphasis on long-term planning” are supported by the results for the questions on less overreacting to short-term goals (Q1,9a and Q1,9b). There is a consistent view across organisations on the “importance of maintaining or enhancing status” (Q1,14a) and also the importance of “improved chances of promotion” (Q1,15a). The range of mean values for both of these items is similar, minimum values being above 4 suggesting the items of reasonable importance to respondents. The importance of the programs resulting in “new important duties” (Q1,18a) had all mean values greater than 4. Table 2 shows that the means of three items were not significantly different. The consensus in all the organisations was that “greater accountability for job performance” was a desirable program outcome (Q6,4a). The range of means for the desirability of “an increase in overall workload” spanned from slightly undesirable to slightly desirable. There was a consensus between organisations that it was to some degree unlikely that quality programs would result in rewards based on quality performance (Q6,6b). It can be seen from Tables 1 and 2 that the majority of items for which there was no significant difference in means across organisations were importance or desirability rather than likelihood items. In other words they were mostly value measures rather than expectancy (belief) measures.

Also in multiple comparison tests relatively few organisations are significantly better in a positive sense than others across the rather large number of items shown in Tables 1 and 2. Of note in this respect are organisations 2, 1 and to a lesser extent organisation 11. Organisation 20 frequently is significantly lower in a positive sense than others in multiple comparisons. This trend is repeated in Table 3 which presents the results for items in Part 2 of the questionnaire and the mean of the three items i.e. a measure of enthusiasm for quality in the organisation. There are significant differences in means for all these four items and also organisation 2 and 11 have significantly greater mean values than a small number of other organisations.

Table 4 shows tests results for the items relating to important others. Only for two items are responses consistent enough to yield no significant differences between mean

values across the fifteen organisations. These items are both importance items firstly, the importance of top management making it easy for individuals to communicate their feeling on the quality program to them (Q3,6a), means all above 5, and secondly, the importance of colleagues supporting the quality program (Q3,9a) again mean values all above 5. In multiple comparisons organisations 1, 2 and 11 frequently score significantly higher than organisations 12 and 20. Higher scores for extent items means that there is more of a good attribute, such as support for the quality program.

Table 5 shows the results for variables from parts 4, 5 and 8 of the questionnaire. This included the established constructs namely “role ambiguity”, “role conflict” and “organisational commitment”. There were significant differences between means for all of the variables, except for “enthusiasm for quality in the organisation”. This item was one of the additional ones added to the revised version of the questionnaire (see Appendix 5B) and was completed by respondents in only two of the organisations being compared in this section of the results.

Table 6 presents results for sub-scales formed through exploratory factor analysis. Not surprisingly oneway ANOVA indicated significant differences between organisations for all of the sub-scales.

From this analysis of mean values across the fifteen organisations some have emerged as significantly better than some others in the extent to which respondents indicate they have positive attributes. Those organisation emerging as significantly better than others are organisation 1, 2 and 11.

6.2.10.4 Comparison of Categorical Variables

The following Chi-square tests were conducted for differences between organisations:

- a) The proportion of respondents in organisations indicating that they were actively involved in their organisation’s quality program (see Appendix 6F, Tables 7a and 7b). Result a significant difference ($p < 0.001$, no cells with expected values below 5)

- b) Gender balance between organisations (see Appendix 6F, Tables 8a and 8b). Result a significant difference ($p < 0.001$, 20% of cells with expected value below 5 – in acceptable range for this test)
- c) Proportion of respondents who had received education/training in quality (see Appendix 6F, Tables 9a and 9b). Result a significant difference ($p < 0.001$, 17% of cells with expected values below 5 – in acceptable range for this test)

6.2.10.5 Ranking of Organisations

A comparative ranking of the fifteen organisations on a number of key dimensions is presented in Appendix 6H, Table 1. A rank of 1 represents the most favourable position for all of the variables. The first item in Table 6 “program support and communications culture” is an attempt to combine a number of relevant variables into a single score. The score was formed by a weighted average of the relevant items from part 3 of the questionnaire. Details of how it was calculated are provided in Appendix 6H. It can be seen that a small number of the organisations appear generally to have higher ranks than the remainder. Taking a fairly arbitrary criterion of counting the number of ranks of 7 and below for each organisation, organisations 2, 4, 9, 8 and 15 have the highest number of ranks and organisations 7, 20 and 5 the lowest. In particular it is clear that overall organisation 2 emerges with the most favourable set of scores.

Overall the inter-company results show that there are a lot of significant differences between organisations and that a small number of organisations stand out as being significantly more advanced than the majority in their implementation of a quality culture. The more advanced organisations include organisation 2, 8 and 4.

6.2.11 Comparison of Organisational and Individual Program Outcomes

For the overall sample the results show that on average respondents generally value beneficial company outcomes from their quality programs more highly than beneficial individual outcomes. Also, respondents believed that beneficial company outcomes are more likely to occur from their quality programs than were outcomes beneficial to themselves. These results are shown in Figures 6.14 and 6.15. and have been discussed

in section 6.2.3 above. This result is an important one worthy of further investigation. In particular the overall results raise the question as to whether or not this pattern is consistent across the organisations in the study. To examine this, histograms similar to Figures 6.14 and 6.15 were drawn for each of the fifteen organisations for which a reasonably large sample size had been obtained. These suggested that this pattern was fairly general across the organisations. To test this more rigorously the following statistical procedure was carried out. For each respondent the ratio of the mean value of organisation benefit to mean value of individual benefit was calculated for both the importance and likelihood items. The items selected from part 1 of the questionnaire for this analysis were those that grouped together in the exploratory factor analysis. Item 16 was excluded as during factor analysis this item loaded onto organisation benefit and individual benefit factors. Ratios were calculated for each of the fifteen organisations by calculating the mean of the ratios calculated for their respondents. Details of the items included in this analysis are given in Appendix 6G. The ratios were printed in table form and examined and a one-way ANOVA was carried out to test for differences in the mean values of each of these ratios between organisations. Results (see Appendix 6G) showed that for importance the ratios of company benefit to individual benefit were greater than 1 for all fifteen organisations. Therefore there is a consistent view by respondents across all of the fifteen organisations that they believe positive outcomes from their quality programs are more important than positive program outcomes for themselves.

Two points should be noted when interpreting this result. Firstly, respondents were asked to rate the importance of outcomes in the context of their quality programs and not in a general way. Secondly, company outcomes consisted of a specified group of items and individual outcomes also consisted of a group of specified items, both groups identified through the use of data reduction using factor analysis. Statistical tests revealed that there was no significant difference in mean values between organisations but there were significant differences between the standard deviations of the ratio.

A similar result was obtained for the ratios of the likelihood of organisation benefits to the likelihood of individual benefits. Ratios were all greater than 1, indicating a

consistent belief by respondents across the fifteen organisations that organisation benefits are more likely to result from their quality programs than are benefits to themselves. Statistical tests showed that there were significant differences between the standard deviations of the ratio between organisations. However in the case of the mean values of the likelihood ratio one-way ANOVA indicated significant differences between organisations ($p < 0.05$).

These results therefore show a consistent pattern across the fifteen organisations regarding the relative importance and relative likelihood of organisation benefits to individual benefits resulting from respondents' quality programs in that the ratios are all greater than 1. In the case of importance there is no significant difference in the mean values of the ratio between the fifteen organisations whereas in the case of likelihood there is. For both importance and likelihood there are significant differences in the variability of the ratio between organisations.

6.2.12 Analysis by Job Category

Part 8, question 4 (Q8,4) of the questionnaire asked respondents to categorise themselves into one of seven broad job categories. The overall responses are shown in Table 6.2. One-way ANOVA and Chi-square tests were used where appropriate to test for significant differences between job category groups. When examining differences between these groups across a number of organisations it is possible that statistical tests using the whole sample could be distorted by an uneven spread of job types across organisations. For example a significant difference between two job categories may be due to one category being concentrated in one particular organisation and the other category concentrated in another organisation. To assess this possibility, to a least some extent, a cross tabulation of job category by organisation was carried out. This indicated that generally there was a spread of most job types over the participating organisations. All of the participating organisations were included in this analysis.

Appendix 6I shows the results of comparison of means but only for those variables where One-way ANOVA tests indicated a significant difference. A large number of

variables were found to be significantly different between organisations however there were relatively few variables for which there were significant differences between job categories. Also where multiple comparisons tests indicated a significant difference this was generally at the least conservative level (e.g. LSD). Some of the more relevant results will now be described.

As might be expected quality specialists scored significantly higher on a number of variables related to quality and their quality programs. They were significantly more enthusiastic about becoming involved with quality in their organisations than were the production, HRM or accounting job categories. Quality specialists also indicated significantly more support for the quality program from their direct bosses and colleagues than did marketing or HRM. They also had significantly higher scores than a number of other categories for the benefits of the TQM approach.

Some unexpected results emerged. For example those in HRM rated the TQM approach significantly more useful than did respondents from the production/operations/purchasing group.

Chi-square tests indicated significant differences between job categories of quality program involvement ($p < 0.001$). The lowest group for program involvement was accounting at 44% the next lowest being HRM at 52%. As might be expected the proportion of quality specialists that had received training/education in quality was significantly greater than other groups at 97% (only one of the 38 quality specialist had not received some formal training/education in quality). There was no significant difference between the other groups on this measure (a Chi-square test was run without the job category quality specialists).

The line/staff role concept is an old one and a significant number of respondents (42%) indicated that their job functions included both line and staff activities. Of the 58% those who felt able to classify themselves by these categories 40% had line roles and 60% had staff roles. It was hypothesised that because many of the ideas of quality evolved in the manufacturing industry and mainly in the operations area those working

in “hands-on” line positions would have more positive views on the value of quality and the application of quality in their organisations than those in staff positions. To test this t-tests were carried out on all variables where this difference might be expected to occur (see Table 7, Appendix 6I). There were no significant differences in attitudes towards TQM, the values placed on program outcomes or beliefs about program outcomes. Of note was that those in staff positions spent significantly more of their time on quality related activities than did those in line positions ($p < 0.05$).

These results of comparisons between job categories suggests that the quality specialist, who has a particular vested interest in quality and the quality program, generally holds more positive views on the benefits of the TQM approach and the benefits of quality programs to their organisations. However the results suggest that these distinctions do not exist between other job functions and between those who consider they hold a line or staff position.

6.2.13 Consistency of Beliefs about Quality Within Organisations

As discussed in Section 2.3.1 of the Literature Review there is no single meaning of quality and that the meaning of quality needs to be defined in any particular context. Furthermore there is also evidence that individuals often confuse different approaches to quality. It would perhaps be expected that organisations in which communication about quality was rated highly by respondents and more generally within organisations with a more advanced quality culture, that there would be greater consistency in the views of respondents about quality. Three aspects of quality were selected to examine the variability of respondents’ beliefs within organisations. These are: beliefs about the type of quality program in the organisation; the perceived stage of program development in the organisation and beliefs about the likelihood of program benefits accruing to the organisation.

Table 1, Appendix 6M shows the respondents’ beliefs about the type of quality program they have in their organisation. It can be seen that in not one of the fifteen organisations do respondents have a consistent view. In some organisations there is much more of a

consensus than in others. For example, in organisation 2, 25 of the 26 respondents agree on the approach to quality in the organisation. Organisation 2 has been identified as having one of the most developed quality cultures of those participating in the research (see Section 6.2.10.1). Whereas there seem to be considerable differences in the opinions of respondents from organisation 12 as to the nature of their quality program. More surprising is that in some cases there is a difference of opinion between quality specialists in the same organisation as to the nature of their quality program e.g. organisation 1.

Figure 1, Appendix 6M shows box plots for the perceived stage of program development in each of the fifteen organisations. It can be seen that there is a reasonably wide spread of scores in all of these organisations, with a small proportion of respondents in organisations 1, 2, 4, 9 and 22 indicating that these organisations have a fully implemented TQM program. There was no significant difference in variance between organisations ($p = 0.17$ test for homogeneity of variances – Levene statistic).

Table 2, Appendix 6M presents a comparison between the beliefs of quality specialists in the organisations and other job categories as to the stage of development of their quality program. Note that for some organisations there were no respondents who indicated that they were quality specialists. Although the sample sizes are too small for meaningful statistical comparison of the two groups it can be seen that in general the means are fairly similar. In seven cases others have rated their programs more developed than have their quality specialists, in five cases the reverse is the case. Thus there seems to be no trend in this respect. There is a rather large difference of belief between the two groups in organisations 2, 3 and 15. Of particular note is the result for organisation 1 where the quality specialist rating is well below those of the other respondents. One may have expected a more equal result as this company seems to have a well developed quality culture and in particular a high level of active program participation (92%).

Results for the last measure likelihood of program benefits is shown in Figure 2, Appendix 6M. This shows that the spread of responses between the upper and lower

quartiles (the box in the figure) is relatively consistent between organisations, being approximately one point on the 1 to 7 scale. As discussed above a one-way ANOVA test showed that there were significant differences in between mean values ($p < 0.001$) however there is no significant difference between variances ($p = 0.74$ test of homogeneity of variances – Levene statistic).

6.3 Qualitative Results

As explained in Chapter 5, Methodology, qualitative information was gathered in the following ways. The survey questionnaires contained an open-ended question and 285 of the returns (approximately 51% of total returns) contained a response to this item. After a preliminary analysis of the numerical questionnaire data, interviews were carried out with middle managers, senior managers and quality managers in ten of the participating organisations. The interview schedule (Table 1, Appendix 5H) provides a list of organisations visited. Background information on these organisations can be found in Appendix 5E. Appendix 5H contains examples of the questions that were asked during interviews. All of the qualitative data was transcribed and subjected to content analysis using NUD*IST software (NUD*IST 1997). NUD*IST requires the user to specify the shortest length of text for analysis purposes. In the case of questionnaire responses this was the total of what was written by each respondent, typically a few lines. In the case of interviews a sentence was the smallest text element used. This section is organised as follows: Firstly, the general themes resulting from the content analysis are presented. Secondly, some of the themes which are particularly pertinent to this thesis are identified and pertinent data presented. Lastly, qualitative data is presented to illustrate some of the more striking differences between organisations included in the study to illustrate the importance of context. Appendix 5I shows how the data was structured in NUD*IST. An example of data entry and an example of text coding are also presented in Appendix 5I. NUD*IST data was too voluminous to include in the thesis.

The following abbreviations are used to attribute comments to individuals and to aid cross referencing with the NUD*IST data base:

M.Mgr. = middle manager; S.Mgr. = senior manager; Q.Mgr. = quality manager;
Quest. = questionnaire data; Int. = interview data

e.g. M.Mgr. Quest 2.12 = Middle manager respondent 12 from organisation 2 comment made on his/her questionnaire return; S.Mgr. Int. Org. 12 = Comment by senior manager, interviewed in organisation 12.

6.3.1 Themes Resulting from Content Analysis

Content analysis revealed a large range of issues related to quality and quality programs. A number of the most frequently mentioned themes are listed directly below. Counts of the number of times a theme was mentioned are shown in parenthesis. Frequency counts for the questionnaire data and interview data are presented separately. The number of times a theme was mentioned in questionnaire responses is a useful measure of the extent of respondents' concerns about particular issues. The themes have therefore been listed in order of the frequency that they were mentioned on the questionnaire responses. Note that a questionnaire response often coded to a number of different themes. Also, respondents were specifically asked to relate events of particular impact related to quality, so one would expect a high count in this category.

- Program views – negative (113 quest. + 1 int.)
- Top management support/communications/leadership (66 quest. + 26 int.)
- Events of impact on the individual related to quality (57 quest. + 1 int.)
- Quality concepts/understanding quality (48 quest. + 14 int.)
- Cost benefit/bureaucracy related to quality (44 quest. + 4 int.)
- Quality assurance/ISO 9000 (32 quest. + 19 int.)
- Program views – positive (27 quest + 1 int.)
- Showcasing quality (the organisation using its success in quality for external and possibly internal publicity) (27 quest. + 3 int.)
- Views on quality – positive (26 quest. + 2 int.)
- Resource issues (23 quest. + 6 int.)
- Views on quality – negative (15 quest. + 1 int.)
- Quality awards (15 quest. + 5 int.)
- Training/education in quality (12 quest. + 11 int.)
- Middle managers (8 quest. + 39 int.)
- Devolution of responsibility (letting go of authority, working with groups) (5 quest. + 6 int.)
- Support from boss and colleague (3 quest + 14 int.)
- Program job satisfaction (2 quest. + 5 int.)

- Active program involvement (1 quest. + 13 int.)
- Clarity of program role (1 quest. + 6 int.)
- Motivation for quality (32 int.)
- Reward (internal to the organisation) for performance in activities related to quality (20 int.)
- Program outcomes for the individual (15 int.)
- Program objectives (13 int.)
- Personal enthusiasm for quality (11 int.)
- Comments on importance of individual program outcomes compared with organisational outcomes. (11 int.)
- Program outcomes for the organisation (7 int.)

The qualitative data will now be examined in the context of a number of themes that are particularly relevant to this research.

6.3.2 Meanings of Quality

The qualitative results support the notion that quality is perceived in different ways. A selection of themes relating to the meaning of quality are shown in Table 6.8. Some definitions are relatively straightforward, as might be found in a textbook on the subject of quality e.g. conformance to specifications. Some of the other definitions are more complex, e.g. describing quality in terms of an individual's perception of what it is or in term of a process such as continuous improvement. It is evident that some respondents had put considerable intellectual thought into trying to clarify what quality meant to them.

Table 6.8 Meanings of quality

Theme	Example
Conformance to specifications	"Quality is conformance to agreed specifications. A good organisation should be able to achieve it first time and every time..." (M.Mgr. Quest. 21.02)
Customers' requirements	"I have a strong focus on quality through customer satisfaction. To me quality is what the customer says it is rather than TQM, ISO 9000 etc. Without a degree of customer satisfaction all else would be a total waste of time." (M. Mgr. Quest. 22.20)
Quality is common sense	"To me TQM is just common sense and the most logical and effective way to run a company. i.e. I don't consciously think 'what is the quality way to do this?'. Thinking over what I have just said, this probably says, unknowing to me, the quality program is a success." (M.Mgr. Quest. 1.47).
Quality is whatever the beholder believes it is	"Quality is whatever the beholder decides to define it as. It is not necessarily conformance to specifications, in my view it is more to do with goodness." (M.Mgr. Quest. 2.23)
Quality is not a program	"Quality is an overall approach to managing all aspects of an organisation's processes to achieve sustained superior organisational performance. It is not a program..." (M.Mgr. Quest. 15.15)
Continuous improvement	"Above all else the value of quality is in all staff living the notion of continuous improvement..." (M.Mgr. Quest. 14.05).

The qualitative data shows that views on the meaning of quality can differ considerably between employees in the same organisation. This difference was well illustrated by the interviews that were carried out with managers in organisation 21, an engineering company. One middle manager interviewed with a lifetime of experience in the particular highly specialised industry had a strong production/product view of quality but with a strong sense of the importance of satisfying the customer in that respect. To him quality was about meeting customer needs through conformance to technical requirements. During the researcher's interview with him little understanding or apparent interest in the broader issues of TQM, such as continuous improvement, employee involvement, were indicated. In contrast the other middle managers interviewed in the organisation, who were considerably younger with much less experience in the industry, saw quality in their organisation from a broader TQM perspective.

As mentioned in Section 2.3.3 of the Literature Review quality management (TQM) is coming under increasing scrutiny from management theorists. They point out that a

major deficiency of TQM is its lack of theoretical underpinning, that there is no coherent theory of TQM. The main purpose of the present research was not specifically to explore this question, however it is pertinent to examine briefly the results, particularly the qualitative results, from this perspective. No respondent to the questionnaire or during interviews mentioned the lack of theoretical underpinning of TQM in a coherent way. This is perhaps not surprising as this issue was not specifically put to them. Some of the remarks made on the questionnaire and by respondents during interview were obliquely related to this issue. For example some said that TQM was a just a fad or fashion e.g. "I view it as yet another 'buzz word' process/fad that the organisation has taken on board..." (M.Mgr. Quest. 20.94)

A number of the definitions of quality also suggested the lack of theoretical underpinning (see Table 6.8). However it is significant that from a rather large sample of managers the issue of theoretical underpinning, that to some commentators is the very essence of the long-term utility of the approach, was not seriously questioned. There seems to be a general acceptance among those surveyed that the recipe as they understood it offered by TQM was a good one and there was no significant questioning of the theoretical basis of TQM, or any suggestion of a need for a theory to be articulated.

Only one person who was interviewed commented on the difficulty they had in understanding what quality meant. This was a person who clearly demonstrated a good deal of knowledge and practical experience in the area i.e. "*Do not really understand what it [TQM] is. I am not really enthusiastic about ISO but I am interested in the way processes are managed...*" (M.Mgr. Int. Org. 10)

6.3.3 Approach to Quality

As was discussed in Section 6.2.2.1 above organisations involved in the study generally used either a TQM approach to quality or TQM supplemented by having some processes certified to ISO 9000. Quite a large number of criticisms were directed at ISO 9000 and some of the criticisms of this approach were particularly strong.

Table 6.9 Some perspectives on the ISO 9000 approach

Theme	Explanation	Example
Too much bureaucracy	A belief that ISO 9000 entails using an excessive amount of clerical resources	"...I believe that there are elements of ISO 9000 which shouldn't be applied, because the value gained does not compensate for the cost of the paper-work/trail that is required. This means a lot of effort is applied for little gain, giving quality a bad name..." (M.Mgr. Quest. 1.02)
ISO 9000 conflicts with the aims of TQM	TQM approach and ISO 9000 approach (at least some aspects of ISO 9000) viewed as clashing rather than being integrated	"The bureaucratic approach to ISO 9000 - i.e. dot I's and cross T's, - promotes waste and inefficiency, something that TQM and process improvement is trying to eliminate." (M.Mgr. Quest. 11.06)
Main program aim is certification	A belief that the main aim of ISO 9000 is to obtain certification (the five ticks), rather than to improve business performance through for example better processes or better planning.	"The quality accreditation process has taken over the TQM principles it appears to me that ISO 9000 is a badge to wear and is not an attainment of excellence..." (M.Mgr. Quest. 1.51)
Inflexibility	A belief that ISO 9000 is too bureaucratic and is not adapted easily to particular contexts.	"... My understanding of quality is about reflecting a better way to the good way we currently work. ISO 9001 has/is destroying this goal with rigid formats/procedures that do not reflect the real way we work...." (M.Mgr. Quest. 1.51)

The main themes that emerged from the qualitative data relating to ISO 9000 are presented in Table 6.9. Perhaps the most important finding is the common theme from respondents in some of the organisations in the study was that the TQM and ISO 9000 approaches are incompatible. Negative comments related both to incompatibility between TQM and ISO 9000 from a conceptual point of view and from an implementation point of view. The ISO 9000 approach was seen by these managers as either hindering, degrading or even destroying the more laudable aims of their wider TQM program. The other themes listed in Table 6.9 – excessive bureaucracy, publicity focus, and inflexibility probably contribute to the belief of incompatibility between the TQM and ISO 9000 approach. Some managers when interviewed expressed reluctance to be involved with ISO 9000. For example it was evident from interviews with managers in organisation 10 that there was a degree of negative feeling and also uncertainty about the benefit of their ISO 9000 activities. This feeling was summed up by the Quality Manager who commented "*The jury is out on ISO 9000*" (Q.Mgr. Int. Org. 10). One of the middle managers commented, with a degree of seriousness, that

she had been avoiding getting involved in ISO 9000 for the last two years (M.Mgr. Int. Org. 10). Not all the comments related to ISO 9000 were negative. Organisation 2 reported that they had successfully integrated ISO 9000 certification into their overall TQM program. They also integrated data collection for ISO 9000 with ISO 14000, an environmental standard, which they were also implementing. Prior to the implementation considerable thought had been given to the likely benefits of the implementation and to how ISO 9000 would be integrated into their broader quality program. Never-the-less the general message in the qualitative data as regards ISO 9000 was rather negative.

The quantitative results showed that there was generally a strong belief among respondents that TQM was an effective way to manage an organisation, see Section 6.2.2.4 above. Quantitative data also indicated that generally respondents' beliefs about the actual effectiveness of their quality programs in terms of outcomes (see Section 6.2.3.2 above) were much more modest. This dichotomy between belief about the supposed benefits of TQM and actual program effectiveness was supported in the relative frequency of related themes listed in section 6.3.1 above. It can be seen that there were more positive questionnaire responses related to views on quality than negative ones (26 and 15 respectively). So views on quality *per se* were generally positive. However there was a large number of negative views about organisations' quality programs. Negative program views head the list in section 6.3.1 with 113 questionnaire mentions. On the issue of program benefits there were significant differences between the views of respondents in different organisations. It has been established that most of the quality programs in organisations consisted of a broad TQM like program with some ISO 9000 certification. To some extent therefore the gap between respondents' views on the value of the TQM approach and their view on program effectiveness may be due to the clash reported in some cases between TQM and ISO 9000. Notwithstanding the TQM/ISO 9000 issue the qualitative data reinforces the notion of a gap between many respondents' beliefs about the potential benefits of TQM and their beliefs about its effectiveness in practice in their own organisations. A number of respondents comments were of the form: TQM is a good idea but... Some examples will illustrate:

"I have no complaint with the concept of quality management. What I do complain of is the time involved in the process. I cannot but help believe that we are showcasing quality to the world at large" (M.Mgr. Quest. 1.04).

However there were a number of respondents who seemed to question the whole quality approach for example:

"General reading indicates that QM/TQM failed in Japan and USA and the trend nowadays appears to be away from these principles. Also appears overly time consuming. Time could be better spent more productively." (M.Mgr. Quest. 1.45) and

"I think quality is tired and well past its day. I think the organisation (and staff) are sick of quality, and immediately cringe when it is mentioned. Perhaps it has so permeated the culture that it seems like common sense. I would be happy never to hear the word quality again." (M.Mgr. Quest. 20.47)

6.3.4 Confusion over Approaches to Quality

As well as the difficulty in defining what quality means a number of questionnaire respondents and some of the managers interviewed believed that individuals are often unsure or confused about different approaches to implementing quality, in particular confusion between the TQM approach and the ISO 9000 approach. The following comments illustrate this, the first two are opinions supporting the notion of confusion and the last comment provided an example:

"...I believe a lot of the trainers, consultants tend to confuse the issue of quality. I would like to remove the word quality and replace it with smart business practice..." (M.Mgr. Quest. 1.46).

"People confuse QA with TQM still" (S.Mgr. Int. Org. 1)

"The ISO 2000 (sic) can verge on total quality madness with organisations going through considerable pain for the benefit of consultants etc, and to achieve certification..."(M.Mgr. Quest. 10.12).

6.3.5 Positive and Negative Program Views

Table 6.10 presents a selection of issues related to negative and positive views on quality and quality programs. The list demonstrates the wide range of issues raised by managers with respect to quality. There were more negative comments regarding program views than there were positive ones on the questionnaire returns (approx. 113 negative and 27 positive). To what extent this ratio is influenced by individuals being more likely to remember and therefore mention problems rather than success is a moot point.

Table 6.10 Program views

Negative program views	Positive program views
ISO 9000 approach Does "real" quality exist? Too much paperwork, bureaucracy, time consuming, complex and not cost effective Accreditation and AQA awards don't help practical problems of management Patchy commitment Changes in commitment Not understanding where quality fits into "the big picture" Management commitment Inadequate resources Lack of feedback on projects Quality presented as a panacea Work culture hostile to TQM Sub-optimization - departments not cooperating Lack of quality in senior management Deadlines subsume quality Insufficient training Concentrating too much on one aspect of quality e.g. product quality	TQM a good concept Program ensures company has future market Quality tools effective QA forced us to deal with neglected issues Documentation of process makes my role easier Observed companies that have developed TQM to a high level also perform well in the long term Using TQM makes for quality and enhanced profitability Applying TQM and QA forces you to understand your processes and have greater confidence in quality of your output Best practice via TQM is an essential tool for long term survival Quality practices involving all levels tend to create a more proactive communicative and stable environment Quality principles benefit organisation by empowering staff Strongly in support of continuous improvement principles TQM motivates people which leads to greater job satisfaction which leads to improved quality which leads to better customer satisfaction Made my job easier

6.3.6 Questioning the Effectiveness of Applying Quality

The quantitative results indicated a general belief of middle managers that their organisations should benefit from their quality programs. However a significant number of middle managers questioned the particular aspects of the way in which their quality program was applied. Some of the more common themes in the data are presented in Table 6.11. These themes relate to the complexity of the approach, the presence of excessive bureaucracy and the notion that “quality work” is different – often an addition – to regular work.

There were a considerable number of criticisms about what individuals considered excessive bureaucracy and “red tape” associated with their quality programs. In many instances this criticism was related to the ISO 9000 approach. In organisation 2, identified by data collected in this research as one of the leading organisations in the group participating, an effort seemed to have been made to reduce the amount of bureaucracy involved with quality. Two of the middle managers interviewed mentioned this as a positive development.

Considering quality work to be different or additional to regular work indicates a lack of integration of quality practices or a misunderstanding of what “quality work” is. In some organisations participating in the study a definite effort was made to achieve integration of quality practices into employees’ roles. The writer was told that one organisation specifically tried to do this by taking what they described as a covert approach to quality (Q.Mgr. Int. Org. 4).

A number of comments related specifically to the cost effectiveness of the quality program. Was the effort involved in the program worth the benefits (if any) achieved? Few of these comments presented data or gave a practical example that demonstrated that cost effectiveness had been measured in a convincing way.

Table 6.11 Themes relating to effectiveness

Theme	Explanation	Examples
Simpler, more cost effective methods exist	A belief that the outcomes achieved or expected to be achieved from the quality program could be achieved in easier and perhaps more cost-effective ways.	"Yes, when tested (quality) for outcomes it is laborious, not simple, a system where the same results can be achieved with simple and less costly methods. Quality does not equal better." (M.Mgr. Quest. 1.43)
Excessive bureaucracy, red-tape and paper trail	A belief that the amount of quality program administration in terms of paper work was excessive. A number of these beliefs were linked with the ISO 9000 approach. Excessive administration could delay action.	"Program involves massive amounts of people's time and energy preparing standard procedures, which are not used and are not standard." M.Mgr. Quest. 15.03) "Administrative workload involved in assisting operations of TQM is always underestimated and undervalued." (M.Mgr. Quest. 18.03)
Quality part of my job?	A belief about whether or not quality related activities/ quality program activities are part of one's job. Such activities can be viewed as an additional burden or as accepted as part of one's job.	"The most difficult task is convincing people that adding quality processes to their work does not mean additional work." (M.Mgr. Quest. 4.08)

6.3.7 Top Management Support

The importance of top management support to quality program success was made quite clear from the number of questionnaires with comments on this issue (66 - the second highest see ranked list of themes in section 6.3.1 above) and the from the company interviews. Quite a large number of themes emerged from the content analysis, and the main ones are presented in Table 6.12. The majority of comments on top management support on the questionnaires related to perceptions of negative behaviours. In some cases however there were very positive comments related to top management support. For example the following comment was made on a questionnaire return from company 2, which has been identified in the quantitative analysis as being in the views of respondents very supportive of their quality program : "...*This organisation has been blessed with senior management absolutely committed to quality improvement as a total philosophy across the company...*" (M.Mgr. Quest. 2.16). In this organisation the quality manager was a director and it was evident that he took a leading role in sustaining the program.

Table 6.12 Themes relating to top management support

Theme	Explanation	Example
Resourcing quality	The provision of adequate resources – materials, time, training, implementing improvement projects etc	“Lack of support for TQM processes by way of funding to maintenance and capital projects forces a fire fighting existence which basically prevents forward movement to quality actions.” (M.Mgr. Quest. 18.05) “Top management want the system, but want it for free.” (M.Mgr. Int. 10)
Paying “lip service” to quality	Middle managers seem to judge support by action rather than words. Lip service is where the words are perceived as rhetoric and not matched by appropriate actions, e.g. provision of adequate resources.	“The most negative influence is hearing lip service from senior management but when it comes to action they are generally slack. Makes it difficult to keep staff focused and enthused” (M.Mgr. Quest. 10.28)
Constancy of purpose	Perception of top management’s ability to maintain continuity of commitment to quality initiatives.	“Lack of real support by executives to foster TQM. We started off with a rush but now we need a new injection of enthusiasm” (M.Mgr. Quest. 5.24)
Chief Executive Officer support	Support for the program from the CEO or general manager.	“Quality at “company X” was strongest when “Y” was CEO. Since then it has withered on the vine”. (M.Mgt. Quest. 20.79) “New general manager must state his commitment to quality initiatives currently underway, top management commitment to the program is vital” (M.Mgr. Quest. 6.04).
Differentiated support	A perception that top management support quality in some departments or areas of the organisation more than in others	“Top management support quality in T and D and purchasing but not sales or marketing” (M.Mgr. Int. 10)
Forcing quality	A perception that quality has been imposed on the organisation by top management, without adequate consultation	“I have seen too many elements of this organisation take on quality programs for the sake of taking them on or because they have been instructed to do so...” (M.Mgr. Quest. 15.03) “Constructive criticism of the program won’t be tolerated.” (M.Mgr. Quest. 1.61)
Showcasing quality	A perception that the quality program is being used excessively to create an external image for the public or customer consumption.	“... We only do what we think customers will admire us for. image over real value.” (M.Mgr. Quest. 20.06)
Self interest/self promotion	A belief that management generally or perhaps some individual senior managers use the quality program in a divisive way for their own gain.	“Executive management only accepts quality initiatives if they suit their personal agenda. Staff try hard and are committed to TQM principles but only receive support and recognition when it suits senior management.” (M.Mgr. Quest. 20.72)

Showcasing quality was mentioned by number of respondents in a negative way. It is clear however that using success in a quality related endeavour, such as winning a quality award or gaining ISO 9000 certification can be an effective way to enhance an organisation's image in the marketplace. The possible negative connotations of showcasing quality were taken particularly seriously by organisation 3. This organisation had decided not to enter for an Australian Quality Award because of the possible negative reaction by employees. They considered that the feeling of program ownership by employees might be diminished if they perceived a primary aim of the program to be external publicity rather than internal improvement (Q.Mgr. Int. Org. 3).

It is evident from the information provided that a change of CEO can result in a profound change in the direction and status of a quality program. The most dramatic example of this is organisation 20 where in the view of many of the questionnaire respondents the commencement of a new CEO gave rise to the decline of the well established formal quality program. The questionnaire survey was carried out shortly after the appointment of a new CEO in organisation 20. This case is discussed in more detail in section 6.3.16 below. In contrast to the case of organisation 20 the new CEO in organisation 8 was seen as a strong supporter of the organisation's quality program as illustrated by this comment from the organisation's quality manager: "...*The new MD is an advocate of quality and has made his views known about this.*" (Q.Mgr. Int. Org. 8).

The provision of resources, particularly time to spend on quality related activities, was the subject of many comments. Evidence of adequate resourcing of the quality program was an important way in which middle managers gauged real as opposed to rhetorical support for quality in their organisations. Types of resources mentioned were funds to run projects, funds for training in quality and perhaps most widely mentioned allocation of time to work on quality related projects.

Constancy of purpose for the quality approach is perhaps one of the most difficult requirements to be asked of top management. The possibility of discontinuity due to the appointment of a new CEO has already been mentioned. Constancy of purpose seemed to be a central feature of some of the companies that had been most successful at

implementing TQM. Constancy of purpose is well illustrated by the diagram of the quality history of organisation 1, shown in Appendix 6N (S.Mgr. Int. Org. 1). Although the focus of their quality initiatives have changed over the years and there have been some setbacks top management has show an underlying commitment to their quality program.

6.3.8 Support from Direct Boss and Colleagues

The quantitative results indicated that middle managers generally believed that program support from their direct boss and from their colleagues in general was a very important factor in shaping their enthusiasm for quality in the organisation and encouraging them to be involved in quality related activities. This issue was probed during interviews. A range of views were expressed. The issue is complex as the importance of support from boss and colleagues and the consequences of this seem to depend to some extent on how quality activities are organised in organisations. There was a minority view among middle managers interviewed that they would try and work in a quality way even if there was a lack of quality culture in their organisation. However they acknowledged this would be difficult : *"... would find it difficult working in a 'non-quality' company but would try and interest them in it – show them."* (M.Mgr. Int. 10). A more usual view was expressed by a middle manager involved in research and development activities: *"If my direct boss did not support the quality program, why [should I] do it?"*(M.Mgr. Int. 10). In the organisations visited quality activities were usually implemented through team activities. Some middle managers emphasised the importance of general commitment among team members: *"... team views are important in influencing my attitude to quality, I think of the team views on quality as being separate from top management 's view"* (M.Mgr. Int. 21). Quality improvement initiatives often involve processes that involve more than one functional area. The importance of having general support for such quality initiatives was mentioned by a number of interviewees: *"All colleagues are motivated now [towards the quality program]. Expected that you would participate. If you did not have support from colleagues it would make it difficult. This was the case 5 years ago. We as designers*

adopted the approach [TQM], process operators did not see the need..." (M.Mgr. Int. 22)

6.3.9 Events Related to Quality Having an Impact on Individuals

The open ended question on the survey questionnaire invited respondent to provide details of events that had particularly influenced their view on quality or their quality program. Experiences mentioned most frequently were training/education in quality, learning from other organisations that had a quality program and involvement with organisations related to quality especially the Australian Quality Council (AQC). Eight questionnaire respondents mentioned involvement with the AQC, either working for them as evaluators on quality award submissions or working within their own organisations on award submissions or reporting the impact of visiting AQC demonstration sites. Respondents considered that these experiences strengthened their commitment to TQM: *"Writing AQC submissions [a significant experience]. The linking of our business management model to AQC criteria provided a clear framework for embedding the quality philosophy in our approach to the business. I find this an excellent tool in management training."* (M.Mgr. Quest. 8.16).

Four respondents commented on the impact training or education in quality had on them: *"Training in 1988/9 in TQM as a young manager set up my own management philosophy"* (M.Mgr. Quest. 22.16).

Sixteen questionnaire respondents mentioned job experiences as having a significant influence on their attitude towards quality. Most of the experiences mentioned encouraged positive beliefs about quality or the quality program. The kinds of events mentioned were witnessing positive program results, believing that the quality program changed organisational culture and various kinds of involvement in quality related activities e.g. *"Some processes in my area have demonstrably been improved by the TQM approach"* (M.Mgr. Quest. 14.01). A lack of following through projects or failing to provide feedback was given as an example of a demotivating experience e.g. *"Lack of*

information on outcomes. Lack of goal post settings for implementing suggestions” (M.Mgr. Quest. 6.36).

6.3.10 Beliefs about the Relationship Between Organisational and Individual Program Outcomes

The quantitative results showed that in general middle managers valued in terms of a program outcome organisational benefits more highly than individual benefits. Also middle managers generally believed it more likely that their quality programs would result in greater benefits for their organisations than for themselves. This issue was explored during interviews. Generally individuals interviewed believed that the primary purpose of their quality program was to produce benefits for their organisations e.g. *“Business improvement is the point of doing quality, employee satisfaction may improve.”* (Q.Mgr. Int. Org. 3). Several interviewees identified a link between improvements in their own organisation resulting from their quality programs and improvements for themselves e.g. *“If the company improves then things will improve for me.”* (Qual. Mgr. Int. 3). Others expressed a more holistic view that their organisation, employees and their customers all benefit from the quality program e.g. *“Who benefits from your program? Certainly the company, individuals, departments and customers...”* (M.Mgr. Int. Org. 2).

6.3.11 Middle Managers’ Observations of Program Impacts on Themselves

Positive program benefits for middle managers emerged at a number levels. Firstly, a number of respondents mentioned the benefits to themselves of their programs resulting in improved processes. Their jobs became easier and they were able to understand better how their operation fitted into the organisation: e.g. *What do you get out of your quality program? “Greater understanding of my own needs, less frustration. Better understanding of how my processes fit in, growth and leadership”* (M.Mgr. Int. Org. 2). Secondly, some interviewees were encouraged by the program producing better results. Examples given often had an operations nature such as improved process performance e.g. *“... things getting finished, jobs getting done...”* (M.Mgr. Int. Org. 10). Lastly, some

middle managers recognised advantages for themselves in more holistic terms recognising for example that the quality program had contributed to bringing about wide cultural change in their organisation. The program led to better relationships between departments.

“...Two years ago I would have said quality was negative for my career. It’s different now not a necessary evil, it’s an approach to business improvement, ways of doing things better. I get job satisfaction from improvements but not from the bureaucracy...”
(M.Mgr. Int. Org. 10)

6.3.12 The Changing Role of Middle Managers

A number of interviewees believed that the role of middle managers was changing in their organisations. Senior managers and quality managers interviewed all considered that middle managers had a key role in their quality programs. Some saw their middle managers’ role in quality as very much a traditional middle management role of interpreting and implementing instructions from senior management: *“Middle managers are the worker bees of the organisation. Senior managers’ role is leadership, tend not to be hands-on, middle managers tend to do the leg work.”* (Q.Mgr. Int. Org. 10)

Others saw the role of middle managers changing to include more leadership: *“Middle manager’s role is important and changing. Role is moving towards leadership from control and to mentoring. Middle managers still have an important communication role. See this as being more effective than through the unions. Takes power back from the union delegates, back to management.”* (S.Mgr. Int. Org.2). This manager also considered that middle managers were the people in his organisation most threatened by change: *“... middle managers still have to demonstrate that they have a role”*.

It is also clear that in most of the organisations in this research some middle managers play a more strategic role in quality. An example is subject “A” interviewed during the exploratory interviews in organisation 8 (see Chapter 3, Exploratory Interviews).

An important role for some middle managers who are actively involved in quality in their organisations is implementing a quality culture in their own areas. As demonstrated by the following example this is sometimes a difficult task: *“I have found the process of implementing a quality system and culture within the branch a difficult one. Most of the staff come from an engineering or technical background and find it difficult to interpret the ISO 9000 requirements..... I find it an up hill battle most of the time when I attempt to recommend direction or action only to be rejected or opposed. Never-the-less, the culture within the branch is slowly but surely changing.”* (M.Mgr. Quest. 1.51).

6.3.13 Resistance from Middle Managers

Literature suggests (see Section 2.2.9 of the Literature Review) that middle managers can be effective in blocking initiatives such as a quality program. Evidence of this kind of behaviour was explored during interviews, particularly interviews with top managers and with quality managers. This issue seemed to be a particularly sensitive one and some interviewees were reluctant to discuss the issue in any depth. It was evident however in at least two of the organisations where interviews were carried out that middle management resistance to the quality program had been a problem. The most evident case was in organisation 1. The quality manager in this organisation pointed out that the organisation was not effective in getting middle management support for their quality initiatives in the early 90s. Feedback from a quality award submission highlighted the problem of middle management resistance and the need to get the message about the quality program across to middle managers in a more effective way. The quality manager's current view of their current situation was that middle managers were part of management and were the change agents in the organisation, although he believed they did not generally see themselves as change agents. A senior manager interviewed in the organisation corroborated the problems experienced with middle management resistance in the early 90s. He explained that the problem was addressed in a very direct way by improving communications about the quality program with branch managers and in particular asking them collectively if they wanted the organisation to continue its quality initiatives. Middle managers supported the approach

and the initiatives continued. If they had not then the approach would have been abandoned.

The quality manager in organisation 6 also mentioned some resistance from middle managers to the start of their quality program. He saw this in terms of them jockeying for position. The pilot interviews carried out in this organisation (see Chapter 3, Exploratory Interviews) clearly show large differences in the level of participation in quality related activities between the four individuals interviewed.

Some of the negative views expressed about quality programs by questionnaire respondents are quite strong. Whilst these kind of views in themselves do not demonstrate resistance towards the individual organisation's quality program they do suggest that non-cooperative type behaviours are likely to occur in some cases.

6.3.14 Views on Rewards for Quality Related Activities

During interviews the issue of rewarding individuals or groups for quality related activities was discussed. A number of the organisations visited had reward systems operating. A number of intrinsic rewards were mentioned as relating to involvement in the quality program. Already mentioned above some middle managers stated that changes in the way work was organised resulting from their quality programs increased their job satisfaction. A number of middle managers interviewed seemed particularly enthusiastic about quality and were actively involved in quality related activities. These individuals seemed to have a strong belief in the underlying philosophy of TQM and applying it in their organisations.

A number of organisations had schemes to reward particular quality initiatives. Some examples are theatre tickets, lottery tickets, cash, share plans, trophies and vacation trips. The general view expressed by managers interviewed was that although these kinds of rewards could be useful in motivating staff they had to be carefully managed. For example, awards could cause problems if some individuals believed the process involved in deciding recipients was unfair. Some examples will illustrate:

“Have had several schemes giving tangible rewards. Have to revitalise these every 2 to 3 years. Have suggestion scheme, relatively low response.” (S.Mgr. Int. Org. 1).

“I think awards for quality [in the organisation] although dangerous to administer should be at an individual level...Rewards contribute to the formation of management culture...Some sarcasm over people getting awards e.g. if a business unit is not making its numbers then why are people working there going on a company paid holiday...” (Q.Mgr. Int. Org. 3).

“Rewards are useful but not perfect. Sometimes people get rewards when not deserved.” (M.Mgr. Int. Org. 2).

“Sometimes more fuss is made of achievement than is warranted...(M.Mgr. Org. 2).

“Do not like them [rewards], they separate quality from the rest of work. Works against integrating quality...” (Q.Mgr. Int. Org 1).

6.3.15 Motivators and De-motivators

Employees interviewed were asked what particularly motivates or de-motivates their involvement in the quality program. Some examples of motivators mentioned are:

- an interest in process development
- personal career motivation
- business planning based on the Australian Awards Model
- gaining a better understanding of processes
- gaining an understanding of what other departments do
- when the present system hurts enough
- pride in work, seeing a good product going out and
- getting people involved, cross fertilisation of ideas.

Some of the de-motivators mentioned are:

- paperwork of the ISO system
- longer hours, struggle to resource projects
- other people whinging about quality
- holding back good ideas to get them perfect and
- a lot of work on something that does not get off the ground

The importance of selecting suitable improvement projects that have a reasonable chance of being implemented was mentioned by several respondents and interviewees e.g. *“Quality teams must only be used to solve an identified problem. This organisation used to have an attitude of form a team and find a problem to solve. This does not work, and makes employees very sick of quality teams...”* (M.Mgr. Quest. 22.19). This issue was also raised by subject “A” interviewed during the exploratory interviews (see Chapter 3) who stated that the biggest crime in quality was ignoring recommendations.

6.3.16 The Importance of Context

The quantitative results showed that there are considerable differences between organisations in this study on many of the variables related to quality. Some organisations such as company 2 emerged as leaders in quality whilst others for a variety of possible reasons were lagging behind. Two examples will illustrate the importance of context in understanding how beliefs and attitudes may be formed.

Organisation 20 had been considered a leader in the implementation of TQM. At the time the questionnaire survey was administered a new CEO had been recently appointed and the strategic direction of the organisation was under review. This included possible downscaling or abandoning their quality program altogether. Comments clearly indicated this state of affairs with formal quality activities being wound down. Some respondents lamented the passing of quality and the disbanding of what they saw as effective quality groups. Others thought that the quality approach had seen its day and that it was time to change. Some thought the quality program should be revitalised. The quantitative results reflect this situation, only 41% of respondents reported that they were actively involved in the quality program, although a relatively high proportion

(71%) said that they had received training/education in quality. In a measure of program support and communications culture (see Table 6, Appendix 6E) this organisation, despite its quality heritage, was ranked 14th out of the 15 participating organisations that were compared.

Organisation 10 had a developing quality program using a TQM approach together with some ISO 9000 certification. Interviews with two middle managers, the quality manager and the Director of HRM clearly showed a shared concern about the lack of resources, particularly time, for quality projects. The resource issue was also mentioned by a number of questionnaire respondents from the organisation. Despite this difficulty there was a general air of enthusiasm for quality in the organisation. The quantitative results supported this latter observation top management support and communications being ranked 5th highest of 21 organisations in the study. A plausible explanation is that shared knowledge of problems, due to effective communication about the quality program, ameliorated middle managers' adverse reaction to scarce program resources.

6.4 Summary of Hypotheses Test Outcomes

Table 6.13 below provides a summary of the outcomes of the ten hypotheses addressed in this research.

Table 6.13 Summary of hypotheses test outcomes

Hypothesis	Comments
Hypothesis H1: Middle managers generally believe that the TQM approach to managing an organisation is useful and effective.	Supported. See Section 7.2.1 of the Discussion.
Hypothesis H2: The attitude of a middle manager towards his or her quality program (and towards support for the program) will be related to the product of the value he/she places on outcomes (outcomes affecting the organisation and outcomes affecting the individual middle manager) from his/her organisation's quality program, and his/her beliefs about the likelihood of these outcomes. Generally positive program attitudes will be related to the product of a) positively valued outcomes that are believed likely to occur and b) negatively valued items which are believed unlikely to occur.	Generally supported. See Section 7.2.3.4 of the Discussion.
Hypothesis H3a: There is a positive relationship between a middle manager's perception of top management support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the quality program.	Supported. See Section 7.2.5.6 of the Discussion.
Hypothesis H3b: There is a positive relationship between a middle manager's perception of his/her direct boss's support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the program.	Supported. See Section 7.2.5.6 of the Discussion.
Hypothesis H3c: There is a positive relationship between a middle manager's perception of his/her colleagues' support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the program.	Supported. See Section 7.2.5.6 of the Discussion.
Hypothesis H4: Middle managers who are working in operations type jobs will generally have more positive views on the TQM approach and towards their organisation's quality program	Not supported. See Section 7.2.6 of the Discussion.
Hypothesis H5: Middle managers who are quality specialists in their organisations will have the most positive attitudes compared with other middle management groups towards the TQM approach and to their organisation's quality programs.	Supported. See Section 7.2.6 of the Discussion.
Hypothesis H6: Generally those employees who consider themselves actively involved in their organisation's quality program will have more positive attitudes and beliefs about their programs than those who do not consider themselves actively involved.	Partial support. See Section 7.2.7 of the Discussion.

Continued over/

Table 6.13 Summary of hypotheses test outcomes (continued)

Hypothesis	Comments
Hypothesis H7: Middle managers who have received training/education in quality will have a significantly more positive attitude towards the TQM approach in general and to quality programs based on TQM in their own organisations than middle managers with no training/education in quality.	Generally supported. See Section 7.2.9 of the Discussion.
Hypothesis H8: Middle managers' attitudes towards their quality program will be positively related to organisational commitment and negatively related to both role conflict and role ambiguity.	Supported for org. comm. & role ambig. but not for role conflict. See Section 7.2.10.1 of the Discussion.
Hypothesis H9: For middle managers actively involved in their organisation's quality program there will be a positive relationship between their attitudes to the quality program and their perception of the clarity of their role in the program.	Supported. See Section 7.2.8 of the Discussion.
Hypothesis H10: Generally variables which are quality specific in that they related directly to aspects of quality in the organisation will be more powerful predictors of an individual's general attitudes to quality than will more general job role or organisational variables.	Supported. See Section 7.2.10.1 of the Discussion.

CHAPTER 7
DISCUSSION OF RESULTS

7. DISCUSSION OF RESULTS

In this chapter the results will be discussed in relation to the overall research question *i.e. what factors are important in forming the attitudes of middle managers towards quality programs in their organisations*, and the various hypotheses outlined in Chapter 4 will be addressed. Where appropriate the results of this research will also be compared to published research findings. A position taken in this research is that the co-operation and involvement of the middle management group in an organisation's quality program is important for its success (see Section 1.3 ii of the Introduction and Rationale). The strength of this position will be discussed.

It is considered important that the results of this research are interpreted in the context of limitations in the methodology. As Dawson (1994) (see Section 2.3.5 of the Literature Review) points out it is important to understand the context in which change, such as the introduction of a quality program, takes place in order to understand the change process. In the present research participating organisations did not constitute an homogeneous group. The organisations were drawn from different types of organisations from both private and public sector (see Appendix 5F). In some cases it was not possible to obtain all the contextual information that the writer would have liked. It was evident that some of the organisations involved in the study were very sensitive about revealing details of their quality programs, especially aspects that might be considered in a negative way. This sensitivity was encountered during visits to some of the organisations when interviewing mainly from senior managers. The scope and general frankness of comments received from the questionnaire survey suggests that such sensitivity was not an issue with the questionnaire method of collecting data. There is also a possibility of non-response bias in the questionnaire data.

This chapter begins by discussing the characteristics of participating organisations and the middle managers who work in them. This is followed by a discussion of the results relating the central issue of the research, namely how middle managers' attitudes toward quality and their organisations' quality programs are formed. The main research

hypotheses are also addressed in this section. The next section discusses other findings of importance that have resulted from the research. The following section addresses the position taken in this research on the importance of middle managers to the successes of quality programs. Reflections on the strengths and limitations of the methodology and suggestions for future related research are presented in Chapter 8 - Conclusions and Recommendations.

7.1 Participating Organisations and Respondents

The research involved gathering data from twenty-one Australian organisations, all of which had a quality program of some kind. Before addressing the main research questions and hypotheses it is useful to set the scene by discussing findings related to the profile of organisations and middle managers who participated in this research.

7.1.1 Participating organisations

Main findings:

- a) Most of the participating organisations had been subject to structural changes of the kind reported in the literature such as downsizing, delayering and the introduction of various kinds of group working.
- b) Results confirmed that most participating organisations were using a TQM approach together with some ISO 9000 certification although there were differences in the substance of the programs (see Section 6.2.2.1 of the Results).
- c) The results suggest that a small number of participating organisations had a significantly more developed quality culture than the rest (see Section 6.2.10 of the Results).
- d) Even well established and apparently successful quality programs are susceptible to changes in strategic direction (see Section 6.3.16 of the Results).

Participating organisations were undergoing many of the recent changes reported in the literature (see Section 2.2.3 and 2.3.7.1 of the Literature Review). Downsizing, delayering and the introduction of new organisational forms such as group working

were reported in all the organisations visited (see Appendix 5E). During the course of data collection one of the participating organisations was 'taken-over' and another participating organisation 'took-over' an organisation.

One of the criteria for selecting organisations for the research was that they had to have a current quality program. The most common type of quality program reported (see Section 6.2.2.1 of the Results) was based on TQM with some certification of processes to the ISO 9000 series of standards. The relatively high incidence of ISO 9000 certification among participating organisations is not surprising given the reported large uptake within Australia. Foley *et al.* (1997) pointed out that in terms of population Australia had the highest number of ISO 9000 certifications of any country (see Section 2.3.7.4 of the Literature Review).

In Section 2.3.5.2 of the Literature Review different ways of measuring what could be described a quality culture were discussed. It was evident that there is no general agreement on exactly what constitutes a quality culture, although there was broad agreement on some key dimensions such as customer focus and employee involvement. It was also evident that an important aspect of measurement is the perspective brought by the individual or group carrying out the assessment. Three perspectives were identified in the literature: a) internal expert perspective; b) internal "who knows best" perspective and c) external expert perspective. In the present research measures of quality culture in participating organisations were made predominantly through the eyes of middle managers, an internal perspective. It can be argued that the combined views of a number of middle managers in an organisation can form a reasonably reliable perspective of the quality culture. Firstly, because middle managers in a particular organisation will contribute perspectives on quality based to some extent on their own work areas, so that a view formed from a number of middle managers in an organisation would include perceptions of the various sub-cultures that might exist in the organisation. Secondly, in all of the participating organisations a reasonable proportion of middle managers that responded to the questionnaire survey had received some training/education in quality (see Table 5 Appendix 6E). Therefore one would expect a reasonable degree of consistency in their mental model of what constitutes an

organisation working in TQM mode. Thus the collective views of middle managers in an organisation would reflect experience in different areas and activities and there would probably be some consistency in their mental model of a TQM culture. A number of the organisations had received Australian Quality Awards or had processes certified to one of the ISO 9000 standards. Although, as illustrated by the history of organisation 20, having received a quality award is no guarantee that the mode of operation of the organisation will not change. A significant number of questionnaire respondents from this organisation indicated that there was a philosophical move away from the TQM approach and some TQM practices were being discontinued (see Section 6.3.16 of the Results). The writer was also able to assess to some extent the quality culture in organisations that he visited. Visits also provided an opportunity to gain a top management perspective and an internal expert perspective by interviewing senior managers and quality managers (see notes in Appendix 5E).

Data collected in the ways described above showed clearly that organisations were at different stages of developing a TQM type culture. Middle managers' beliefs about the quality culture in their organisations are presented in a number of ways. Their assessment of their organisation's quality culture in terms of a fully implemented TQM program is presented in Table 4, Appendix 6E (for fifteen organisations with reasonably large responses). Appendix 6H shows a ranking of fifteen of the organisations that contains a number of dimensions related to quality culture e.g. program support and communications culture. A small number of organisations emerged as leaders in quality among the participating organisations. Data gathered in various ways on organisation 2 showed a consistent story of a high level of TQM operation. Of particular note is the ability of organisation 2 to integrate the activities of their quality program with activities related to the environmental standard ISO 14000. Lawler *et al.* (1993) found in their research that organisations that were good at integrating different programs, in their case TQM and employee involvement programs, had better outcomes both for employees and the organisations (see Section 2.4.3.3 of the Literature Review). It is also clear from the results of the present research that a number of the participating organisations were just starting to develop a TQM culture.

7.1.2 Defining Middle Management

Main findings:

- a) Participating organisations used a variety of different definitions for their middle management group.
- b) The only feature that all the definitions had in common was that middle management was generally defined as being below the executive level and above supervisory level.
- c) Despite the lack of a generally agreed definition of middle management and structural changes such as delayering that had taken place in most of the participating organisations the concept of middle management still had currency.

This research supports those writers who suggest the notion of middle management is a hazy one (see Section 2.2.1 of the Literature Review). In the sample of organisations participating in this research definitions of middle management differed considerably (see Appendix 5F). Definitions were most frequently in terms of hierarchical level e.g. level below senior management level (organisation 12). In two of the organisations their definition of middle management was in terms of role e.g. those responsible for running teams (organisation 21). The proportion of middle managers in the participating organisations is to some extent affected by the definition used. The only general consistency in the definition of middle management between organisations participating in this research was that middle management lies somewhere below top management level and above the supervisory level. This result corresponds to the observation made by Mintzberg (1973) that the only thing that middle managers have in common is that they are, in an hierarchical sense, in between. In a number of cases questionnaire respondents who had been selected for inclusion in the research by senior management on the basis that they were middle managers, did not agree with this classification (see Section 6.2.1.4 of the Results). Given the lack of agreement on definition it is somewhat paradoxical that the notion of middle management still seems to be a useful one. Participating organisations did not have much difficulty in identifying their middle managers and there was no suggestion, either on the questionnaire returns or during interviews, that the notion of middle management was

outmoded. It was evident however that structural changes had taken place in most of the participating organisations in particular delayering and the introduction of group working. One possible explanation for the continued utility of the notion of middle management despite such changes can be inferred from the Australian research of Palmer and Dunford (1997, 1999) (see Section 2.2.7 of the Literature Review). Their research suggests that in larger organisations new organisational forms, such as group work, may coexist with traditional hierarchical structures.

Upon reflection the decision to let participating organisations identify their middle managers in the context of their own organisation's structure, rather than to impose a uniform definition for all participating organisations, seems to have been a reasonable one. To have imposed a definition would probably have led to problems in administering the questionnaire survey and the probable withdrawal from the research by some of the participants.

7.1.3 Profile of Respondents

Main findings (see Section 6.2.1 of the Results):

- a) Only 19% of questionnaire respondents were female.
- b) Mean organisational tenure varied considerably across participating organisations.
- c) Mean job tenure was relatively short across all participating organisations.
- d) Overall a high proportion of questionnaire respondents had received education/training in quality.

The small proportion of females in the questionnaire sample seems fairly representative of Australian industry in general. A recent Australian Bureau of Statistics survey reported that women constitute around 22% of all management positions in Australia (Australian Bureau of Statistics 1998). There were large differences in gender balance across participating organisation (see Table 5, Appendix 6E). This is not surprising given the differences in the organisations. The 1995 Australian Workplace Industrial

Relations Survey (Morehead, *et al.* 1997, pp. 36-38) shows that there are considerable differences in the percentage of females employed in different industries.

Mean organisational tenure varied considerably across organisations (see Table 1, Appendix 6E). Mean organisational tenure was generally higher in public sector and utility organisations in the sample, as high as 25.6 years for organisation 4, a public sector service organisation. Organisational tenure was shortest in the more volatile sectors such as information technology, e.g. 8.4 years for respondents from organisation 8.

In contrast to the large differences in organisational tenure across participating organisations there was much less difference in mean job tenure between organisations (see Table 1, Appendix 6E). Reflecting the widespread structural and organisational changes that have taken place in organisations in recent years (see Chapter 1) mean job tenure across participating organisations is short; 60% of respondents had job tenure of 2 years or less (see Section 6.2.1.3 of the Results). Therefore generally employees who responded to the questionnaire change their jobs relatively frequently although in some cases they may have been employed in the same organisation for a considerable time.

Respondents' training and education in quality is of particular relevance to this research. The literature on quality strongly advocates training in quality methodology, ideally for all employees. For example point 13 of Deming's 14 points of management (see Appendix 2A) is: "Institute a vigorous program of education and self-improvement." The overall percentage of respondents who had received formal training/education in quality of 78% (see Section 6.2.1.2 of the Results) is reasonably high. However, the proportion of respondents trained/educated in quality varied considerably between participating organisations (see Table 5, Appendix 6E). Only in organisation 2 had all of the respondents received training/education in quality. This variation across organisations was not unexpected as some of the organisations had been pursuing a formal quality program for only a relatively short time. Overall the level of training/education in quality indicates that most of the respondents should possess at least a basic understanding of quality concepts and the different approaches to

implementing quality. In their survey of Australian manufacturing organisations Terziovski, Sohal and Moss (1998) collected data on training in quality. Their results cannot be directly compared with the present research as their unit of analysis was the organisation rather than the middle manager. However their results do show that the sources of training in quality and to some extent the relative use of different sources are similar to the present study. For example, they found the use of consultants for training more popular than courses run by tertiary institutions. They present data on the extent of training in quality from their previous surveys carried out in 1991 and 1993. Their 1993 results indicated that one half of responding organisations claimed to provide training in quality to all of their employees. Generally their results indicate a increasing use of training in quality over the period 1991 to 1996.

7.1.4 Quality Program Involvement

One of the unexpected results in this research revolved around the issue of active program involvement. The results suggest that what actually constitutes active program involvement is rather a grey area. One of the important factors in defining active program involvement in the minds of middle managers may well be the degree to which they perceive quality-related activities as being distinct from *regular* work activities. Therefore what constitutes active quality program involvement may not be a clear-cut issue and further research on this issue is warranted. In the case of organisation 3 the quality manager when interviewed expressed surprise that only 43% (see Table 5, Appendix 6E) of questionnaire respondents considered that they were actively involved in the organisation's quality program. His belief was that all employees were actively involved in the organisation's quality program. In his research into TQM implementation Zbaracki (1998) (see Section 2.4.3.1 of the Literature Review) observed frustration at problems of integrating TQM into daily routines and a tension between work demands and the discipline of using TQM tools. There may also be a difference between an individual's perception on formal or official involvement and active involvement. Perceptions of these different definitions were not explored in this research.

Results related to the way in which respondents said they became actively involved in their organisations' quality programs (see Section 6.2.2.5 of the Results) further emphasises the need for further investigation into what constitutes active program involvement. Clearly the suggestion made by Wilkinson, Marchington and Goodman (1992, pp.4-5) that participation in TQM is generally compulsory is not supported by the results of the present study. Approximately 40% of the respondents who said that they were actively involved in their organisation's quality program said that they had been given some choice in the matter, whereas approximately half said that they considered their program involvement was compulsory. The majority (85%) of those who said they were not actively involved in their organisation's program said it was because they had not been invited to do so. This suggests that active participation may also be related to the stage of program implementation that an organisation has reached.

7.2 Results Addressing Main Hypotheses

In this section the results relating the central issue of the research, namely the beliefs and attitudes that middle managers have toward quality and quality programs in their organisations and how these attitudes and beliefs are formed, is discussed. The main research hypotheses are addressed in this section. See Table 6.13 of the Results for a summary of the hypotheses test outcomes.

7.2.1 Beliefs about the TQM Approach to Running an Organisation

Hypothesis H1: Middle managers generally believe that the TQM approach to managing an organisation is useful and effective.

An important finding of this research is that middle managers generally had a strong belief that the TQM approach to managing an organisation was an effective one. Both the quantitative and qualitative results generally strongly support hypothesis H1. The strength of the support for the TQM approach particularly across the participating organisations was unexpected. The questionnaire responses clearly demonstrated this with a mean of 5.5 on the 1 (not effective) to 7 (very effective) scale for the whole

sample. This high score was consistent across the fifteen participating organisations which were compared (see Table 4, Appendix 6E) with means ranging from 5.12 to 6.23. However, there was a statistically significant difference in mean values between some of these organisations (see Table 5, Appendix 6F). Note that fifteen organisations had sufficient questionnaire responses to enable sensible comparisons to be made. Some questionnaire comments did express negative views about the TQM approach (see Section 6.3.3 of the results). For example some respondents considered that TQM was a fad or fashion (for a discussion on managerial fads and fashions see Abrahamson 1991) and was past its use-by date. However, comments criticising the TQM approach as distinct from its application were relatively few and were restricted mostly to respondents from organisation 20 which appeared from the data collected to be making a strategic move away from a TQM approach.

Even given that participating organisations were selected because they had a quality program the level of support for the TQM approach is perhaps surprising for the following reasons. Firstly, there are quite major differences between participating organisations. The sample is drawn from both private and public organisations and includes a wide range of business sectors. The results clearly showed that organisations were at different stages in implementing TQM into their organisations (see Table 4, Appendix 6E – perceived stage of program development). Secondly, the consistently high mean scores were surprising given that there were significant differences between mean values for a number of items related to the respondents' beliefs about the effectiveness of their own organisations' quality programs. Thirdly, a concern mainly expressed in the academic literature that TQM lacks a credible theoretical underpinning and is a hazy concept (e.g. Dean and Bowen 1994; Foley 1997, see Section 2.3.3 of the Literature Review). Fourthly, a labour market perspective of TQM put forward by Knights and McCabe (1997, 1999) suggests that TQM can be used by management to increase control over employees (see Section 2.3.4 of the Literature Review). There was however scant indication that this was a belief of middle managers participating in this research. A survey of the beliefs of employees at lower levels in the organisations on this issue would probably be a more rigorous way to test this *control* hypothesis. Fifthly, there are other more recent change management approaches which might be seen

as competing with TQM. In particular the Business Process Reengineering (BPR) (Hammer and Champy 1994) approach, is seen as a replacement for TQM by some of its proponents and is marketed as such (one interviewee took the opposite view believing that BPR was a part of TQM). The qualitative data included very few suggestions of specific alternative approaches to TQM. Lastly, it is also quite evident from the literature (see Section 2.3.5 of the Literature Review) and from this research that TQM is difficult to implement and often requires significant resources.

An important question is how individuals' beliefs about the benefits of the TQM approach to managing are formed. Does the rhetoric that often surrounds TQM influence individuals' beliefs or is it knowledge and understanding about TQM gathered by means such as training, experience of TQM implementation or the opinions of important others about the approach? Sisson (1994, p. 15 cited in Legge 1995, p. 314) for example contrasts the rhetoric of various management approaches with her interpretation of the reality in a human resource context. Sisson's reality of TQM is doing more with less. There was generally a belief among middle managers in the present research that quality programs (that may include approaches other than TQM) involve an increase in workload (see Figure 6.18 in the Results). Is it the very essence of TQM that appeals to those who are knowledgeable about it e.g. employee involvement, customer focus, and management by facts? Are individuals attracted by the consultative style of leadership that seems to be predicated by the TQM approach?

The results of the correlation and regression analyses and the qualitative data suggest some of the variables that may be important in influencing individuals' beliefs about the effectiveness of the TQM approach. It should be stressed that correlation analysis and multiple linear regression do not provide alone sufficient argument for causality between variables. The regression analysis (see Tables 2 and 6 in Appendix 6L, and Sections 6.2.7.2 and 6.2.7.5 of the Results) showed that three variables directly related to quality are the most powerful predictors of an individual's belief about the value of the TQM approach. These are: a) the product of the importance that individuals attach to possible beneficial program outcomes *for their organisations* and the strength of their beliefs about the likelihood of these outcomes occurring (positive relationship) b) the

product of the degree to which individuals value program support from their direct boss and colleagues and the strength of their belief about this support (positive relationship) and c) whether or not an individual had received education/training in quality (positive relationship).

It should be noted that this result does not mean that an individual's values and beliefs about top management program support are not significantly related to the extent that middle managers value the TQM approach. Indeed the correlation between these variables for the whole sample was 0.39 ($p \leq 0.01$) (see Appendix 6J). Rather, due to interaction between some of the independent variables in the regression analysis the variable top management program support and communication was displaced from prominence. This type of interaction is explained in Section 6.2.7.1 of the Results.

Besides the three quality related variables, three work related variables had significant Beta values in the regression analysis. These were role ambiguity (negative relationship), organisational tenure (negative relationship) and gender (females more positive than males). The participating organisations all had quality programs and it is evident that in the majority of organisations those programs had resulted in changes at the level of the individual's job role. For example the majority of questionnaire respondents indicated that they were actively involved with their organisation's quality program. Programs in most of the organisations had been running for some years. It seems likely therefore that individuals' beliefs about the effectiveness of the TQM approach are influenced to some extent by their beliefs about the impact of their quality program on their own particular roles. Put another way, those with a high degree of role ambiguity may believe that to some extent that this is partly due to a negative impact of their quality program on their own job role and therefore are more likely to have more negative beliefs about the utility of the whole TQM approach. The significance of organisational tenure and gender is more difficult to explain. In the case of gender perhaps the large differences in the gender balance between organisations was a contributing factor.

The qualitative data provided some evidence as to why individuals generally believe that the TQM approach to running an organisation is an effective one. When principles of TQM, such as customer focus, employee involvement and continuous improvement were mentioned by questionnaire respondents or interviewees it was predominantly in a positive way (see Section 6.3.3 of the Results). This suggests that some understanding of the principles of TQM through education/training or through work experience generally influences an individual's beliefs about the utility of the TQM approach in a positive way. A number of people interviewed referred to the holistic nature of the TQM model helping them to understand the complex interrelationships in their business. For example subject "C" (see Chapter 3 – Exploratory Interviews) explained that the Australian Quality Award framework was used as a business planning tool in the organisation. Although, as mentioned above, some management theorists consider TQM to be a hazy concept the generally accepted principles involved in TQM are not denigrated in the academic literature but rather they are portrayed as good general management practice, attuned to the times. It is hard to argue against having a customer focus, employing continuous improvement techniques, managing by facts and employee involvement practices.

The strong general belief that middle managers and other participants in this research had that TQM is an effective way to manage an organisation is encouraging for the future of the quality movement. The fact that the majority of individuals contributing to this research have received training/education in quality and also most have experienced the reality of a quality program in their organisations adds credence to this result. Data on the extent of and trends of use of TQM in Australia is rather unclear. The 1995 Australian Industrial Workplace survey (Morehead *et al.* 1997) found that 69% of workplaces with 500 or more employees reported using TQM (see Section 2.3 7.2 of the Literature Review). However, in a recent publication Terziovski, Sohal and Moss (1999) reported a decline in the reported use of TQM in manufacturing organisations from 55%, in their 1993 survey to 35% in their 1996 survey (see Section 2.4.3.1 of the Literature Review). Data on the extent of use of TQM in the service sector in Australia seems to be particularly lacking.

7.2.2 Beliefs and Attitudes Towards the ISO 9000 Approach

The majority of participating organisations' quality programs were based on the TQM approach together with some certification to ISO 9000. Although respondents' views on the ISO 9000 approach were not specifically solicited on the survey questionnaire a significant amount of qualitative data on this approach was amassed through interviews and questionnaire respondents' answers to the open ended question. The amount of information provided on ISO 9000 (see Section 6.3.3 of the Results) indicates that it was an issue of considerable concern to many individuals. In sharp contrast to the generally high regard that respondents and interviewees had for the TQM approach the majority of views expressed about ISO 9000 were negative. The analysis of these views revealed a number of clear themes (see Table 6.9 in the Results). Perhaps the most disturbing of these was the notion that the ISO 9000 approach was in conflict with the TQM approach. A shared belief surrounding this theme was the belief that ISO 9000 with its prescriptive and narrowly focused approach was damaging or in some way inhibiting the more beneficial holistic TQM approach. The perception of conflict between the two approaches is an important finding and as far as the writer is aware has not been described in the literature. Other negative themes such as excessive bureaucracy and emphasis on the marketing benefits of ISO 9000 are well documented in the literature (e.g. Terziovski, Samson and Dow 1995) and have been discussed in Sections 2.3.2.2 and 2.3.7.4 of the Literature Review.

However, not all of the beliefs expressed about ISO 9000 in this research were negative. Organisation 2, perhaps the participating organisation with the most developed quality culture (see Appendix 6H in which fifteen of the participating organisations are compared), had apparently successfully integrated ISO 9000 certification into their overall TQM approach. It was evident that the management of that organisation had put considerable effort into evaluating the contribution of ISO 9000 to their business and to the way in which it could be harmoniously integrated into their quality program. They also integrated data collection for ISO 9000 together with data collection for the environmental standard ISO 14000.

As discussed in Section 2.3.7.4 of the Literature Review the ISO 9000 series is being revised. According to Ketheeswaran and Ezrakhovich (1999) the large number of standards in the previous ISO 9000 which were a cause of confusion will be reduced to just three. The intention of the revisions is to address some of the criticisms, in particular the revised series will have more emphasis on process and business improvement. The revisions to the ISO 9000 series could be seen as bringing the approach closer to that of the various quality award/excellence award models.

7.2.3 Values and Beliefs Related to Program Outcomes

An important contribution of this research is the insight the results provide into the values and beliefs that middle managers hold about the outcomes of their quality programs.

7.2.3.1 Relative Lack of Quantitative Evidence

The qualitative results, both comments on the questionnaires and from interviews with middle managers, contained very little quantification of improvements resulting from quality programs in their organisations. This may have been because this kind of information was not specifically requested. Alternatively it may have been in the case of some organisations, particularly those that have started their quality program relatively recently, that performance information was not available. There is some evidence from quality award feedback both in the USA and in Australian that the area of data analysis and performance measurement is weak relative to other dimensions measured for these awards. For example a comparison of quality management practices in Australia and the USA by some leading researchers in the area identified performance measurement as an area of particular weakness in both countries (Evans, Lindsay, Preston and Saunders 1997). This may be a symptom of the more general difficulty of relating business performance to a quality program in a statistically convincing way, as has been discussed in the literature (see Section 2.3.6 of the Literature Review).

Another possible reason for the general lack of quantitative evidence may be due to poor communication of this type of data from top management. The results of this research show that scores for the extent of top management communication about their quality

programs were relatively low and significantly lower overall than the extent of other types of top management support measured by the questionnaire survey (see Table 6.5 in the Results).

7.2.3.2 Values and Beliefs about Beneficial Program Outcomes

Part 1 of the questionnaire dealt with program outcomes that were considered to be beneficial. Respondents scored the importance of each item as a program outcome and the likelihood that it had resulted or would result from their organisation's quality program. The main findings related to respondents' rating of the importance of these beneficial outcomes (see Section 6.2.3.1 of the Results) were:

- a) The importance of most program outcomes beneficial to the organisation (mean values) were generally high.
- b) The importance of most program outcomes beneficial to individuals (respondents themselves) were generally quite high.
- c) A comparison of mean responses between fifteen of the organisations found that for most of the items there were no significant differences, indicating general consistency across these organisations regarding the importance of these positive program outcomes.
- d) Following from a) and b), generally program outcomes beneficial to the organisation were rated by respondents as more important than program outcomes beneficial to the individual (the respondents themselves).

It is important to note that respondents were asked to rate importance of outcomes not generally but in terms of an outcome from their quality program. Perhaps the most important result is d) above. This result together with data collected during interviews (see Section 6.3.10 of the Results) suggests, as might be expected that organisation outcomes were considered by middle managers (and also senior managers and quality managers) more important than better outcomes for individuals.

The main findings related to respondents' rating of the likelihood of these beneficial outcomes (see 6.2.3.2 of the Results) were:

- a) Core TQM principles such as continuous improvement were generally rated the most likely program outcomes.
- b) The likelihood of beneficial organisational outcomes was generally moderately high.
- c) The likelihood of beneficial program outcomes for individuals were generally significantly lower than beneficial outcomes for their organisations.
- d) Two organisation outcomes i.e. "less overreacting to short-term goals" and "a significant reduction in 'red tape' and bureaucracy" were generally rated as the most unlikely beneficial program outcomes.
- e) There were significant differences in mean values for most of the items across the fifteen organisations that were compared.

The generally low importance and likelihood scores for beneficial individual program outcomes were somewhat unexpected, particularly so when compared with the generally higher scores for beneficial organisation outcomes. The results of the ratio tests (see Appendix 6G and Section 6.2.11 of the Results) suggest that this may be a fairly general characteristic of quality programs. The mean likelihood score for the group of items related to organisation benefits was consistently higher across organisations than were the mean likelihood scores for the group of program outcome items beneficial to individuals. The views expressed on this issue by most of those interviewed (middle managers, senior managers and quality managers) (see Section 6.3.10 of the Results) was a belief that the main reason for having a quality programs is to improve organisational performance, rather than the lot of the individual middle manager. Therefore on this issue the interview results were consistent with the results of middle managers' program expectations from the questionnaire survey. Also, the beliefs held by senior managers and quality managers on this issue were similar to the middle manager group e.g. "*Business improvement is the point of doing quality, employee satisfaction may improve*", (Q.Mgr. Int. Org. 3). The data suggested a link between middle managers' values and beliefs about organisation and individual program outcomes. This is discussed in Section 7.3.1 below.

In contrast to the generally high scores for TQM as an effective way of running an organisation, the likelihood scores for beneficial program outcomes for respondents' organisations were much more modest (see Figure 6.15 in the Results). This result is not unexpected for at least two reasons. Firstly, as discussed in Section 7.2.1 above middle managers' beliefs about the TQM approach were probably to some extent a measure of the potential of TQM and its utility in a theoretical sense - the rhetoric rather than the reality. Research has shown that effective implementation of a quality program is very difficult (see Section 2.3.5 of the Literature Review). Secondly, as far as the writer is aware none of the organisations participating in the present research were exemplary examples of TQM in its ideal purest form.

Generally middle managers believed that core TQM principles such as continuous improvement, improved relationships with customers and better quality products/services were the most likely beneficial organisation outcomes. Middle managers' beliefs about the effectiveness of their programs in a more strategic sense would seem to be particularly important. The mean values of likelihood of the two externally focused items related to competitiveness i.e. items "improved company long-term survival prospects" and "improved competitiveness" were positive (means above 4) for fourteen of the fifteen organisations that were compared. This result suggests that middle managers generally view their quality programs as being modestly effective in a strategic sense. For likelihood items the standard deviation was typically around 1.5 and data for all of the items ranged across the 1 to 7 scale, and the distribution of data was approximately normal. These likelihood data therefore show a fairly wide divergence of opinion both for the whole sample and within organisations. This suggests that there will be some individuals in most organisations who have a relatively low opinion of the effectiveness of their organisation's quality program that may contribute towards a lack motivation to either support or to become an active program participant.

The low expectation that respondents' quality programs would result in a reduction in short-term thinking is an important result. Especially when this item was rated as a

relatively important program outcome. It should be noted that this item had the second largest importance/likelihood gap (see Figure 6.16 in Chapter 6 – Results). In his seminal work *Out of the Crisis* Deming (1986) included emphasis on short-term profits as one of the deadly diseases of the then Western style of management:

Emphasis on short-term profits: short-term thinking (just the opposite from constancy of purpose to stay in business), fed by fear of unfriendly takeover, and by push from bankers and owners for dividends. (Deming 1986, pp. 97-98).

Other writers have identified short-termism as an impediment to TQM (e.g. Wilkinson and Witcher 1991) and Lawler *et al.* (1992) (see Section 2.4.3 of the Literature Review) identified short-term performance pressures as a barrier to implementation of employee involvement programs. However the results suggest that respondents generally believe that their quality programs are not able to address this problem. Perhaps the pressures that Australian organisations are under, for example to make short-term profits to maintain shareholder confidence, is an important factor. In not-for-profit organisations short-term thinking may be in part due to pressures to reduce costs and stay within budgets or responding to changing customers' requirements.

The largest gap between importance and likelihood for beneficial organisation outcomes was for the item “reduction in ‘red tape’ and bureaucracy” (see Figure 6.16 and Section 6.3.6 of the Results). It is clear from both this result and from the qualitative data that middle managers have a general concern about the amount of paperwork and general bureaucracy associated with their programs. Many of the negative comments on this issue related specifically to the ISO 9000 approach. However this concern seemed to be more widespread than relating just to the use of the ISO 9000 approach. This is an important issue for management. On the one hand the collection of data and incorporating it into a useful information system and more general recording of information is an important component of an effective quality program. Indeed in the case of ISO 9000 maintaining the quality management system is a requirement. Charting processes and recording data to understand how processes perform is an important part of the TQM approach also. It was evident that some of the participating

organisations had invested much effort in information systems related to their quality programs. For example organisation 3 used their intranet to record and disseminate program information to employees. On the other hand the results of this research clearly show that middle managers can find the amount of bureaucracy involved excessive. What middle managers see as excessive paperwork and other forms of bureaucracy can lead them to question the cost effectiveness of at least some aspects of their quality programs e.g. *“Yes when tested (quality) for outcomes it is -laborious -not simple -a system where the same results can be achieved with simple and less costly methods.”* (M.Mgr. Quest. 1.41). Another issue that some middle managers related to program effectiveness was a belief that their quality programs resulted in additional workload. This issue will be discussed in Section 7.2.4 below.

In contrast to the reasonably positive beliefs that respondents have that beneficial program outcomes would result for their organisations they had generally significantly lower expectations that beneficial program outcomes for themselves would result. With the exception of “increase in overall job satisfaction”, all items had mean scores for the whole sample that were fairly neutral (between 3.5 and 4). There were as expected significant differences between the means of the fifteen organisations that were compared. The statistical analysis of the ratio of the likelihood of organisation benefits to individual benefits (see Table 1, Appendix 6G) showed that, although the ratio was always greater than one, there were significant differences between the fifteen organisations. Although mean values generally were close to neutral (4) the variability for all of the items was quite high, with a typical standard deviation of 1.5 (for the whole sample). Variation in the value respondents placed on those outcomes was much lower.

The literature suggests that opportunities for middle managers to gain promotion have become fewer in recent years mainly due to the amount of layering that has taken place in larger organisations (see Section 2.2.3 of the Literature Review). Promotion can be an important way in which middle managers achieve some of their growth needs (e.g. Porter and Lawler 1968). Improved chances of promotion although of moderate importance as a program outcome (mean of 4.9 for the whole sample), was generally

thought to be a relatively unlikely program outcome (mean of 3.5 for whole sample). There were significant differences between organisations (see Table 1, Appendix 6F). Job security is another concern for middle managers identified in the literature. Quality programs, which often involve the empowerment of lower level employees, may pose a threat to middle managers' job security (e.g. Bardoel and Sohal 1999). The results for the item "maintain or improve job security" suggest that this may be a significant quality program issue for some respondents bearing in mind that the mean importance for this item was rated relatively highly. In only two of the fifteen organisations that were compared was the mean for the likelihood of this item above 4. This suggests that in the majority of the participating organisations a significant number of employees do not believe that their quality programs will improve their job security and that in some cases job security may be reduced. However interviews and other qualitative data suggested that middle managers did not generally believe that their quality programs were a particular threat to their job security. It should be noted that most of the participating organisations had been through one or more rounds of downsizing (see Appendix 5E). Overall the results on job security suggest that middle managers view their quality programs in a generally neutral way in relation to this issue.

The relationship between overall job satisfaction and their quality program was an important issue for middle managers. The mean value of the importance response for the item "an increase in your (the respondent's) overall job satisfaction" was high at 5.87. The likelihood value was also high compared to values for other individual program outcomes at 4.24 for the whole sample. Furthermore, for ten of the fifteen organisations that were compared the mean for likelihood was greater than 4 on the 1 to 7 scale. For organisation 2 the likelihood value was a high 5.2. The likelihood scores can be seen as encouraging for the continuation of the quality movement. The exploratory factor analysis and regression analysis shed further light on the constituents of overall job satisfaction. In particular the results indicate that individuals' values and beliefs about program outcomes related to the organisation are a significant component of overall job satisfaction. This is discussed in Section 7.3.1 below.

7.2.3.3 Program Outcomes that could be Considered Desirable or Undesirable

Main findings:

- a) Devolution of responsibility to lower level employees was seen by middle managers as a relatively likely outcome of their quality programs and was generally regarded as a desirable program outcome.
- b) Greater accountability for job performance was seen by middle managers as a desirable and relatively likely quality program outcome.
- c) The majority of respondents believed that an increase in their workload would result from their quality program. However, surprisingly, the majority did not consider this to be an undesirable program outcome.

The positive desirability results for the three items particularly associated with devolution of responsibility namely: a) “more group work in the organisation”; b) “more opportunities for lower level employees to get involved in decision making” and c) “lower level employees taking over some of your (respondents’) duties” (see Figure 6.17 a, b, & g and Figure 6.18 in Chapter 6 – Results), were somewhat unexpected. Even though there were some significant differences in mean values of these variables between organisations (see Tables 2 and 6, Appendix 6F), these three items were desirable outcomes for all of the fifteen organisations whose mean values were compared. Overall, the results suggest that these three aspects of devolution of responsibility are to some extent regarded as desirable program outcomes in all of the participating organisations. Overall respondents believed that lower levels taking over some of their duties was less likely than an increase in group working or opportunities for lower levels to get involved in decision making (see Figure 6.18 in Chapter 6 - Results). There were some significant differences between organisations in likelihood scores for the devolution items.

The desirability results for the three devolution of responsibility items are important. They show that in general middle managers participating in this research are generally supportive of devolution of responsibility to lower levels in their organisations. The qualitative results also did not reveal any particular hostility towards devolution of responsibility to lower level employees. This result is in sharp contrast with the reports

of resistance shown by middle managers, to for example, the introduction of quality circles into Western organisations in the 1980s. Brennon (1991) in her doctoral research identified resistance by middle managers as the most important factor in contributing to the failure of quality circles (see Section 2.4.3.2 of the Literature Review). However, there are at least two major differences between the context of quality circles in the 1980s and the context of the present research that help to explain the apparent change in middle managers' attitudes. Firstly, the programs themselves are quite different. Quality circles in the 1980s was implanted into Western organisations generally without the understanding that it was one part of an organisation wide Japanese management system. The literature suggests that organisations gave little thought to the impact of introducing quality circles on the role of middle managers (see Section 2.4.3.2 of the Literature Review). In contrast contemporary models of quality, such as the various quality award models, are holistic in nature and advocate the planning and integration of activities for all employees in the change process (see Sections 2.3.2.6 and 2.3.7.3 of the Literature review). Secondly, it is quite evident from the literature that over the last decade or so there has been a general and pervasive trend toward "leaner" organisations. This has been accomplished through the introduction of strategies that include devolution of responsibility to lower level employees and in particular the introduction of various forms of self-managing groups (see Section 2.2.5 of the Literature Review).

This result suggests that at least in the organisations included in this research there is a general acceptance that organisational changes that encourage devolution of responsibility are viewed in a neutral or desirable way. The results for the devolution of responsibility items are encouraging for those organisations contemplating introducing a TQM program. The more general issue of resistance by middle managers is discussed in Section 7.3.2 below.

Respondents generally believed that their quality programs would lead to greater accountability for their own job performance and this was considered by most respondents to be a desirable program outcome (see Figure 6.18 in Chapter 6 - Results). This is in some respects an unexpected result. Accountability requires a certain amount of monitoring of the performance of an individual and transparency of their actions. As

pointed out by some commentators (e.g. Zuboff 1988) transparency of information could be resisted by individuals as blunders and inappropriate actions and behaviours can be revealed. The item “a reduction in monitoring of your (respondents’) performance” is generally consistent with this result. Most respondents were either neutral or found this an undesirable outcome. Most considered it an unlikely program outcome. This result also suggests a disposition towards leadership as it appears that middle managers are willing to be accountable for their actions. One possible reason for this result is that in recent years there has been an emphasis in the strategy, quality and operations literature on the importance of performance measurement. The work of Norton and Kaplan (1992) on their balanced scorecard has probably been particularly influential in this respect. TQM advocates management by data and facts and accountability for decisions and generally measuring all aspects of business performance. This result strongly endorses this feature of the TQM approach and the issue would be a useful one for further research.

As mentioned in Section 7.2.3.2 above the largest gap between importance and likelihood for items in Part 1 of the questionnaire was for the item “significant reduction in ‘red-tape’ and bureaucracy”. Respondents generally believed this to be an important but unlikely program outcome. The result for the item “an increase in your overall workload” was consistent with this, respondents indicating their general belief that an increase in their overall workload would result from their quality programs. The results of the desirability responses to this item are more difficult to explain. While the majority of respondents were neutral or considered this item undesirable a substantial minority considered this a desirable program outcome. This result is difficult to explain particularly as the literature suggests that managers often complain of excessive workloads which can lead to *burnout* (see for example Scase and Goffee 1989). One possibility is that the result is misleading because respondents misunderstood the item. This possibility seems unlikely for two reasons. Firstly, the result is consistent across the fifteen organisations that were compared. Secondly, the results for the likelihood of this item are consistent with other data gathered on this issue, which suggest there could be an increase in individuals’ workload. Another possible explanation is that some individuals would find additional work on quality related activities a desirable program

outcome. This might suggest a significant positive correlation between enthusiasm for quality in the organisation and the desirability of additional workload resulting from the quality program. However this correlation was found to be not significant. Although workload issues were sometimes mentioned in a negative way in the qualitative data this was generally because the extra work was not considered to be cost effective. During the interviews it was evident that a number of middle managers were willing to work often long extra hours on quality related project because they were motivated to do so.

7.2.3.4 Hypotheses Related to Quality Program Outcomes

For clarification it should be noted that the main attitudinal measure reported in the results is “enthusiasm for quality in the organisation”. This measure consists of the mean scores of the three items on Part 2 of the survey questionnaire. A guide to the variables used in the various analyses is given in Table 6.6 in the results (see also Tables 5 and 6 in Appendix 6C for addition detail on variables used). In this section the results related to the relationship between beliefs about quality program outcomes and variables other than “enthusiasm for quality in the organisation” will also be discussed.

Particularly the relationship between beliefs about program outcomes and: a) “time spent on quality related activities” and b) likelihood of an increase in overall job satisfaction resulting from the quality program.

Hypothesis H2: The attitude of a middle manager towards his or her quality program (and towards support for the program) will be related to the product of the value he/she places on outcomes (outcomes affecting the organisation and outcomes affecting the individual middle manager) from his/her organisation's quality program, and his/her beliefs about the likelihood of these outcomes. Generally positive program attitudes will be related to the product of a) positively valued outcomes that are believed likely to occur and b) negatively valued items which are believed unlikely to occur.

Main results were:

- a) Beliefs about the benefits of the quality program to the organisation (“organisational benefits”) was a more powerful predictor of “enthusiasm for quality in the organisation” than were respondents’ beliefs about program outcomes more directly affecting themselves (“individual benefits”) (see Section 6.2.7.1 of the Results).
- b) “Individual benefits” was a more powerful predictor of “time spent on quality related activities” than “organisational benefits”. The latter was not a significant variable in regression analyses (see Sections 6.2.7.4 and 6.2.7.5 of the Results).
- c) “Organisational benefits, “individual benefits” and “devolution of responsibility” were significant predictors of the likelihood of “an overall increase in job satisfaction” resulting from respondents’ quality programs (see Section 6.2.7.3 of the Results).

The results show that the beliefs that individuals have about the outcomes of quality programs in their organisations is a significant predictor of their attitude towards quality in the organisation and also a number of other important variables. The results therefore support hypothesis H2.

It is of particular note that for this sample actual participation as measured by “time spent on quality related activities” was significantly related to “individual benefits” whereas the attitudinal measure “enthusiasm for quality in the organisation” was not. This result suggests that although as discussed in Section 7.2.3.2 above respondents believed that the main purpose of their quality programs was to improve organisational performance, their beliefs about the impact of the program on themselves may be an important factor in regulating their participation in quality related activities.

Activities that lead to devolution of responsibility to lower level employees are fairly widely cited in both in both the quality management and employee involvement literature as likely to be viewed in a negative way by middle managers. Kanter (1982) for example has suggested that middle managers have derived much of their power from their hierarchical position that can be challenged by the introduction of various forms of

group working (see Section 2.2.5 of the Literature Review). More recently Sohal, Samson and Ramsey (1998) found in their Australian study of TQM implementation that some middle managers believed that their power was being reduced by the introduction of TQM (see Section 2.4.3.1 of the Literature Review). Fenton-O’Creevy (1998) found that resistance by middle managers to employee involvement (EI) initiatives was greater in organisations where EI had been associated with job loss, delayering and loss of professional opportunities (see Section 2.4.3.3 of the Literature Review). The results of the various regression analyses that include “devolution of responsibility” as an independent variable suggest it is not as important an overall predictor of “enthusiasm for quality in the organisation” or “time spent on quality related activities” as might be expected. “Devolution of responsibility” was however significantly positively related to likelihood of “increase in overall job satisfaction” for the whole sample (see Section 6.2.7.3 of the Results). The correlation results by organisation for “devolution of responsibility” (see Tables 1 and 3, Appendix 6K) however show a particularly volatile set of values. This suggests that in some organisations beliefs about devolution of responsibility is a much more important predictor of some attitudes towards quality and the quality program than in others.

7.2.4 A Paradox?

As discussed above (see Sections 7.2.3.2 and 7.2.3.3) results indicate that there is a strong general view that the implementation of the quality program will involve two negative factors which appear to be related. These are an increase in bureaucracy and paperwork and an increase in workload. However neither of these variables seem to be good predictors of attitudes to quality. For example the variable “an increase in overall workload” was considered an undesirable program outcome reasonably likely to occur. However this variable (product) does not correlate significantly with “enthusiasm for quality in the organisation” for the overall sample or for any of the fifteen organisations whose data was compared (see Table 1, Appendix 6K). Neither was it a significant variable in any of the regression runs. Beliefs and values about workload therefore do not seem to be significantly related to either enthusiasm for getting involved in quality in the organisation or for time spent on quality related activities. These results seem

something of a paradox. Edwards *et al.* (1998) reported a similar seemingly paradoxical situation in their study of TQM implementation in six U.K. organisations (see Section 2.4.3.1) of the Literature Review. They found cases where growing work effort was not disliked. One possible explanation is that middle managers are generally willing to tolerate an increase in workload resulting from the quality program in their organisations as long as they believe that the program is supported by “important others” and that beneficial outcomes are likely to result. Thus the variables related to workload and bureaucracy could be considered to be analogous to negative hygiene factors identified by Herzberg (Bolman and Deal 1991, pp. 157-160). That is in general individuals are willing to tolerate additional workload and an increase in bureaucracy if they believe that other important benefits will result from the quality program and that there is strong support for the program from important others. The interviews carried out at organisation 10 (see Section 6.3.16 of the Results) support the notion that adverse reactions by middle management to problems associated with a quality program, such as a shortage of resources, (which often mean additional workloads for existing staff) can be ameliorated by important others communicating a shared concern. In their research Mann and Kehoe (1995) found that having shared values was an important factor in successful TQM implementation (see Section 2.3.5.1 of the Literature Review). It should be noted however that “an increase in overall workload” did form significant negative correlations with “an increase in overall job satisfaction” for some of the participating organisations (see Table 2, Appendix 6K). For other organisations the correlations between these variables were significant but positive suggesting the importance of context as explained above. It is evident from the literature that *too little time* has been a recurring complaint of managers. Stewart (1967) in her pioneering work on managers identified this as an issue (see Section 2.2.2 of the Literature Review).

7.2.5 Findings Related to Important Others

Three groups of important others were included for detailed examination in this research. These were top management, the middle manager’s direct supervisor (boss) and the middle manager’s colleagues. The general results relating to these three groups

of important others will be discussed first then the hypotheses relating to them will be addressed.

7.2.5.1 Top Management Support for Quality

Main results (see Section 6.2.4 and 6.3.7 of the Results)

- a) Middle managers generally rated as high the importance of all six items related to top management program support and communication.
- b) Mean ratings of importance of top management program support and communication were high across all of the participating organisations. Although there were some statistically significant differences (see Table 4, Appendix 6F).
- c) Middle managers' beliefs about the extent of program support and communication varied considerably across organisations (see Tables 3 and 4, Appendix 6E). The ratings for organisations 1, 2, 8 and 11 were particularly high (see Table 4, Appendix 6F for statistical comparison of means).
- d) Middle managers had a general belief that top management program communication was less effective than the other aspects of top management support measured (see Table 6.4 in the Results). This belief was consistent across the fifteen organisations that were compared (see Table 3, Appendix 6E).
- e) Exploratory factor analysis grouped all of the top management items (including the items on program communication) together.

The results provided an important insight into the value that middle managers attach to the importance of top management support for quality programs in their organisations' programs. The results of this research support the view widely put forward in the literature that top management support is a vital component in the success of a broad based quality program such as TQM (see Section 2.3.5.1 and 2.4.3.1 of the Literature Review). Middle managers across all of the participating organisations generally gave high scores for the importance of top management program support in influencing their own commitment to their organisations' quality programs. The lowest mean importance score by organisation (for the fifteen organisations that were compared) for any of the top management related item (see Table 4, Appendix 6F) was 5.13 on the 1 (not important) to 7 (very important) scale.

In contrast to the high importance scores given across participating organisations middle managers' beliefs about the extent of top management program support varied significantly across organisations (see Figures 3 and 4, Appendix 6E). It is clear that only a small number of the participating organisations have, in the eyes of their middle managers, a top management that is highly committed to their organisation's quality program. For a number of organisations low scores suggest that top management program support and communication is inadequate and may be a major impediment to program success.

The qualitative data provides an insight into the ways in which middle managers may form their beliefs regarding the extent of program support from top management. It is apparent from the data collected that middle managers are astute observers of top management's behaviour with respect to their quality programs. An analysis of this data identified eight themes related to middle managers values and beliefs about top management behaviour with respect to quality in their organisations (see Table 6.12 of the Results). These themes will now be compared with relevant research reviewed in Chapter 2 – Literature Review.

The literature of quality program implementation (see Section 2.3.5.1 of the Literature Review) does not always emphasise the issue of resource provision. Some writers do however. For example Sohal, Samson and Ramsay (1998) identified two aspects of program resourcing as particularly important (see Section 2.4.3.1 of the Literature Review). These were firstly, that quality programs have to compete with other initiatives for scarce resources and secondly that quality improvement activities may be seen as additions to the normal working loads of supervisors and managers. Resourcing, seen more broadly, could include the provision of what Fenton-O'Creevy (1998) describes as *power tools*. Power tools, which include provision of relevant information, control of resources and authority to influence decisions in the organisation was found by Fenton-O'Creevy to be a significant factor in middle managers' resistance to EI programs (see Section 2.4.3.3 of the Literature Review). The often close relationship between quality program and employee involvement programs

has been demonstrated by Lawler *et al.* (1992, 1995). The issue of resourcing is clearly linked to other themes in this section e.g. CEO support. It would seem very important that to achieve adequate resourcing a quality program must be fully incorporated into an organisation's strategic plan.

Most of the middle managers who mentioned *showcasing quality* did so in a negative way as described in Table 6.12 in the Results. This view suggests a belief by some middle managers that their organisations are using the quality program excessively for public relations purposes, perhaps at the expense of more important quality related activities. The quality manager of organisation 3 took this seriously enough to decide not to enter the organisation for a quality award. However, as pointed out by Zbaracki (1998) (see Section 2.4.3.1 of the Literature Review), who uses the same term, showcasing has a positive purpose. Zbaracki found in the organisations that he studied that management felt a need to tell their success stories outside their organisations. He found that these stories were often distorted emphasising successes. Zbaracki observed that for some employees the rhetoric of showcasing did not match their experience and, as comments on this issue from middle managers in the present research suggest, they grew sceptical.

Zbaracki (1998) also points out that rhetoric which he defines as a stream of discourse used to construct, spread and sustain a set of assumptions about TQM, can serve a useful purpose in the implementation of a quality program. According to Zbaracki this management rhetoric can be particularly useful in the early stages of implementation but he points out that as employees gain an understanding of the substance of TQM they can begin to notice divergence between rhetoric and management action. As most of the organisations in the present research have a number of years of program implementation experience it is likely that comments related to *paying lip service to quality* reflect the dichotomy between rhetoric and reality observed by Zbaracki.

Deming (1982) stressed the importance of constancy of purpose to the success of TQM (see point 1, Appendix 2A). Clearly, this is a difficult task for organisations. As discussed in Section 7.2.3.2 above middle managers generally do not believe that their

quality programs cushion their organisation from over reacting to short-term pressures. Within the organisations participating in this research there were some good examples of constancy of purpose. For example organisation 7 was embarking on a second quality program initiative hoping to improve on their initial efforts that had been in place for some years. The diagram drawn by a senior manager in organisation 1 (see Appendix 6N) is powerful evidence of the struggle involved in achieving constancy of purpose in quality. It should be noted that even if an organisation changes its approach to management away from TQM it is likely that some cultural aspects of TQM will be incorporated into any “new” approach. Powell (1995) in his research on the effectiveness of TQM as a business strategy (see Section 2.3.6 of the Literature Review) found examples of organisations that did not consider themselves to be TQM organisations but seemed to operate in a TQM way.

It was evident, particularly from discussions with some quality managers and senior managers that it is not easy to achieve uniform support for a quality program from all of the top management team in an organisation. As one quality manager put it *“The top management team say they understand quality but I think they have different views – not a common view. They are not leading enough in quality”* (Q.Mgr. Int. 3).

The qualitative results in particular demonstrate the importance of the stance that a CEO has towards a quality program. A change in CEO can also signal a change in policy that can impact on an organisation’s quality program. The following two examples illustrate these situations: *“Quality at company “X” was strongest when “Y” was CEO. Since then it has withered on the vine”* (M.Mgr. Quest. 20.79), *“New general manager must state his commitment to quality initiatives currently underway; top management commitment to the program is vital”* (M.Mgr. Quest. 6.04).

Results from organisation 20 clearly showed that the previously well supported formal quality program, which had been promoted extensively as part of the organisation’s corporate image, was in the process of being dismantled due to a change in policy by the new CEO. This case shows that a change of strategic direction, which moving away from a formal quality program was in this case, can happen relatively quickly with a

change in CEO. This research did not focus to any great extent on the politics of change, but as Dawson (1994) points out (see Section 2.3.5 of the Literature Review) clearly internal politics is an important factor in forming or changing policy related to quality programs. However in the case of organisation 20 it is too simplistic to conclude from the information supplied by middle managers that the CEO was solely responsible for the change in policy. However this was a belief that many of the middle managers expressed.

7.2.5.2 Program Support from Direct Boss and Colleagues

Main results (see Section 6.2.4 of the Results):

- a) The quantitative responses from middle managers showed clearly that program support from their direct boss and program support from their colleagues are important in increasing their own program motivation. This importance was expressed consistently over the participating organisations.
- b) Generally middle managers believed that program support from their direct boss was stronger than from their colleagues (see Figures 5 and 6, Appendix 6E).
- c) Middle managers' beliefs about program support from their direct boss and from their colleagues differed significantly between the fifteen organisations that were compared (see Table 4, Appendix 6F).
- d) Middle managers' rating of the extent of program support from their direct boss appears to be less variable across organisations than does their rating of the extent of top management support (see Figures 3, 4 and 5, Appendix 6E).
- e) Exploratory factor analysis grouped items relating to their direct boss and their colleagues together.

The most striking result is the consistency across organisations with which middle managers rated the importance of support from their direct boss and from their colleagues in increasing their own program motivation. Although there were a small number of significant differences between organisations (see Table 4, Appendix 6F). It can also be seen from Table 6.5 in the Results that for the whole sample the mean importance scores for the boss and colleagues items are similar to the items relating to top management program support.

As was the case for the items relating to top management support and communications the beliefs that middle managers held about the extent of program support from their direct boss and their colleagues varied considerably across organisations (see Table 4, Appendix 6F). For the items relating to extent of program support from these two important others mean scores ranged from 3.30 to 5.85 on the 1 to 7 scale.

The correlation and regression results showed that a middle manager's beliefs about support from his or her direct boss and colleagues was an important variable in influencing "enthusiasm for quality in the organisation", their belief about the "effectiveness of the TQM approach" and to a lesser extent "time spent on quality related activities" in their organisation. Interviews with middle managers reinforced the importance to them of having a supervisor who was enthusiastic about the quality program and supported their participation in it. As one middle manager said "*Why would you do it (get involved in the quality program) if your boss did not support you?*" (M.Mgr. Int. Org. 10).

Research on TQM and work related outcomes by Morrow (1997) (see Section 2.5.9 of the Literature Review) found that employees' satisfaction with supervisor support and co-worker support had significant positive relationships with some key measures of TQM commitment. Although Morrow's research is not directly comparable to the present research this result supports in a general way the importance of program support from the middle manager's direct boss and colleagues.

7.2.5.6 Hypotheses Related to Important Others

Hypothesis H3a: There is a positive relationship between a middle manager's perception of top management support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the quality program.

Hypothesis H3b: There is a positive relationship between a middle manager's perception of his/her direct bosses' support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the program.

Hypothesis H3c: There is a positive relationship between a middle manager's perception of his/her colleagues' support for the organisation's quality program (as measured by the product of value placed on the support by the middle manager and his/her evaluation of the extent of the support) and his/her attitude towards the program.

As well as the qualitative data mentioned above the correlation and regression analyses with “enthusiasm for quality in the organisation” address these hypotheses (see in particular Sections 6.2.7.1 of the Results).

It is clear from the discussion above that top management has perhaps the major influence on the success of a quality program. The interpretation of the regressions analysis between with “enthusiasm for quality in the organisation” was problematic with respect to the variable “top management program support and communications” owing to some interaction with some other variables. This is explained in Section 6.2.9 of the Results. However the correlation results (see Table 1, Appendix 6K) generally support hypothesis H3a. The qualitative evidence relating to top management program support discussed in Section 7.2.5.1 above is very supportive of this hypothesis.

The results clearly show that the variable “boss and colleagues program support” is a significant predictor of “enthusiasm for quality in the organisation”. The correlation analysis by organisation (see Table 1, Appendix 6K) suggests that the importance of “boss and colleagues program support” in developing a positive attitudes by middle managers to involvement in quality applies across organisations participating in this research. The qualitative data discussed above also generally supports the importance

of the position on the quality program taken by the middle manager's direct boss. The results of this research therefore support hypotheses H3b and H3c.

Correlation and regression analysis show that middle managers' beliefs about program support from their boss and colleagues may influence their beliefs about the effectiveness of the quality management approach (see Section 7.2.1 above) and also perhaps the time they spend on quality related activities (see Section 6.2.7.4 of the Results).

It is clear that middle managers value program support from top management, their direct boss and from their colleagues. It seems therefore that an ideal situation would be one in which the middle manager perceived support for quality from all of these groups. This result clearly shows the importance of having a critical mass of committed employees, perhaps especially within the management ranks of the organisations, for a quality program to succeed. Although a few middle managers that were interviewed said they would practice principles of TQM even if they did not get support from their direct boss or more generally in the organisation, this represents a minority view and perhaps an idealistic one.

A particularly important finding of this research is that the belief a middle manager holds regarding program support from his or her boss and colleagues seems to be a powerful predictor of a his or her general disposition towards the quality program and towards being involved in quality activities in their organisation.

7.2.6 Relationship Between Job Type and Beliefs/Attitudes Towards Quality

(see Section 6.2.12 of the Results)

In the literature review (see Section 2.3.2) it was shown that the development of TQM owes much to the manufacturing industry and that some writers (e.g. Jones *et al.* 1993) believe that individuals doing operations type jobs will be more enthusiastic about TQM and their quality program than other job groups. In particular TQM was developed, along with a number of other Japanese management techniques such as just-in-time, by

large Japanese corporations especially Toyota. The literature also showed that quality techniques were developed predominantly in operations activities in these organisations, such as controlling or improving materials and processes to achieve high product quality. Given the operations origins of approaches to quality such as TQM and ISO 9000 it was hypothesised that middle managers who have operations type jobs will have significantly more positive beliefs and attitudes toward approaches to quality such as TQM and towards quality programs in their own organisations:

Hypothesis H4: Middle managers who are working in operations type jobs will generally have more positive views on the TQM approach and towards their organisation's quality program

Hypothesis H4 was not supported by the results of this research. This is an important finding. There were generally very few significant differences between job groups for the large range of variables tested (see Appendix 6I). There was also no support for the hypothesis in the qualitative data. One possible reason for this result is that quality programs using the TQM approach have been in use by major Australian non-manufacturing organisations for at least 10 years. Also both TQM and ISO 9000 can be and are in practice applied to service processes in manufacturing organisations. As discussed in the literature review (see Section 2.3.7.2) a number of Australian quality organisations such as the AQC have been very actively encouraging interest in the TQM approach for some years. It is possible therefore that activities such as these together with the widespread use of quality program in all kinds of organisations has diminished the strong association of quality to operations and manufacturing in the minds of middle manager questionnaire respondents. Therefore this result probably reflects the widespread publicising and use of quality programs in all sectors and types of organisation, not just manufacturing. This result also suggests that at least in the minds of middle managers participating in this research the shackles of quality's past have been broken.

7.2.6.1 Quality Specialists

It was argued that quality specialist who had a vested interest in their organisations' quality programs and activities would have significantly more positive beliefs and attitudes toward quality and their quality programs:

Hypothesis H5: Middle managers who are quality specialists in their organisations will have the most positive attitudes compared with other middle management groups towards the TQM approach and to their organisation's quality programs.

Thirty-eight questionnaire respondents identified themselves as quality specialists. The results generally supported hypothesis H5. Quality specialists rated the effectiveness of the TQM approach to running a business significantly higher than other groups that they were compared with (see Section 6.2.12 of the Results). They also had significantly more positive beliefs on a number of variables related to the effectiveness of the quality programs in their own organisations. A lesson for practice can be drawn from this result. It seems important that quality specialists should take into account when formulating quality strategy and running quality related activities that middle managers in their organisations may not share their own high level of enthusiasm for these activities.

7.2.7 Hypothesis Related to Active Quality Program Involvement

Hypothesis H6: Generally those employees who consider themselves actively involved in their organisation's quality program will have more positive attitudes and beliefs about their programs than those who do not consider themselves actively involved.

As discussed in Section 7.1.4 above the results with respect to active program involvement were somewhat unexpected. In particular in some of the participating organisations' senior managers and quality managers were surprised that some respondents from their organisations did not consider themselves to be actively involved in the quality program. The issue of exactly what constitutes active program involvement warrants further investigation. However the results generally support the

hypothesis. Tests (independent t tests) for differences in means between involved and not involved groups for the whole sample revealed that for most of the variables related to the hypothesis the involved group had significantly more positive beliefs and attitudes than the non involved group. Some examples of variables are “effectiveness of the TQM approach” ($p < 0.001$), “enthusiasm for quality in the organisation” ($p < 0.001$) and all of the items relating to values and beliefs about the program support of important others (min $p < 0.01$). Those actively involved also spent significantly more time on quality related activities ($p < 0.001$) and had a stronger belief that the quality program would result in increased overall job satisfaction ($p < 0.001$). The result of these t tests need to be interpreted with caution. For example they do not take into account that a significantly greater proportion of those actively involved had received training/education in quality (see Table 6.4 in Chapter 6, Results). Also the proportion of respondents actively involved in their quality programs was significantly different across participating organisations (see Table 5, Appendix 6E). The results of the regression runs (see Appendix 6L) show that compared with a number of the other independent variables program involvement/non involvement is not a particularly powerful predictor of dependent variables for which the t tests indicated significant differences.

7.2.8 Clarity of Program Role

Research by Jones, Glaman and Johnson (1993) identified a significant positive relationship between “program role clarity” and quality program commitment. Based on their findings the following hypothesis was formulated:

Hypothesis H9: For middle managers actively involved in their organisation’s quality program there will be a positive relationship between their attitudes to the quality program and their perception of the clarity of their role in the program.

Results of regression analysis (see for example Table 3, Appendix 6L) lends support to this hypothesis. This result together with the result for “role ambiguity” discussed in Section 7.2.10 below suggests that a middle manager who has a clear idea of his/her job

role and in particular their role within the quality program (low “role ambiguity” and high “program role clarity”) will generally have significantly more positive attitudes towards the quality program in their organisation. This result is also important for senior management, as they are often responsible for the design and allocation of the work that middle managers do. A senior manager interviewed in organisation 22 emphasised the importance in setting mutually agreed boundaries to quality improvement initiatives with his middle managers.

The other variable introduced in the regression analysis for those actively involved in their organisations’ quality programs was “program tenure” (see Section 6.2.7.5 of the Results). Program tenure was only a significant variable in the regression with “time spent on quality related activities” as the dependent variable (see Table 8, Appendix). “Stage of program development” was also positive and significant in this regression analysis. This result suggests that respondents in organisations with more mature quality programs actually do more quality related work, or at least believe that they do.

Of particular interest is that “program tenure” is not a significant variable in regressions against “enthusiasm for quality in the organisation”, belief about the “effectiveness of the quality management approach” or “increase in job satisfaction” from the program.

7.2.9 Hypothesis Related to Training/Education in Quality

The quality literature emphasises the importance of training and personal development as an important component of a successful quality program. This theme flows through the literature from the early writers such as Deming (see points 6 and 13 of Appendix 2A) and Juran to contemporary quality award/excellence models. See for example the Australian Business Excellence Model in Section 2.3.7.3 of the Literature Review. It was argued in this research that middle managers who had received education and training in quality would generally have more positive views on the TQM approach and on quality programs in their organisations. The education/training in quality that questionnaire respondents had received and the importance of this training has been

discussed in Section 7.1.4 above. Here we discuss the results in relation to the following hypothesis:

Hypothesis H7: Middle managers who have received training/education in quality will have a significantly more positive attitude towards the TQM approach in general and to quality programs based on TQM in their own organisations than middle managers with no training/education in quality.

As in the case of involvement above independent t tests for the whole sample revealed significantly higher mean values for the trained/educated group on a number of variables related to the hypothesis. For example, “effectiveness of the quality management approach” and “enthusiasm for quality in the organisation”.

In particular middle managers’ beliefs about the effectiveness of the TQM approach are statistically strongly related to training/education in quality. As noted above caution is needed in drawing conclusion about causal relations. The regression results also show that training/education in quality is also a significant predictor of “enthusiasm for quality in the organisation” and for belief about the “effectiveness to the quality management approach” to running an organisation (see Tables 1 and 2 of Appendix 6L). The results therefore generally support the hypothesis.

It was evident during interviews that some middle managers who claimed to have had no formal training/education in quality were never-the-less quite knowledgeable about quality models and quality principles. Their knowledge seemed to have generally been gained by a combination of on-the-job experience and by self-study. Subject “C” interviewed during the exploratory interviews (see Chapter 3, Exploratory Interview) is a good example of someone interested and involved in quality who had received no formal training/education in quality.

7.2.10 Job Role Variables

It was argued that a middle manager's attitude toward the quality program in his or her organisation or towards becoming involved in quality related activities would to some extent depend on their more general attitudes towards the organisation and their job. Three constructs were included on the questionnaire survey in this research to explore this argument, namely: "organisational commitment" (attitudinal), "role conflict" and "role ambiguity". Exploratory factor analysis (see Table 3, Appendix 6C) of the items related to role conflict and role ambiguity confirmed the structure of the two constructs. In the case of "organisational commitment" exploratory factor analysis revealed a multi-factor solution (see Table 4, Appendix 6C). This is not uncommon, the literature indicates for example that the negatively worded items often form a separate factor (Morrow 1993).

There were significant differences between some of the organisations for mean values of all three constructs (see Table 2, Appendix 6E and Table 5, Appendix 6F). This is not surprising given the nature of the sample of organisations included in this research.

7.2.10.1 Hypotheses Related to Job Role Variables

Hypothesis H8: Middle managers' attitudes towards their quality program will be positively related to organisational commitment and negatively related to both role conflict and role ambiguity.

The results show a significant correlations between "organisational commitment" and "enthusiasm for quality in the organisation" for the whole sample (see Appendix 6J) and for some of the individual organisations (see Table 1, Appendix 6K). In all of the step-wise regression runs (see Tables 1 to 8, Appendix 6L) the inclusion of "organisational commitment" produced a significant change in the R squared value. This was even the case for the dependent variable "time spent on quality related activities". This result supports the hypothesis in relation to organisational commitment.

“Role ambiguity” is a relatively good predictor of “enthusiasm for quality in the organisation” (negative relationship) whereas “role conflict” is not. “Role conflict” was not correlated significantly with “enthusiasm for quality in the organisation” for any of the fifteen organisations that were compared (see Tables 1 and 3, Appendix 6k). The results therefore support the hypothesis with regard to “role ambiguity”, but do not support the hypothesis with regard to “role conflict”. As noted above exploratory factor analysis of the items relating to “role ambiguity” and “role conflict” separated them into the two groups suggested by Rizzo, House and Lirtzman (1970). Thus suggesting that the two constructs do measure different things. “Role ambiguity” is related to the clarity an individual has about their authority and responsibilities, whereas “role conflict” is related to problems that occur during role action e.g. lack of resources, having to bend rules and do things counter to specifications. As discussed in the literature review organisations have in recent years been subject to high rates of change in their organisational structures (e.g. delayering) and in work practices (e.g. group working). These kinds of changes often accompany the introduction of a quality program. The results suggest that in this turbulent environment a middle manager’s attitude to being involved in quality related activities depends to some extent on them having a clear notion of what their job role and authority is. This result for “role ambiguity” is to some extent corroborated by the result related to “clarity of program role” discussed in Section 7.2.8 above.

It is clear from the quantitative analysis carried out, especially the regression analysis, that some variables that are directly related to quality and the quality program are better predictors of “enthusiasm for quality in the organisation” than are the three job role related measures. Thus giving support to hypothesis H10. For example in the regression analysis shown for the whole sample excluding quality specialists (see Table 1, Appendix 6L) “organisational commitment” and “role ambiguity”, both significant in block 5 lose their significance when block 6 (quality related variables) is introduced. In the regression for those actively involved in their quality programs (see Table 5, Appendix 6L) with the introduction of block 5 “program role clarity” becomes significant and “role ambiguity” loses its significance. However, the results generally

support hypothesis H8 for “organisational commitment” and for “role ambiguity” but do not generally support hypothesis H8 for “role conflict”.

7.3 Other Important Issues and Findings

7.3.1 Overall Job Satisfaction

(see Section 6.2.7.3 of the Results)

It was mentioned in Section 7.2.3.2. above that middle managers generally rated “increase in overall job satisfaction” as an important quality program outcome. The results of the regression analysis using the likelihood of increase in overall job satisfaction as a dependent variable are therefore worthy of discussion (see Table 2, Appendix 6K and Tables 3 and 7 in Appendix 6L).

The results show that the best predictors of whether or not middle managers derive job satisfaction from their quality programs are their values and beliefs about “organisational benefits”, “individual benefits” and “devolution of responsibility”. It is not surprising that “individual benefits” is significant as the items comprising this scale are to a large extent dimensions of the job satisfaction construct.

The regression analysis and some of the qualitative data collected suggests that to some extent middle managers, or at least some middle managers, see a link between program benefits for their organisation and these benefits flowing onto themselves. An obvious linkage would be the quality program resulting in improved competitiveness leading to improved job security. However the linkages mentioned in the qualitative data relate more to the impact of process changes within the organisation. These program outcomes are less distant and also more easily achievable, than improved competitiveness. Having organised processes and a better understanding of how their work fitted into the whole and being closer to customers were some changes resulting from their programs that middle managers indicated satisfaction with. A response from a middle manager to the question, “Who benefits from the quality program?” illustrates this: *The program achieves a feeling of direction from business processes, things get finished, jobs get done. Objective get set, performance measured and corrections made*

it's a closed loop (M.Mgr. Org. 10). This result may also indicate that middle managers believe that there is a relatively high goal congruency between organisation program objectives and individual program objectives.

7.3.2 Issues Relating to Resistance by Middle Managers

Main findings:

- a) This issue was a sensitive one that senior managers interviewed were generally reluctant to discuss in much detail.
- b) There was some evidence of past resistance to quality management initiatives in a small number of the organisations.
- c) The situation in participating organisations at the time data was collected suggests that there is generally little overall resistance to the implementation of quality programs. However some strong negative feelings were expressed about the ISO 9000 approach and there were suggestions from some individuals that they were avoiding involvement with this approach.

The literature provides evidence of middle management resistance to various kinds of change programs. These include quality circles (e.g. Brennan 1991), other kinds of employee involvement initiatives (e.g. Fenton-O'Creevy 1998) and to quality programs (e.g. Wilkinson & Witcher 1991 and Sohal, Samson & Ramsay 1998). The literature also suggested that resistance can take many forms and can be very subtle, such as various tactics of non-cooperation (Fenton-O'Creevy 1998). The evidence of middle management resistance toward the implementation of their quality programs in this research is rather inconclusive. The issue seemed to be quite a sensitive one with some of the senior managers interviewed, and in some cases it may have been that the senior managers interviewed were not sufficiently aware of the issue to be able to comment. In two of the organisations visited interviews revealed that senior management had been aware of resistance by middle managers to quality program implementation. The stories of these two instances are described in Section 6.3.13 of the results. The way in which organisation 1 dealt with the problem of middle management resistance, by empowering middle managers to decide whether or not the program would continue, shows the very

high level of importance attached to their support by senior management. If middle managers were not going to be supportive then it was better to scrap the program. The resistance by middle managers in this case would seem to have been fairly widespread. It was evident that top management had not adequately considered middle managers' needs in terms of the quality program.

More passive and isolated resistance to a quality program, for example avoiding being actively involved, is probably more difficult to identify and perhaps therefore more difficult to ameliorate. The results of this research suggest that this kind of resistance can occur even in organisations with an established quality pedigree. The results on the proportion of middle managers declaring that they were not actively involved in their organisation's quality program surprised some senior managers who were shown them (see Section 7.1.5 above). A good example of what might be described as passive resistance to the quality program was subject "B" of the exploratory interviews (see Chapter 3, Exploratory Interviews).

Although there were some significant differences between organisations overall the data did not suggest strong underlying resistance by middle managers to quality programs in their organisations. The results suggest that overall middle managers view their quality programs in a more benign way than might be expected from some of the earlier literature for example on the introduction of quality circles (Brennan 1991).

A possible reason for this is that most of the participating organisations had already been through a period of downsizing and most that were still downsizing were doing this through a policy of natural attrition. So middle managers generally in these organisations were not in danger of being made redundant. It is also clear from the Australian Workplace Survey (see Section 2.3.7.1 of the Results) that changes in work practices such as the introduction of various kinds of group working and organisational restructuring such as delayering are now widely in place in Australian Industry, at least in larger organisations. The strong overall support given by middle managers to the TQM approach to running an organisation and discussed in Section 7.2.1 above is also a likely reason. Thus in general individuals did not seem to perceive their quality

programs as a danger to their security of employment. Their organisation's policy was supportive of their tenure and devolution of responsibility and restructuring had in many cases already occurred or was seen as inevitable rather than an issue related to the quality program. This view is supported by the questionnaire data on the values and beliefs that respondents held about their quality program outcomes. Generally, respondents valued possible program outcomes positively and considered negative program outcomes relatively unlikely. The situation in organisations now seems quite different from the situation in the 1980s when resistance to the introduction of quality circles into Western organisations was reported (Brennan 1991). Work practices have changed dramatically and unlike in the case of the introduction of quality circles there is a much better understanding of approaches such as TQM and ISO 9000. This position is supported by the findings of Vouzas (1997) (see Section 2.4.3.4 of the Literature Review). Vouzas in his study of middle managers' involvement in quality in Europe found that they did not seem to feel their job security was threatened by the introduction of TQM. He observed that in organisations that had mature quality programs (he called this the TQM stage) middle managers felt more secure than ever.

7.3.3 Quality – Still a Subject of Confusion?

The surprisingly high value that middle managers in this research give to the quality management approach to running an organisation was discussed in Section 7.2.1 above. This result was interpreted as a positive indication for the continuation of the quality movement in Australia. However the results of this research show that there are still concerns related to defining quality and also to understanding how the ISO 9000 approach relates to the broader TQM approach.

The qualitative results (see Section 6.3.2. of the Results) supported the notion widely accepted in the literature (e.g. Garvin 1988, pp. 40-46 and Hardie 1995; see Section 2.3.1. of the Literature Review) that quality has multiple definitions. The mechanism by which middle managers form their definition (or mental model) of quality is beyond the scope of this research. However, the results suggest that the education/training that a middle manager has received in quality and their job context may be important factors.

Hardie's research shows that useful definitions are those that are relevant and useful in a particular context and that short definitions such as – *fitness for purpose* – are seldom very useful. His research suggests that a universal definition of quality is not only highly unlikely but that it is undesirable. The problem reported by some writers (e.g. Dean and Bowen 1994) that there is a lack of a coherent theory of quality management, appears to be a wider issue than defining what quality means. This criticism is levelled at the conceptual framework that underpins the various quality award models.

The results of this research revealed some lack of understanding of the difference between the ISO 9000 and the broader TQM approach to implementing quality. In some of the participating organisations (see Section 6.2.13 of the Results) there were inconsistent beliefs between middle managers about the approach to quality used. There was generally more consensus on the approach to quality used in organisations that had been practising quality for some time. In some participating organisations that were recent implementers of a quality program there seemed to be considerable confusion about different approaches to quality. Some middle managers expressed their concern that the ISO 9000 approach and TQM approach were still being confused by others (see Section 6.3.4 of the Results) e.g. "*People confuse QA with TQM still*" (S.Mgr. Int. Org. 1).

The confusion over the ISO 9000 and the TQM approach is not unexpected. It has been previously reported in the literature (e.g. Foley *et al.* 1997). To some extent the confusion between the quality assurance approach, represented by the ISO 9000 series of standards, and the broader TQM approach, represented by various quality award frameworks, may have resulted from a lack of explanation by the organisations involved in their administration on how the two approaches relate. For example in the Australian Business Excellence Framework 2000 booklet (AQC 1999) it states that the framework contains all the requirements of the 2000 ISO 9000 series (*ibid.* p. 3) but there is no explanation of how the series relates to the framework. One might also speculate as to whether or not the move to replace the word *quality* with the word *excellence* in a number of award titles (see Section 2.3.2.6 of the Literature Review) will add to the confusion.

These results and observations serve to emphasise the importance of a workforce educated in quality and also the importance of effective organisational communication with respect to quality. It was noted in Section 7.2.5.1 above that effectiveness of quality program communication was generally rated significantly lower by middle managers than the other aspects of top management commitment and leadership measured in this research.

7.3.4 Rewards Linked to Participation in Quality Related Activities

A number of researchers have argued that reward systems should be linked to participation in quality related activities in organisations that have quality programs (e.g. Wilkinson & Witcher 1991 and Sohal and Terziovski 2000). The literature also suggests such reward schemes are not very common (e.g. Adebajo & Kehoe 1998 and Terziovski and Samson 1999) (see Section 2.4.3.1 of the Literature review). A number of the participating organisations in the present research were using extrinsic rewards of various kinds to reward participation in quality related activities. It was evident that the use of extrinsic rewards was problematic for some organisations, particularly rewards attached to specific activities (see Section 6.3.14 of the Results). Some senior managers interviewed were concerned with issues of equity related to these kinds of rewards. However most of those interviewed considered that reward systems related to effective involvement in quality related activities were important in increasing employees' motivation. The quantitative results indicate that a significant proportion of respondents do not believe that rewards are sufficiently aligned with quality outcomes (see Figure 6.19 in the Results). These results indicate that more research is warranted into the role of reward systems in the context of quality programs.

7.4 Are Middle Managers Important for Quality Program Success?

A position taken in this research was that the effective involvement of middle managers in their organisations' quality programs is an important factor for program success (see Section 1.3 ii of Chapter 1, Introduction and Rationale). When this research was first

contemplated the future of middle managers was at best uncertain and at worst gloomy. During the 1990s, the period when the bulk of the present research was carried out, there has been somewhat of a renaissance in middle management work. Many of the gloomy predictions made in the late 1980s did not occur (e.g. Dopson and Stewart 1994). Delaying and the development of the information technology revolution have not led to the demise of middle management. Thomas and Dunkerly (1999) (see Section 2.2.7 of the Literature Review) for example in their research show that downsizing has provided some positive outcomes for middle managers. They reported increased promotional opportunities and increased job satisfaction with their jobs. Some other possible reasons for this reestablishment of the importance of middle managers are explained by Hilmer and Donaldson (1996) who argue strongly for the utility of middle management and the need for hierarchy in organisations. They are essentially against what they consider over-zealous use of delaying and reduction in middle management numbers. They explain the sophisticated role that middle managers have in the area of information management - middle managers are not just passing on information (*ibid.* p. 35). They also point out the important role that middle managers have as communicators, particularly in non-numeric ways. The research by Palmer and Dunford (1997, 1999) suggests that in larger organisations new organisational forms such as group working coexist within a hierarchical framework.

The interviews in particular demonstrated the wide range of different roles that middle managers have both within an organisation and between organisations. The influence that an individual middle manager has on a quality program through support, involvement, resistance, leadership etc is highly contextual. For example a quality manager gave the following response when asked about the role of middle managers in his organisation: "*Their involvement is different in different functions. Marketing is lagging but sales is better. I think leadership (by middle managers) is important in functional areas.*" (Q.Mgr. Int. Org. 10). In the organisations visited there was no evidence that middle management in particular was being earmarked for further downsizing. This result is consistent with the current literature on middle management that predicts a more secure future for this group.

The antagonist view of middle management by senior managers reported by Albrecht (1990) (see Section 2.2.9 of the Literature Review) was not apparent in the present research. Senior managers and quality managers interviewed all considered that middle management support for the implementation of their organisation's quality program was very important. This result is similar to the findings of Vouzas (1997) who reported that middle managers were considered key people in TQM implementation (see Section 2.4.3.2 of the Literature Review). Top managers and quality managers had a variety of views on the role of middle managers in their organisations' quality programs. A frequent theme related to the traditional middle management role of interpreting and implementing top management's plans (see Section 2.2.2 of the Literature Review). An example of a comment by a senior manager on this issue is: "*Middle managers have to take concepts given by top management and make them work.*" (S.Mgr. Int. Org. 1). A number of top managers and quality managers commented that middle managers have a leadership role in implementing quality e.g. *The middle manager's role is changing - moving from control towards leadership – towards mentoring. Although they still have an important communications role.*" (S.Mgr. Int. Org. 2); "*I see middle managers as leaders, they need to have a clear view of management philosophy and should be doing things that are consistent with that philosophy e.g. providing customer service.*" (Q.Mgr. Int. Org. 3).

The work by Floyd and Wooldrige (1990, 1992, 1994 and 1997) carried out in the U.S.A. into middle managers' involvement in strategic issues was discussed in the literature review (see Section 2.2.7 of the Literature Review). Their research shows an increasing involvement of middle managers in formulating strategy in their organisations. Although this issue was not the main focus of the present research some observations related to middle managers and quality can be made. A number of quality specialists that were interviewed clearly had an input into the formulation of quality strategy in their organisations. More generally the results indicate that the quality program, at least in some of the participating organisations, provided some opportunities for middle managers to become involved in strategic issues. The extent of these opportunities probably depends on the degree to which the quality program is valued as a strategic initiative in the organisation. A number of middle managers interviewed,

besides quality specialists, were clearly involved in some strategic decision making through their involvement with quality. A good example is subject "A" interviewed during the exploratory interviews (see Chapter 3 - Exploratory Interviews).

The results of the present research generally support the position taken on the importance of the middle management group in the success of a quality program. Although it is important to stress the importance of context in influencing the issues discussed.

CHAPTER 8
CONCLUSIONS AND RECOMMENDATIONS

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

This research as far as the writer is aware is the first of its kind in Australia which has looked into the beliefs and attitudes of middle managers toward quality and quality programs in their organisations.

The research supported the position taken that the effective involvement of middle managers is important for the successful implementation of a quality program (see Section 7.4 of the Discussion of Results). Factors that make for effective involvement of middle managers in quality programs are complex and to a large extent depend on the context of the organisation and the middle manager's role. Dawson and Palmer (1995, p. 43) point out that an examination of the history of management thought shows that we should expect context to affect the acceptance and influence that new ideas have in different situations. The results demonstrated that the attitudes that middle managers hold with respect to quality programs in their organisations can be an important factor in influencing their own involvement in quality related activities. Of the variables identified as being particularly important in forming the attitudes of middle managers towards quality programs in their organisations (see Table 6.13 in Results for a summary of the hypothesis outcomes) the following are arguably of particular importance:

- a) The extent to which middle managers valued program outcomes and expected them to result from the program.
- b) The extent to which middle managers valued program support from: i) their direct supervisor; ii) the top management group and iii) their colleagues, and the extent of program support from these *important others*.

The effective involvement of middle managers in their quality programs depends on more than them just having a positive program attitude, there needs to be opportunity. The majority of middle managers who reported not being actively involved in their organisation's quality programs gave the reason as lack of opportunity. It should be

noted that it was found that the notion of what constitutes active program involvement was not as clear cut, and is worthy of further investigation (see Section 7.1.4 of the Discussion of Results).

The research findings agreed with those writers who suggest that the notion of middle management is not well defined¹ (see Section 2.2.1 of the Literature Review). Also, it is evident that in recent years a number of new organisational forms such as group working have become well established throughout organisations. Given the lack of an agreed definition for middle management and the proliferation of new organisational forms that can erode organisational hierarchy, it is somewhat paradoxical that the notion of middle management was found to be useful in all the participating organisations. All of the participating organisations had no problem in identifying middle managers in their organisations. Although, the only common feature of definitions they used was that middle managers were somewhere above supervisory level and below top management level. The research of Palmer and Dunford (1997, 1999) may provide a clue to the continued utility of the middle management concept. Their research suggests that in larger organisations new organisational forms, such as group work, may coexist with traditional hierarchical structures (see Section 7.1.2 of the Discussion of Results).

It was clear from discussions with senior managers that middle managers in their organisations were valued employees. The negative feelings of top management towards middle management, reported in literature of the 1980s, were not apparent within organisations participating in this research. Also, more recently a number of writers have provided strong arguments supporting the role of middle managers in contemporary organisations (see Section 7.4 of the Discussion of Results). They emphasise the importance of middle managers' traditional linking role and their importance in the knowledge management. Generally, middle managers who participated in the research appeared to be reasonably satisfied with their working lives. These findings are in keeping with the recent more optimistic view of the future of middle management work reported in the literature (see Section 7.4 of the Discussion of Results). All of the participating organisations had been through fairly radical

¹ A working definition of middle management is given in Section 2.2.11 of the Literature Review.

restructuring changes in recent years. Many of the middle managers remaining were survivors of these changes.

A striking result was the high value that middle managers across all the participating organisations placed on the effectiveness of the TQM approach to managing an organisation. This is particularly surprising given: i) the large differences between participating organisations; ii) concern expressed in the literature that TQM is a hazy concept and iii) development of more recent change management approaches, such as Business Process Reengineering. This result which is supported by interview data suggests that Australian Business Excellence Framework, which is essentially based on TQM, has value for middle managers. The TQM approach seems to be in tune with contemporary business practice that generally advocates employee involvement activities and social and environmental responsibility (see Section 7.2.1 of the Discussion of Results).

Although evidence of the labour market perspective of TQM i.e. that TQM is sometimes used as a means of controlling employees (see Section 2.3.3 of the Literature Review) was not evident in the results, this does not mean that this behaviour does not exist. Use of TQM as a control mechanism may be more related to controlling employees at sub-management levels in organisations. Indeed, middle managers may use their quality programs to some extent to control the behaviour of their subordinates. It would be interesting to explore if middle managers believe that quality programs are used to control lower level employees. It also seems important to investigate the views of lower level employees on this issue, many of whom would be supervised by middle managers.

The results show that middle managers, together with some senior managers and quality managers have mixed feelings about the ISO 9000 approach. A particular difficulty highlighted by the research was integrating the ISO 9000 approach with a broader TQM approach (see Section 7.2.2 of the Discussion of Results). A significant minority of middle managers and some senior managers believed that there are areas of incompatibility between the TQM and ISO 9000 approaches. This is an important issue for quality program implementation. This research clearly demonstrates the importance

of being able to effectively integrate different approaches to quality for program success. Participating organisations with the most effective outcomes from their quality initiatives were able to integrate different approaches in an effective way. However the literature revealed surprisingly little explanation about the relationship between the various quality award/quality excellence approaches and the ISO 9000 series, or how to integrate them. There is clearly a opportunity for the organisations involved with developing and marketing these two approaches to provide more detailed information to users on how to integrate them. It should be emphasised that the since data was collected for this research the ISO 9000 series has been revised. These revisions were designed in particular to encourage continuous improvement activities.

Middle managers participating in this research generally believed that the primary purpose of quality programs in their organisations was to improve organisational performance rather than to provide beneficial outcomes for themselves (see Section 7.3.2.2 of the Discussion of Results). Generally they believed that it was more likely that the organisation would benefit more directly from their quality program than they would. However good organisational outcomes were important to middle managers and generally their program commitment increased with the strength of their belief that these good organisational outcomes would occur.

A number of beliefs that middle managers held regarding the outputs of their quality programs were unexpected. One of the *deadly sins* that Deming hoped TQM implementation would alleviate was the prevalence of damaging short-term thinking (see Section 7.2.3.2 of the Discussion of Results). This research clearly shows that middle managers do not believe that their quality programs have or will alter short-term thinking in their organisations. Perhaps the pressures that Australian organisations are under, for example to make short-term profits to maintain shareholder confidence, is an important factor. The literature also shows that middle managers can resist restructuring which devolves some of their responsibilities to lower level employees. In contrast the middle managers in the present research generally supported devolution of responsibility to lower level employees in their organisations (see Section 7.2.3.3 of the Discussion of Results). It was evident that quality programs in their organisations had

been, at least in part, responsible for devolving responsibility to lower level employees. However, it should be noted that the opinions of employees responsible to middle managers were not solicited on this issue and their views may be different. Middle managers generally had a strong belief that quality programs produced an excessive amount of paperwork and bureaucracy. However, somewhat paradoxically this variable was not a good predictor of attitudes towards the quality program (see Section 7.2.4 of the Discussion of Results).

As generally acknowledged in the literature leadership in quality by top management is important for program success. This research shows that middle managers place a high value on leadership in quality from the senior management group and in particular from their direct boss. The extent to which middle managers believe that this leadership exists is an important factor in forming their attitudes toward the quality program and becoming involved in quality related activities. The research clearly showed that middle managers are astute observers of top management behaviour relative to quality (see Table 6.12 in the Results). Middle managers generally identified top management's communication effectiveness on quality issues as an activity that needs to be improved (see Section 7.2.5.1 of the Discussion of Results). The research identified a particular need for better information to be provided on the cost effectiveness of quality related activities. Many middle managers questioned the cost effectiveness of quality initiatives but hard data on this issue appeared to be scant. It was clear from this research that in even organisations that were most successful in implementing quality it is difficult to get strong support for the quality program from all senior managers. A natural reaction to a lack of program support from some senior managers would be that it is bad for the organisation. However, perhaps a degree of scepticism and questioning is a healthy state of affairs and will help to ward off the dangers of groupthink.

The research confirmed that implementing quality is a difficult task. There were considerable differences across the fifteen organisations that were compared both in their approach to implementing quality and the apparent success of their endeavours

(see for example Appendix 6H). It was clear that only a relatively small number of these organisations could be described as leaders in implementing quality.

A number of thought provoking issues have emerged from the research that are worthy of mention. In this research the concept of a formal quality program, or formal quality intervention, was used as a convenient focus of the study. It was acknowledged that in practice a program may consist of a series of intervention over time. However it is obvious that many quality related activities become part of everyday activities, especially as an organisation becomes more quality mature. Therefore employees not actively involved with the quality program may have considerable involvement with day-to-day quality related activities. Also some middle managers did not like the idea of quality improvement activities being described in terms of a program. From the point of view of the methodology used in this research a useful additional perspective could be gained by focusing in more detail on specific quality related activities that middle managers might be involved in. This was the approach used by Morrow (1997).

Related to this was a tension that emerged from some of the data between the notions of *working on quality* and doing *normal work*. Some middle managers considered that doing *normal work* got in the way of doing work on quality. The possibility of dichotomy in the minds of middle managers between doing quality related work and doing *normal work* is worthy of further investigation as clearly the goal of the quality approach is to integrate quality related activities into *normal work*.

The results showed that for some middle managers defining quality and distinguishing different approaches to quality implementation is a confusing matter (see Section 7.3.3 of the Discussion of Results). This is not surprising as the literature clearly shows that quality is a multi-dimensional construct. The lack of information on how various approaches relate to one another, mentioned above, probably contributes to this confusion. Given that a degree of confusion already exists it is interesting to speculate whether easing the work *quality* out of the some of the quality award terminology and replacing it with the word *excellence* will improve or worsen matters.

8.2 Reflections on the Methodology

As Remenyi *et al.* (1998, p. 68-69) points out:

As research proceeds the researcher develops a greater understanding of the research question, the research process and the research findings. This means that the final dissertation will be a piece of work that could be improved upon if the researcher were to start the research project again.

This has been the case in this research and the following are some areas in which the research methodology could possibly be improved.

Greater use of established constructs, or items from existing constructs, may have improved the utility of the questionnaire. In particular the use of more standard measures related to various aspects of job satisfaction. This together with more extensive pre-testing of the questionnaire may have avoided some of the problems of interaction between variables experienced in the regression analysis.

A number of additional variables could have been added to the questionnaire to aid analysis and in some cases additional items to better explore particular areas. A measure of organisational climate would have been useful in inter-organisation analysis (see for example the research by Morrow reviewed in Section 2.5.9 of the Literature Review). Additional information on the use of extrinsic rewards could have been obtained by adding additional items to the questionnaire survey. However the writer was concerned that the questionnaire should not be too long as this could significantly lower the response rate.

The framework for the research based on Ajzen's theory of planned behaviour (see Figure 4.1 in Chapter 4 – Theoretical Framework and Hypotheses) was found to be particularly useful. Scale construction for the expectancy-value approach presented

some problems and some improvements would probably be possible (see Section 2.5.6.1 of the Literature Review).

The difficulties experienced in gaining access to some participating organisations for interviews and background information additional to that supplied on the survey questionnaires was unexpected. Some feedback of the questionnaire survey results was provided prior to interview being carried out. In some cases this feedback may have been interpreted as rather negative and influenced organisations not to allow interviews.

As with all research the limitations should be taken into account in interpreting and generalising the results. The sample of organisations included a large proportion that had received external recognition through gaining an Australian Quality Award (or more recently an Australian Quality Award for Business Excellence). The sample could therefore include a high proportion of organisations that are relatively advanced in the deployment of quality. However despite this possible bias the results clearly show considerable differences in quality culture across participating organisations (see for example Appendix 6H). For the questionnaire survey it was not possible to sample across organisations in a uniform way. Participating organisations were allowed to define their middle managers. In some cases organisations specified which division or department that they would allow to be surveyed. The population of middle managers in some organisations was large usually necessitating taking a sample. In other organisations with a small number of middle managers questionnaires were usually distributed to all of them. Never-the-less allowing organisations to identify their middle managers and accepting some latitude in sample selection enabled a large amount of useful data to be collected. There is also a possibility of non-response bias in the quantitative results. That is the sample from an organisation may not be representative of the whole population because of sample response bias. For example, respondents may include a greater proportion of those with positive views about quality than non-respondents. In some cases it was likely that organisations selected those with positive view on quality for interviews. It should be noted that in the discussion of the results the writer has been aware of these limitations and has taken them into account.

8.3 Recommendations for Further Research

This research has identified a number of topics that warrant further study. In the following section these topics are described together with an explanation of their relevance based on the results of this research.

a) Examination in more detail of the behaviours of middle managers with respect to quality in their organisations.

The present research concentrated on beliefs and attitudes of middle managers with respect to quality and quality programs (see Figure 4.1 in Chapter 4 - Theoretical Framework and Hypotheses). Further research could examine the ways in which middle managers are involved with quality as well as specific activities that they perform in the context of quality. For example, Floyd and Wooldridge (see Section 2.2.7 of the Literature Review) argue that middle managers are becoming increasingly involved in strategic issues in organisations. To what extent do quality programs present opportunities for middle managers to become involved in strategic issues and what is the nature of their involvement?

b) Examination of the concept of a quality program compared with quality being embedded into an organisation's culture.

As discussed in Section 8.1 above there are a number of issues related to the integration of quality into an organisation's culture and tensions between what some middle managers considered *normal work* and working on quality.

c) A more comprehensive investigation of the use and impact of various kinds of rewards associated with middle managers' involvement with quality in their organisations.

A number of the organisations participating in this research were in a dilemma regarding the issue of rewarding middle managers for effective participation in quality

initiatives (see Section 7.3.4 of the Discussion of Results). Whilst there was a general consensus among managers interviewed that explicit rewards can be useful to motivate middle managers a number of issues related to implementation, such as equity, were of concern.

d) To compare beliefs and attitudes that different groups (e.g. by hierarchical level) in organisations have towards quality issues.

This research has looked in some detail at the beliefs and attitudes that middle managers hold regarding their quality programs and quality more generally. There has been surprisingly little research that has compared the attitudes and beliefs about quality between different groups in organisations. For example one of the principles of the TQM approach is that all employees should be involved in improvement activities in their organisations. TQM particularly targets lower level non-management employees for involvement in improvement activities. It could therefore be hypothesised that lower level employees will generally have more to gain from a TQM program than managers and therefore lower level employees will have significantly more positive beliefs about program outcomes than say middle managers.

e) Investigate in more detail issues relating to the effectiveness of integrating various approaches to quality improvement.

This research has presented evidence that the ability of an organisation to integrate various approaches to quality e.g. ISO 9000 into a broad TQM program can produce significant advantages. One organisation was also successfully integrating some of the activities needed for the environmental standard ISO 14000 with activities needed for ISO 9000. This research also revealed cases of some hostility towards the ISO 9000 approach. Some middle managers considered the ISO 9000 approach was in conflict with the TQM approach.

8.4 Lessons for Practice

There are a number of recommendations which flow from this research that the writer believes will be of particular use in practice. These recommendations are addressed mainly to top management who typically take the major leadership role in the implementation of a quality program or quality intervention. Each lesson is explained in relation to the findings of this thesis.

- a) The research indicates that it is important that the needs of the middle management group in an organisation be taken into account when planning a quality program. Middle managers should be involved in the planning process and on an ongoing basis. This involvement will enable senior management to appreciate the particular concerns that middle managers may have and to manage them effectively. The literature and the results of this thesis provide compelling evidence of the importance of this involvement. The effective involvement of middle managers is an important factor for program success. Middle managers often have an important role in the implementation of quality programs. Sometimes this role involves the traditional middle management function of translating top management ideas into practice, including managing lower level employees' involvement. It is clear from this research that middle managers can resist being actively involved in their organisation's quality program. Lack of program commitment from key middle managers can clearly also affect the productive involvement in quality related activities of those they supervise.
- b) The research shows that middle managers are astute observers of top management's behaviour relative to their commitment to a quality program (see Table 6.12 in the Results). The conclusions drawn by a middle manager's observation of a top manager's behaviour may of course not be correct, it is their interpretation of reality. However, as this research has demonstrated beliefs, whether true or not, can influence attitudes and attitudes can influence behaviour. It is therefore recommended that senior managers become aware of the kinds of behaviours that can engender negative or positive attitudes in middle managers and attempt to eliminate negative behaviours and promote positive ones.

c) This research shows the beliefs that a middle manager holds regarding his or her direct boss's support for a quality program can be important in influencing their own attitudes and behaviour with respect to quality and a quality program. It is important that a middle manager's direct boss, assuming he or she is committed to the program, communicates this commitment to the middle manager and supports the middle manager's involvement in quality and the quality program. This research has demonstrated that middle managers value support for the quality program and that this support is positively related to their own program commitment. A very small number of middle managers interviewed did indicate that they would support a quality approach to change even if support from management was lacking. However, this position would be difficult to sustain as support in terms of resources may not be provided. A more typical view expressed by a middle manager during interview was – *"If my direct boss did not support the quality program, why [should I] do it?"* (M.Mgr. Int. 10)

d) Effective communication related to quality is important in motivating middle managers. The results highlight the importance in a general sense of having effective communication with respect to a quality program. The results showed that middle managers valued effective quality program communications highly but identified communication effectiveness on quality as generally in need of improvement (see Section 7.2.5.1 of the Discussion).

e) It seems particularly important that the cost/benefit of quality related activities are understood and communicated to middle managers. Middle managers frequently complained about excessive bureaucracy being associated with quality related activities and questioned the cost effectiveness of outcomes. The results of both the questionnaire survey and the interview with managers suggested a lack of concrete data on the performance of quality initiatives. This is not to say that such data does not exist, it may not be being communicated effectively. However research does suggest that one of the least developed activities in a quality program is the measurement and communication of results.

f) This research suggests that it is important to consider how various approaches to quality improvement will be integrated. The research highlighted the problems that can occur if middle managers believe that the ISO 9000 approach is not compatible with TQM approach. Better planning of integration of the approaches could possibly have avoided such problems. The research also suggests that integration of programs/interventions/initiatives can include approaches other than those associated with quality, such as the environmental standard ISO 14000 and employee involvement programs. This research strongly suggests that the ability of an organisation to effectively integrate a number of related approaches can significantly contribute to desirable performance outcomes.

APPENDICES

Appendix 2A - Deming's 14 Points for Management

Source Deming 1982, pp. 23-24.

1. Create constancy of purpose towards improvement of product and service, with the aim of becoming competitive and to stay in business and to provide jobs.
2. Adopt the new philosophy We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Move towards a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company
9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.
10. Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.
11.
 - a) Eliminate work standards (quotas) on the factory floor. Substitute leadership.
 - b) Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.
12.
 - a) Remove barriers that rob the hourly worker of his (sic) right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality
 - b) Remove barriers that rob people in management and in engineering of their right of pride of workmanship. This means, inter alia, abolishment of the annual merit rating and of management by objectives.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job

Appendix 5A - Initial version of questionnaire



SURVEY OF EMPLOYEES' ATTITUDES TO THEIR QUALITY PROGRAMS

University of Technology, Sydney

I would be most grateful if you could spare the time to participate in this survey which is a vital part of my Doctorate work. A number of organisations are participating. Note that your participation is on a totally voluntary basis. The survey takes approximately 15 minutes to complete

PURPOSE OF THIS SURVEY

To improve our understanding of employees' involvement in, and attitudes towards quality programs.

WHO SHOULD FILL IN THIS QUESTIONNAIRE?

Your views are sought whether or not you have been actively involved in your organisation's quality program.

CONFIDENTIALITY

Reporting back to your organisation will be on a collective basis. Your responses will be confidential to myself and will not be used in any way that would identify you with the information you have provided. The project has to be carried out in accordance with guidelines laid down by the university ethics committee.

IF YOU WANT MORE INFORMATION

I would be pleased to discuss any aspect of the questionnaire with you or the research project in general or provide you with a summary of the results of the research. If you would like this please contact either my supervisor Dr Tom Fisher or myself. Our addresses and telephone numbers are given below

INSTRUCTIONS

Detailed instructions are given at the start of each section. Most questions require you to indicate on a scale of 1 to 7, the strength of your belief or your opinion of a statement or to tick an appropriate box.

Please try to complete all relevant sections of the questionnaire.

After completing the questionnaire please mail it back to me using the envelope supplied.

Thank you very much for your cooperation.

Researcher:

Douglas Davis
Senior Lecturer
School of Management
University of Technology, Sydney
PO Box 123
Broadway
NSW 2007

Tel: 9514 3609
Fax: 9514 3602

My research supervisor is:

Dr Tom Fisher
Senior Lecturer
School of Management
University of Technology, Sydney
PO Box 123
Broadway
NSW 2007

Tel: 9514 3620
Fax: 9514 3602

PART 1. For each outcome statement indicate how important is it to you personally that this outcome is achieved & how likely you think this has resulted or will result from the quality program

	Outcome The quality program has or will result in:-	How important is it to you personally that this outcome is achieved?							How likely is it that this outcome has or will result from your quality program?						
		not important at all			very important				very unlikely			very likely			
1	Improved quality of our goods and services	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	Improved competitiveness	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	Improved company long term survival prospects	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	Improved relationships with our customers	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5	Improved interdepartmental cooperation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6	Improved relationships with our suppliers	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	Significant reduction in "red tape" and bureaucracy	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	More emphasis on long term planning	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	Less overreacting to short term goals	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	Improved communication throughout the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11	Improved processes and procedures throughout the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	A culture of continuous improvement throughout the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Maintaining or enhancing your position in the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	Maintaining or enhancing your status in the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15	Improved chances of promotion for you	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16	An increase in your overall job satisfaction	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17	Retention of duties that you consider to be important	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18	New important duties for you	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19	Maintenance or improvement in your job security	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 2. Please indicate the degree to which you agree or disagree with each of the statements below by marking an appropriate number on the scale.

	statement	strongly disagree							strongly agree						
1	I am very enthusiastic about applying quality principles in my organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	I actively encourage others in my organisation to take an interest in quality issues	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	I am very willing to provide leadership in the area of quality in my organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 3. Please indicate how important each item is in increasing your commitment to the quality program and the extent that it happens in your organisation.

Item	How important is this in increasing your commitment to the quality program?							To what extent does this happen in your organisation?						
	not important at all			very important				not at all			to a great extent			
1 Top management in our organisation is committed to the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2 Top management in our organisation provides strong leadership in the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3 Top management's actions clearly show that they support the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4 Top management keeps us informed of their plans regarding the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5 Top management provides useful feedback on how the quality program is going	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6 Top management makes it easy for me to communicate my feelings about the quality program to them	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7 My direct boss is committed to the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8 My direct boss encourages and supports my involvement in the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9 Most of my colleagues support the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 4. With respect to your own feelings about working for your company please indicate the degree of your agreement or disagreement with each of the statements by marking an appropriate number on the scale.

		strongly disagree							strongly agree						
1	I feel certain about how much authority I have	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	I have clear planned goals and objectives for my job	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	I have to do things that should be done differently	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	I know I have divided my time properly	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5	I receive an assignment without the manpower to complete it	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6	I know what my responsibilities are	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	I have to buck a rule (bend/break/ignore a rule) or policy in order to carry out an assignment	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	I work with two or more groups who operate quite differently	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	I know exactly what is expected of me	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	I receive incompatible requests from two or more people	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11	I do things which are apt to be acceptable by one person but not accepted by others	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	I receive an assignment without adequate resources and materials to execute it	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Explanation is clear of what has to be done	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	I work on unnecessary things	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Part 5. With respect to your own feelings about your company please indicate the degree of your agreement or disagreement with each statement by marking an appropriate number on the scale.

	statement	Strongly disagree						Strongly agree
1	I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful	1	2	3	4	5	6	7
2	I talk up this organisation to my friends as a great organisation to work for	1	2	3	4	5	6	7
3	I feel very little loyalty to this organisation	1	2	3	4	5	6	7
4	I would accept almost any type of assignment in order to keep working for this organisation	1	2	3	4	5	6	7
5	I find my values and the organisation's values are very similar	1	2	3	4	5	6	7
6	I am proud to tell others that I am part of this organisation	1	2	3	4	5	6	7
7	I could just as well be working for a different organisation as long as the type of work was similar	1	2	3	4	5	6	7
8	This organisation really inspires the very best in me in the way of job performance	1	2	3	4	5	6	7
9	It would take very little change in my present circumstances to cause me to leave this organisation	1	2	3	4	5	6	7
10	I am extremely glad that I chose this organisation to work for over others I was considering at the time I joined	1	2	3	4	5	6	7
11	There's not too much to be gained by sticking with this organisation indefinitely	1	2	3	4	5	6	7
12	Often, I find it difficult to agree with this organisation's policies on important matters relating to its employees	1	2	3	4	5	6	7
13	I really care about the fate of this organisation	1	2	3	4	5	6	7
14	For me this is the best of all possible organisations for which to work	1	2	3	4	5	6	7
15	Deciding to work for this organisation was a definite mistake on my part	1	2	3	4	5	6	7

PART 6. For each outcome statement indicate how desirable or undesirable it is to you personally that this outcome is achieved & how likely you think this has resulted or will result from the quality program

Outcome The quality program has or will result in:-	How desirable or undesirable is it to you personally that this outcome is achieved?			How likely is it that this outcome has or will result from your quality program?												
	very undesirable	neither undesirable or desirable	very desirable	very unlikely	very likely											
More group work in the organisation	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
More opportunity for employees at lower levels to get involved in decision making	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
Rewards (pay etc) based on quality performance	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
Greater accountability for your job performance	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
An increase in your overall workload	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
A reduction in the monitoring of your performance	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
Lower level employees taking over some of your duties	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7

1. How long have you worked for your present organisation?[] Years
2. How long have you worked in your current position?[] Years

Which of the following most closely describes your level in the organisation?

- 1 [] No management or higher level administrative/professional responsibilities
- 2 [] Lower level management, ie. managing those doing routine work in the organisation (eg. supervisor)
- 3 [] Middle level management, ie. supervising lower level management or undertaking higher level administrative/professional duties
- 4 [] Senior level management, ie. responsible for managing middle level managers or for strategic matters in the organisation

4. Which of the following best describes your area of activity in the organisation? Please ✓ one

- 1 [] Quality specialist
- 2 [] Marketing/sales
- 3 [] Production/operations/purchasing
- 4 [] Human resource management
- 5 [] Design/research and development/engineering/IT
- 6 [] Accounting/finance/economics
- 7 [] General management
- 8 [] Other, please state

5. Is your job mainly a support role, sometimes called a staff role; or a more direct operations role, sometimes called a line role? Please ✓ one

- 1 [] line role
- 2 [] staff role
- 3 [] both line and staff role

Which of the following best describes your organisation's approach to quality? Please ✓ one

- 1 [] An approach based on quality assurance/certification to quality systems standards such as ISO 9000
- 2 [] A broad approach based on TQM/quality management principles such as employee involvement and continuous improvement and described by various quality award models eg the Australian Quality Award Model
- 3 [] Approaches [1] and [2] together
- 4 [] Not sure

7. Are you actively involved in the company's quality program?

1 yes - **Go To Question 8**

2 no - **Go To Question 12**

8. How long have you been involved in the quality program? [] years

9. How did you become involved in your quality program?

1 Involvement offered and I was expected to accept

2 Involvement offered and I was under no obligation to accept

3 I volunteered my involvement in the program

4 Other, please explain

10. How clear is your role in the quality program? Please ✓ one

not clear at all 1 2 3 4 5 6 7 very clear

11. Please indicate the strength of your intentions about continuing your involvement in the quality program. Please ✓ one

I definitely intend to

leave the program

1

2

3

4

5

6

7

I definitely intend to remain

in the program

Go To Question 14

12. **If "No" to question 7**, ie. you are not involved in the quality program, please indicate the reason for your non-involvement

1 role not offered

2 role offered but I was not interested

3 other reason, please state

13. **If "No" to question 7** ie. you are not involved in the quality program at present, please indicate the strength of your future intentions: Please ✓ one

I definitely do not intend

to become involved in

the program

1

2

3

4

5

6

7

I definitely intend to

become actively involved

the program

14. In terms of your idea of an organisation that has fully implemented the ideas of TQM/Quality Management, what stage of development do you consider that your organisation is at? Please ✓ one.

just starting

1

2

3

4

5

6

7

fully implemented

15. Overall approximately how much of your time at work is spent on activities related to quality eg. improving product/service and processes, working with improvement teams, learning more about quality, training and coaching others in quality improvement methods and planning for quality? Please ✓ one

none of my time

1

2

3

4

5

6

7

most of my time

PART 8. Personal details

1. What is your gender

1 male

2 female

2. What is your age group?

1 less than 25 years

2 25 - 34 years

3 35 - 44 years

4 45 - 54 years

5 55 -64 years

6 more than 64 years

3. What is your highest qualification? Please one

1 school certificate

2 TAFE/ Technical College qualification

3 bachelors degree

4 post graduate certificate/diploma

5 higher degree eg. masters, PhD

4. Have you received any formal training or education in quality /TQM/quality management?

1 no

2 yes. Please all relevant boxes:

a) in company training by company personnel

b) training by consultants

c) external courses eg TAFE, AQC, short courses

d) university courses or subjects

PART 9.

1. To what extent do you think that applying the ideas of Quality Management/Total Quality Management is an effective way to manage an organisation? Please one

not effective at all 1 2 3 4 5 6 7 very effective

2. Any comments you like to make about quality in general or your involvement in quality activities at work would be appreciated.

.....

.....

.....

MANY THANKS FOR YOUR TIME, PATIENCE AND VALUABLE CONTRIBUTION TO THIS RESEARCH PROJECT



SURVEY OF EMPLOYEES' ATTITUDES TO THEIR QUALITY PROGRAMS

University of Technology, Sydney

I would be most grateful if you could spare the time to participate in this survey which is a vital part of my Doctorate work. Note that your participation is on a totally voluntary basis. The survey takes approximately 15 minutes to complete. A number of organisations are participating.

PURPOSE OF THIS SURVEY

To improve our understanding of employees' involvement in, and attitudes towards quality programs.

WHO SHOULD FILL IN THIS QUESTIONNAIRE?

Your views are sought whether or not you have been actively involved in your organisation's quality program. This is an opportunity for you to communicate your views on the quality program.

CONFIDENTIALITY

Reporting back to your organisation will be on a collective basis. Your responses will be confidential to myself and will not be used in any way that would identify you with the information you have provided. The project has to be carried out in accordance with guidelines laid down by the university ethics committee.

IF YOU WANT MORE INFORMATION

I would be pleased to discuss any aspect of the questionnaire with you or the research project in general or provide you with a summary of the results of the research. If you would like this please contact either my supervisor Dr Tom Fisher or myself. Our addresses and telephone numbers are given below

INSTRUCTIONS

Detailed instructions are given at the start of each section. Most questions require you to indicate on a scale of 1 to 7, the strength of your belief or your opinion of a statement or to tick an appropriate box.

Please try to complete all relevant sections of the questionnaire.

After completing the questionnaire please mail it back to me using the envelope supplied.

Thank you very much for your cooperation.

Researcher:

Douglas Davis
Senior Lecturer
School of Management
University of Technology, Sydney
PO Box 123
Broadway
NSW 2007

Tel: 9514 3609
Fax: 9514 3602

My research supervisor is:

Dr Tom Fisher
Senior Lecturer
School of Management
University of Technology, Sydney
PO Box 123
Broadway
NSW 2007

Tel: 9514 3620
Fax: 9514 3602

PART 1. For each outcome statement indicate how important is it to you personally that this outcome is achieved & how likely you think this has resulted or will result from the quality program by marking an appropriate number on each scale

	Outcome The quality program has or will result in:-	How important is it <u>to you personally</u> that this outcome is achieved?							How likely is it that this outcome has or will result from your quality program?						
		not important at all			very important				very unlikely			very likely			
1	Improved quality of our goods and services	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	Improved competitiveness	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	Improved company long term survival prospects	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	Improved relationships with our customers	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5	Improved interdepartmental cooperation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6	Improved relationships with our suppliers	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	Significant reduction in "red tape" and bureaucracy	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	More emphasis on long term planning	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	Less overreacting to short term goals	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	Improved communication throughout the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11	Improved processes and procedures throughout the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	A culture of continuous improvement throughout the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Maintaining or enhancing your position in the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	Maintaining or enhancing your status in the organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15	Improved chances of promotion for you	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16	An increase in your overall job satisfaction	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17	Retention of duties that you consider to be important	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18	New important duties for you	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19	Maintenance or improvement in your job security	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 2. Please indicate the degree to which you agree or disagree with each of the statements below by marking an appropriate number on the scale.

	statement	strongly disagree							strongly agree						
1	I am very enthusiastic about applying quality principles in my organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	I actively encourage others in my organisation to take an interest in quality issues	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	I am very willing to provide leadership in the area of quality in my organisation	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 3. Please indicate how important each item is in increasing your commitment to the quality program and the extent that it happens in your organisation.

Item	How important is this in increasing your commitment to the quality program?							To what extent does this happen in your organisation?						
	not important at all			very important				not at all			to a great extent			
1 Top management in our organisation is committed to the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2 Top management in our organisation provides strong leadership in the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3 Top management's actions clearly show that they support the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4 Top management keeps us informed of their plans regarding the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5 Top management provides useful feedback on how the quality program is going	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6 Top management makes it easy for me to communicate my feelings about the quality program to them	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7 My direct boss is committed to the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8 My direct boss encourages and supports my involvement in the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9 Most of my colleagues support the quality program	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 4. With respect to your own feelings about working for your company please indicate the degree of your agreement or disagreement with each of the statements by marking an appropriate number on the scale.

		strongly disagree							strongly agree						
1	I feel certain about how much authority I have	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2	I have clear planned goals and objectives for my job	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3	I have to do things that should be done differently	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	I know I have divided my time properly	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5	I receive an assignment without the manpower to complete it	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6	I know what my responsibilities are	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	I have to buck a rule (bend/break/ignore a rule) or policy in order to carry out an assignment	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	I work with two or more groups who operate quite differently	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	I know exactly what is expected of me	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	I receive incompatible requests from two or more people	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11	I do things which are apt to be acceptable by one person but not accepted by others	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	I receive an assignment without adequate resources and materials to execute it	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Explanation is clear of what has to be done	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	I work on unnecessary things	1	2	3	4	5	6	7	1	2	3	4	5	6	7

PART 5. With respect to your own feelings about your company please indicate the degree of your agreement or disagreement with each statement by marking an appropriate number on the scale.

	statement	Strongly disagree						Strongly agree
1	I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful	1	2	3	4	5	6	7
2	I talk up this organisation to my friends as a great organisation to work for	1	2	3	4	5	6	7
3	I feel very little loyalty to this organisation	1	2	3	4	5	6	7
4	I would accept almost any type of assignment in order to keep working for this organisation	1	2	3	4	5	6	7
5	I find my values and the organisation's values are very similar	1	2	3	4	5	6	7
6	I am proud to tell others that I am part of this organisation	1	2	3	4	5	6	7
7	I could just as well be working for a different organisation as long as the type of work was similar	1	2	3	4	5	6	7
8	This organisation really inspires the very best in me in the way of job performance	1	2	3	4	5	6	7
9	It would take very little change in my present circumstances to cause me to leave this organisation	1	2	3	4	5	6	7
10	I am extremely glad that I chose this organisation to work for over others I was considering at the time I joined	1	2	3	4	5	6	7
11	There's not too much to be gained by sticking with this organisation indefinitely	1	2	3	4	5	6	7
12	Often, I find it difficult to agree with this organisation's policies on important matters relating to its employees	1	2	3	4	5	6	7
13	I really care about the fate of this organisation	1	2	3	4	5	6	7
14	For me this is the best of all possible organisations for which to work	1	2	3	4	5	6	7
15	Deciding to work for this organisation was a definite mistake on my part	1	2	3	4	5	6	7

PART 6. For each outcome statement indicate how desirable or undesirable it is to you personally that this outcome is achieved & how likely you think this has resulted or will result from the quality program

Outcome The quality program has or will result in:-	How desirable or undesirable is it to you personally that this outcome is achieved?			How likely is it that this outcome has or will result from your quality program?												
	very undesirable	neither undesirable or desirable	very desirable	very unlikely	very likely											
1 More group work in the organisation	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
2 More opportunity for employees at lower levels to get involved in decision making	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
3 Rewards (pay etc) based on quality performance	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
4 Greater accountability for your job performance	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
5 An increase in your overall workload	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
6 A reduction in the monitoring of your performance	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
7 Lower level employees taking over some of your duties	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7

Part 7. Please indicate the degree to which you agree or disagree with each of the statements below by marking an appropriate number on the scale.

	statement	strongly disagree						strongly agree
1	I am very enthusiastic about applying our quality program in my organisation	1	2	3	4	5	6	7
2	I actively encourage others in my organisation to take an interest in our quality program	1	2	3	4	5	6	7
3	I am very willing to provide leadership in the quality program in my organisation	1	2	3	4	5	6	7

PART 8.

1. How long have you worked for your present organisation?[] Years
2. How long have you worked in your current position?[] Years
3. Which of the following most closely describes your level in the organisation?
 - 1 [] No management or higher level administrative/professional responsibilities
 - 2 [] Lower level management, ie. managing those doing routine work in the organisation (eg. supervisor)
 - 3 [] Middle level management, ie. supervising lower level management or undertaking higher level administrative/professional duties
 - 4 [] Senior level management, ie. responsible for managing middle level managers or for strategic matters in the organisation
4. Which of the following best describes your area of activity in the organisation? Please ✓ one
 - 1 [] Quality specialist
 - 2 [] Marketing/sales
 - 3 [] Production/operations/purchasing
 - 4 [] Human resource management
 - 5 [] Design/research and development/engineering/IT
 - 6 [] Accounting/finance/economics
 - 7 [] General management
 - 8 [] Other, please state
5. Which of the following best describes your organisation's approach to quality? Please ✓ one
 - 1 [] An approach based on quality assurance/certification to quality systems standards such as ISO 9000
 - 2 [] A broad approach based on TQM/quality management principles such as employee involvement and continuous improvement and described by various quality award models eg the Australian Quality Award Model
 - 3 [] Approaches [1] and [2] together
 - 4 [] Not sure

6. Are you actively involved in the company's quality program?

1 yes - **Go To Question 7**

2 no - **Go To Question 11**

7. How long have you been involved in the quality program? [] years

8. How did you become involved in your quality program? Please ✓ one

1 Involvement offered and I was expected to accept

2 Involvement offered and I was under no obligation to accept

3 I volunteered my involvement in the program

4 Other, please explain

9. How clear is your role in the quality program? Please circle one

not clear at all 1 2 3 4 5 6 7 very clear

10. Please indicate the strength of your intentions about continuing your involvement in the quality program. Please circle one

I definitely intend to

leave the program

1

2

3

4

5

6

7

I definitely intend to remain

in the program

Go To Question 13

11. **If "No" to question 6**, ie. you are not involved in the quality program, please indicate the reason for your non-involvement

1 role not offered

2 role offered but I was not interested

3 other reason, please state

12. **If "No" to question 6** ie. you are not involved in the quality program at present, please indicate the strength of your future intentions: Please circle one

I definitely do not intend

to become involved in

the program

1

2

3

4

5

6

7

I definitely intend to

become actively involved

the program

13. In terms of your idea of an organisation that has fully implemented the ideas of TQM/Quality Management, what stage of development do you consider that your organisation is at? Please circle one.

just starting 1 2 3 4 5 6 7 fully implemented

14. Overall approximately how much of your time at work is spent on activities related to quality eg. improving product/service and processes, working with improvement teams, learning more about quality, training and coaching others in quality improvement methods and planning for quality? Please circle one

none of my time 1 2 3 4 5 6 7 most of my time

15. To what extent do you think that your quality program is of benefit to the organisation?
Please circle one.

of little benefit 1 2 3 4 5 6 7 of great benefit

16. Overall what is your personal commitment to the quality program? Please circle one

low commitment 1 2 3 4 5 6 7 high commitment

17. To what extent do you think that applying the ideas of Quality Management/Total Quality Management is an effective way to manage an organisation? Please circle one

not effective at all 1 2 3 4 5 6 7 very effective

PART 9.

1. What is your gender

1 [] male
2 [] female

2. What is your age group?

1 [] less than 25 years
2 [] 25 - 34 years
3 [] 35 - 44 years
4 [] 45 - 54 years
5 [] 55 -64 years
6 [] more than 64 years

3. What is your highest qualification? Please ✓ one

1 [] high school only
2 [] TAFE/ Technical College qualification
3 [] bachelors degree
4 [] post graduate certificate/diploma
5 [] higher degree eg. masters, PhD

4. Have you received any formal training or education in quality /TQM/quality management?

1 [] no
2 [] yes. Please ✓ **all relevant boxes**:

a) [] in company training by company personnel
b) [] training by consultants
c) [] external courses eg TAFE, AQC, short courses
d) [] university courses or subjects

5. Have there been any events that have particularly influenced your views on your quality program? Also any comments you like to make about quality in general or your involvement in quality activities at work would be appreciated. (cont. over if you need more space).

.....

.....

.....

.....

.....

.....

.....

.....

MANY THANKS FOR YOUR TIME, PATIENCE AND VALUABLE CONTRIBUTION TO THIS RESEARCH PROJECT

Appendix 5C - Letter of approval from UTS Research Ethics Committee

Research Office
 Director
 Angelina Farmer
 PO Box 123
 Broadway NSW 2007
 Australia
 Tel +61 2 330 1256
 Fax +61 2 330 1244



University of Technology, Sydney

12 July, 1996

Dr Tom Fisher
 School of Management
 Markets Campus

Dear Tom

Re: HREC 96/57 - FISHER, Dr Tom (for DAVIS, Mr Doug - PhD student) - "Anonymous survey of employee's attitudes to their quality programs"

The UTS Human Research Ethics Committee considered your request for approval of the above project at its meeting of 9 July 1996. The Committee had no hesitation in approving the above application. The approval number is UTS HREC 96/57A.

The NHMRC guidelines require us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. The attached report form must be completed at least annually, and at the end of the project (if it takes more than a year), or in the event of any changes to the research as referred to above, in which case the Research Ethics Officer should be contacted beforehand.

I also refer you to the AVCC guidelines relating to the storage of data. The University requires that, wherever possible, original research data be stored in the academic unit in which they were generated. Should you submit any manuscript for publication, you will need to complete the attached *Statement of Authorship, Location of Data, Conflict of Interest* form, which should be retained in the School, Faculty or Centre, in a place determined by the Dean or Director.

Please complete the attached (green) report form at the appropriate time and return to Susanna Davis, Research Ethics Officer, Research Office, Broadway. In the meantime, if you have any queries please do not hesitate to contact either Susanna or myself.

Yours sincerely,

Production Note:
 Signature removed prior to publication.

Associate Professor Ashley Craig
 Chair
 UTS Human Research Ethics Committee

Office City campus, No. 1 Broadway, Sydney NSW
 Campuses Balmain, City, Kuring-gai, St Leonards

Appendix 5D - Explanatory letters sent to organisations

[Name of contact]
[Company address]

[Date]

Tel 9514 3609
Fax 9514 3602

School of Management

Dear ...,

Middle managers and quality programs - survey

Further to our recent conversation I am able to provide you with details of the questionnaire survey that we discussed and formally invite you to consider participation in the project. Below I describe the background to the research, the structure and purpose of the questionnaire, what your organisation can expect to get out of the exercise and suggest a procedure for distributing and collecting the questionnaires for your consideration. The project has to be conducted in a way that satisfies the guidelines laid down by the university ethics committee.

Background to this research project

I am doing research for a doctorate in management and my supervisor is Dr Tom Fisher. We both work in the School of Management at UTS. My interest is in how middle managers adapt when organisations introduce a quality program of some kind. There is a reasonable amount of published research material on middle managers but not very much on their attitudes towards, and participation in quality management programs. This is the area in which I hope to make a contribution.

More specifically I am interested to explore what factors are important in influencing their acceptance or non acceptance of initiatives like a quality management program. I have developed a questionnaire which is the main way in which I will collect data from middle managers.

The questionnaire (see copy enclosed)

The front sheet provides instructions to respondents, this can be customised if needed eg. to include the name of your particular program.

Parts 4 and 5 are standard questionnaires from the literature, they measure aspects of work which often seem to be particular issues for middle managers, namely, conflict and ambiguity (part 4) and commitment to the organisation (part 5). A colleague of mine has organisational commitment data for several hundred Australian organisations so data from this research can be compared to his findings.

The remainder of the questionnaire is of my own design and should be fairly self explanatory. I will be pleased to explain it to you in more detail and discuss the way in which I intend to analyse the data.

How the data will be analysed and related ethical considerations

The data will be analysed at two levels, the collective data (data from all participating organisations combined) and by individual organisation. The latter will allow some inter organisation comparisons to be carried out. The results will be presented in a way so that organisations are anonymous and responses cannot be linked with particular individuals or groups of individuals. So, for example

collective data would be used to explore the relationship say between attitudes to the quality program and job type, but this would not be done within each organisation as it may identify individuals or particular groups. Inter organisation comparisons will be made using all data from each organisation.

What your organisation can expect to get out of the project

You will receive a summary of the results for the whole project and a summary of the data for your own organisation. This will provide you with valuable information on your own middle managers' views on a range of issues related to quality in your organisation and you will be able to make comparisons with other participating organisations. For example you will get an idea of what middle managers in your organisation expect from your quality program and how they value and rate different kinds of support for your quality program. I would also supply you with some national data on organisational commitment (see part 5 of the questionnaire) for comparison purposes. I cannot provide data in a way that identifies individuals and groups in your organisation with particular results. I would anticipate that you would be willing to share some of the feedback with middle managers who are interested in the survey results and may have participated in it.

What I ask of your organisation

Participation both for your organisation and for your middle managers is voluntary. If you agree to participate the steps I think will be needed in your organisation to carry out the research are as follows:

- a) Making any minor modifications to the questionnaire and accompanying instructions to aid the understanding of your middle management group. You may for example wish to include a note stating that your organisation is supporting the project.
- b) Identify middle managers in your organisation, or the part(s) of your organisation that you are interested in surveying, and distribute the questionnaire to them. I would supply the required number of questionnaires and either envelopes addressed to myself at UTS or sticky self addressed labels. Once a middle manager had completed their questionnaire he/she would mail it directly back to me at UTS. Note that your company name would be on your questionnaires, this is needed in order to carry out inter company comparisons. Respondents would of course not put their names on the questionnaires.
- c) In order to obtain a reasonable sample size reminders may need to be distributed. I would prepare the reminders and ask you to send them to all the middle managers who received the original questionnaire.
- d) As you will appreciate a questionnaire of this kind takes a "snap-shot" at a point in time. In order to discuss the results in a meaningful way I need to have some understanding of how your quality program(s) was developed. The most practical way of doing this is to conduct a small number of interviews with key managers involved. Setting this up could be discussed after the questionnaire data collection has been completed.

If you require any further information I will be pleased to assist.

Yours sincerely

Douglas Davis
Senior Lecturer

cc Dr Tom Fisher

QUICK GUIDE ON SURVEY PROCEDURE

A detailed explanation of the research project is contained in the enclosed letter. This is a one page guide suggesting how to carry out the survey in your organisation. It is based on the experience gained with organisations already participating.

1. Decide if you want to participate in the project. Assuming you do then:
2. Decide which group of middle managers you want to survey. Note, that I am leaving it up to you to define who your middle managers are. You may want to:
 - a) take a sample of middle managers across the organisation,
 - b) sample one particular group (eg. part of the organisation) of interest to you or
 - c) sample a number of groups for comparison purposes

The response rate to the questionnaire is around 50% so to get a sample of say 30, 60 middle managers would need to be sent questionnaires. If you want to sample more than one group then I think we need a reasonable response in each group - say at least 15 - for statistical purposes and to maintain the anonymity of individual respondents. So group sizes need to be a minimum of around 30.

3 The meaning of "quality program" may not be obvious to respondents. If not, either this can be made clear on the front page of the questionnaire, which I can customise, or in a note from yourself which accompanies the questionnaire. Note, most organisations have thought it important to included a note of organisational support with the questionnaire and have used this document to clarify what their "quality program" is.

4 Let me know who you want to survey and how you want to do it. Some of the alternatives are:

- a) I supply you with the required number of questionnaires and pre-paid self addressed envelopes. You distribute these together with any letter of support/clarification to your selected middle managers, using your internal mail system. Respondents mail the completed questionnaires back to me. I need to know the number of questionnaires you require and if more than one group is being surveyed then a name for each group is required so that we can keep track of where the questionnaires were filled in. Note this is the most usual method of distributing the survey.
- b) You can supply me with names and addresses of middle managers and I will mail the questionnaires and self addresses envelopes (and any letter of support) directly to them. (a small number of organisations have opted for this option)
- c) Any other method that you might prefer as long as the anonymity of respondents is maintained.

Appendix 5E - Details of participating organisations

The following is a summary of the organisations surveyed. This summary includes details of sample selection for the questionnaire survey. A common format is used to describe each of the organisations. There is generally more detailed information on the ten organisations visited than the other participating organisations that were not visited. In a number of cases organisations were unable to provide additional information after the questionnaire survey had been carried out. In two cases organisations were involved in mergers and in some cases the contact person was too busy to provide the additional information requested. Information is presented in a form that maintains the anonymity of participating organisations.

Organisation 1

Type of organisation – Utility

Number of employees – 1920

Definition of middle manager – Level below executive level

Number of middle managers in organisation – 200 i.e. 10.4% of employees

Selection of sample – Samples were taken from four functional groups, the organisation was interested in examining possible differences between these groups.

Usable questionnaire response 67

Questionnaire sample as % of middle managers in organisation – 33.5%

Employees interviewed – 2 senior managers (one also quality manager), 2 middle managers.

Quality manager in senior management position? – Yes

External recognition of quality initiatives – Recent Australian quality award

Brief details of quality program – The company has a long involvement with formal quality programs starting in 1990 with a TQM program. After providing training sessions for staff their first action was to introduce Quality Improvement teams this was followed by integrating quality into their business plans. The third step they took was the quality management of their processes focusing on business performance. Part of this involved the establishment of a Quality System to replicate effective processes. The Board of Directors of the company actively encourages a quality environment. The organisation entered for an Australian Quality Award in the mid 1990s. Employees are expected to be involved in teams and teamwork and performance reviews.

Recent structural changes – Recently the original organisation has amalgamated with another smaller utility.

Current quality program is TQM with some ISO 9000 certified processes.

For the questionnaire item on program maturity i.e. In terms of your idea of an organisation that has fully implemented TQM/Quality Management, at what stage of development do you consider your organisation is at? the quality manager gave a rating of 5 on the 1 (just starting) to 7 (fully implemented) scale. This rating is the same as the mean of the ratings given by middle manager questionnaire respondents from the organisation. The organisation has developed its own version of self-assessment.

Organisation 2

Type of organisation – Manufacturing

Number of employees – 130

Definition of middle manager – Employees above supervisor level and below director level

Number of middle managers in organisation – 36 (27.6%) of total employees

Selection of sample – All middle managers

Usable questionnaire response - 26

Questionnaire sample as % of middle managers in organisation – 72%

Employees interviewed – 1 director, responsible for quality, 2 middle managers.

Quality manager in senior management position? – Yes, a company director

External recognition of quality initiatives – Recent Australian quality award winner.

Brief details of quality program – Practised QA for many years and moved to a more holistic approach in 1991. Started with TQM in 1992 with employee training and a company continuous improvement program. Strong support for current program from CEO.

Recent structural changes – Some gradual downsizing.

Employees are expected to be involved in teams and teamwork.

Have both TQM and ISO 9000 certified processes. QA is integrated into quality program so as to add value. Integrate data collection activities for ISO 9000 and the environmental standard ISO 14000.

Organisation 3

Type of organisation – Information technology

Number of employees – 1100

Definition of middle manager – Employees above supervisor level and below senior management level

Number of middle managers in organisation – 80, 7.3% of total employees (15 senior managers)

Selection of sample – Across the organisation in Australia.

Usable questionnaire response - 26

Questionnaire sample as % of middle managers in organisation – 32.5%

Employees interviewed - Quality Manager

Quality manager in senior management position? – Yes, participates in Board meetings.

External recognition of quality initiatives – Have 8 processes certified to ISO 9000. Some business units have participated in quality awards but their policy is to focus on quality for business improvement not for winning awards. The organisation has a high profile in quality the quality manager is a frequent presenter at conferences.

Brief details of quality program – The company is a multi-national but the following comments apply to its Australian operation. At the end of the 1980's the organisation went through a massive downsizing selling off property and some businesses. More recently there has been an emphasis on strategy to compete effectively in the market place rather than just cost reduction. In the early 1990's the company appointed a part-time quality manager to champion quality. A year later a full-time quality manager was appointed together with some quality personnel to form a quality unit. The current structure is one quality manager working closely with HR supporting all business affiliations. The long-term aim of the quality program is to have a quality culture in which everybody is practising this; there will be evidence that this is happening. They have a well-developed quality plan. Information on quality is available on a computer web site accessible by all employees. There is strong support for the program from top management; the quality manager who is a senior manager participates in board meetings with the company directors.

Recent structural changes – Three or four attempts at restructuring in recent years.

All employees are expected to be involved in the quality program.

Have both TQM and ISO 9000 certified processes.

Organisation 4

Type of organisation – Public sector

Number of employees – 618

Definition of middle manager – Branch managers and their deputies.

Number of middle managers in organisation – Approximately 40, 6.5% of total employees

Selection of sample – All middle managers

Usable questionnaire response - 21

Questionnaire sample as % of middle managers in organisation – 52%

Employees interviewed - Quality manager, two senior managers and two middle managers.

Quality manager in senior management position? – Yes.

External recognition of quality initiatives – Early recipient of an Australian Quality Award.

Brief details of quality program – Became interested in quality in 1986 and was one of the first recipients of an Australian Quality Award. Initial work concentrated on building up relationships with their customer groups. Their current approach to quality was described by one manager interviewed as "covert". By this he meant that employees were provided with the opportunities to get involved in quality and to keep abreast of developments in quality, for example by being sent to conferences, rather than being part of a highly orchestrated approach. It was evident that quality procedures had been adopted throughout the organisation. The writer was given a copy of a department procedure manual by one of the middle managers interviewed. This manual contained specific quality related activities that employees were expected to undertake.

Recent structural changes – Three or four attempts at restructuring in recent years.

Employees are expected to be involved in the program.

Have both TQM and ISO 9000 certified processes.

Organisation 5 This organisation was the subject of a take-over. This took place after the questionnaire survey had been administered and returns received. After the take over the organisation withdrew from this research and it was not possible to obtain further information directly. Some background information was obtained from secondary sources e.g. Kompas Directory

Type of organisation – Finance

Number of employees – 2200

Definition of middle manager –

Number of middle managers in organisation –

Selection of sample –

Usable questionnaire response - 24

Questionnaire sample as % of middle managers in organisation –

Quality manager in senior management position? –

External recognition of quality initiatives – unknown

Brief details of quality program –

Recent structural changes – Taken over by another financial institution

All employees are expected to be involved in their quality program.

Organisation 6

Type of organisation – Finance

Number of employees – 49163 (in Australia at all various sites)

Definition of middle manager –

Number of middle managers in organisation –

Selection of sample – Convenience

Usable questionnaire response - 37

Questionnaire sample as % of middle managers in organisation –

Employees interviewed – Nil

Quality manager in senior management position? – yes

External recognition of quality initiatives – None

Brief details of quality program – A formal quality program had been established for about one year. they have focus groups operating and some continuous improvement activities under way. There was a quality management unit in the organisation. At the time of survey were deciding on future strategy, in particular whether or not to pursue ISO 9000.

Recent structural changes –

Employee involvement in program – employees given some choice on whether or not to be involved.

Organisation 7

Type of organisation – Public sector

Number of employees – 6900 total., 2500 in business unit surveyed

Definition of middle manager – White-collar predominantly professional engineers managing work teams engaged in contract construction and maintenance.

Number of middle managers in organisation – Approximately 100 in business unit surveyed

Selection of sample – The operation was divided into three distinct businesses, the sample was taken from one of the business units which contained approximately 100 middle managers

Usable questionnaire response - 34

Questionnaire sample as % of middle managers in organisation – 34% of total in business unit surveyed

Employees interviewed – Corporate quality manager, a company director (strategy), 2 middle managers (neither middle manager was from the business surveyed by questionnaire!)

Quality manager in senior management position? – Yes

External recognition of quality initiatives – Some ISO accreditation

Brief details of quality program – The questionnaire survey was carried out at a time when the organisation had evaluated its approach to quality and had decided to restructure its approach to quality.

The original quality team had been disbanded and a new team was being assembled. Management said that they felt enthusiasm for quality would be at a low ebb when the survey was carried out. Their involvement with formal quality initiatives started 1994/95 with the development of a quality manual and quality training. This approach proved too academic and projects were considered on reflection to have been too grandiose. Currently company uses a continuous improvement approach plus quality assurance and is also carrying out self-assessment using the Australian Quality Council material. They publish a set of Continuous Improvement Priorities that are related to the corporate strategic plan.

Recent structural changes - Significant "downsizing" has occurred over the last eight years and is continuing at a reduced rate.

Employee involvement in program – generally employees expected to be involved.

Organisation 8

Type of organisation – Information technology

Number of employees – 1300

Number of middle managers – 150 middle managers

Definition of middle manager – Group below top management.

Selection of sample – Random sample across the organisation

Usable questionnaire response - 17

Questionnaire sample as % of middle managers in organisation – 11.3%

Employees interviewed – Director responsible for quality in the organisation

Quality manager in senior management position? – Director

External recognition of quality initiatives – Recent Australian Quality Award recipient

Brief details of quality program – Basically a TQM type program with some certification to ISO9000.

The company had a well-developed quality structure consisting of a steering committee and various quality groups mainly focused around product or customer segments.

Recent structural changes - A new CEO had been recently appointed and there had been a recent reduction in the number of hierarchical levels of management.

Employee involvement in program – It was evident that although active participation in formal quality groups was encouraged it was not compulsory.

Organisation 9

Type of organisation – Manufacturing (Note: a number of requests were made for further information)

Number of employees – 1400 (in group)

Definition of middle manager –

Number of middle managers -

Selection of sample –

Usable questionnaire response - 18

Questionnaire sample as % of middle managers in organisation –

Employees interviewed – Nil (request made)

Quality manager in senior management position? – yes

External recognition of quality initiatives – Some ISO 9000 Certification

Brief details of quality program - TQM approach with some ISO 9000 certification.

Recent structural changes –

Employee involvement in program – employees generally expected to be involved.

Organisation 10

Type of organisation – Manufacturing

Number of employees – 240

Definition of middle manager – Level below senior management

Number of middle managers - 38

Selection of sample – All middle managers

Usable questionnaire response - 32

Questionnaire sample as % of middle managers in organisation – 84%

Employees interviewed – Business Improvement Manager, two middle managers, Director of Human Resources.

Quality manager in senior management position? – Yes

External recognition of quality initiatives – Some ISO 9000 Certification, entrant in Australian Quality Awards.

Brief details of quality program – Started with ISO 9000 to get factories certified. Both a TQM and ISO approach used. Was told that they use QA to stabilise processes and do not expect improvements out of QA. A focus of their overall quality program is business improvement. A key objective is to be an effective organisation with less people. In the last two years (1995-1997) their understanding of quality has been maturing.

Recent structural changes? New CEO with a background in quality. Previous CEO charismatic leader but did not understand the "nitty gritty" (of quality)

Employee involvement in program – Expected/encouraged to be involved.

Organisation 11

Type of organisation – Public Sector

Number of employees – 13,500 in New South Wales

Definition of middle manager – Facility Managers, the top echelon below the Executive Group.

Number of middle managers – Approximately 137

Selection of sample – Random

Usable questionnaire response - 29

Questionnaire sample as % of middle managers in organisation - 21%

Employees interviewed – Manager Quality and Best Practice., Ex Facility Manager.

Quality manager in senior management position? – Yes

External recognition of quality initiatives – ISO 9000 in some of the facilities

Brief details of quality program – Started on quality in 1991. Has been a gradual process with some resistance at first. First ISO 9000 accreditation in 1991. Use teamwork extensively Have a highly multicultural workforce with approximately 80% from non-English speaking backgrounds.

Recent structural changes – A significant reduction in staff at head office.

Employee involvement in program – program involvement generally compulsory.

Organisation 12

Type of organisation – Distribution private sector

Number of employees – 437

Definition of middle manager – Level below senior management

Number of middle managers – 36 (questionnaires were sent to all middle managers in the organisation)

Selection of sample – All areas/functions of the organisation

Usable questionnaire response - 20

Questionnaire sample as % of middle managers in organisation – 55.6%

Employees interviewed – Nil (interviews requested)

Quality manager in senior management position? – Yes

External recognition of quality initiatives – ISO 9000 Certification

Brief details of quality program – TQM with some ISO 9000 certification.

Recent structural changes –

Employee involvement in program – program involvement generally expected.

Organisation 13

Type of organisation – Manufacturing & distribution

Number of employees – 300

Definition of middle manager –

Number of middle managers -

Selection of sample –

Usable questionnaire response - 10

Questionnaire sample as % of middle managers in organisation –

Employees interviewed – Nil

Quality manager in senior management position? – Yes

External recognition of quality initiatives –

Brief details of quality program –

Recent structural changes –

Employee involvement in program – program involvement encouraged.

Organisation 14

Type of organisation – Communications

Number of employees – 73,000

Definition of middle manager –

Number of middle managers -

Selection of sample – From the Melbourne office

Usable questionnaire response - 9

Questionnaire sample as % of middle managers in organisation – Very small

Employees interviewed – Nil

Quality manager in senior management position? – Yes
 External recognition of quality initiatives –
 Brief details of quality program –
 Recent structural changes – Numerous
 Employee involvement in program – program involvement encouraged.

Organisation 15

Type of organisation – Manufacturing
 Number of employees – 4000 in division surveyed
 Definition of middle manager –
 Number of middle managers –
 Selection of sample – arranged by contact person
 Usable questionnaire response – 21
 Questionnaire sample as % of middle managers in organisation – Very small
 Employees interviewed – Nil
 Quality manager in senior management position? – Yes
 External recognition of quality initiatives – ISO 9000 certification
 Brief details of quality program – Have had TQM initiatives for many years and have been a leader in TQM implementation
 Recent structural changes – Many
 Employee involvement in program – encouraged not compulsory.

Organisation 17

Type of organisation – Manufacturing
 Number of employees – 492
 Definition of middle manager – Level below top management (3rd tier in the organisation)
 Number of middle managers - 10
 Selection of sample – All middle managers
 Usable questionnaire response - 6
 Questionnaire sample as % of middle managers in organisation – 60%
 Employees interviewed – Nil
 Quality manager in senior management position? – yes
 External recognition of quality initiatives – ISO 9000 certification
 Brief details of quality program –
 Recent structural changes –
 Employee involvement in program – involvement generally expected.

Organisation 18

Type of organisation – Manufacturing
 Number of employees – 2600
 Definition of middle manager –
 Number of middle managers –
 Selection of sample – details not provided
 Usable questionnaire response - 10
 Questionnaire sample as % of middle managers in organisation –
 Employees interviewed – Nil
 Quality manager in senior management position? – Yes
 External recognition of quality initiatives –
 Brief details of quality program – TQM type program
 Recent structural changes –
 Employee involvement in program – program involvement generally expected.

Organisation 19

Type of organisation – Transport
 Number of employees – 8611
 Definition of middle manager –
 Number of middle managers –
 Selection of sample – Details not provided

Usable questionnaire response - 9

Questionnaire sample as % of middle managers in organisation – Small

Employees interviewed – Nil

Quality manager in senior management position? – Yes

External recognition of quality initiatives –

Brief details of quality program – Mainly QA initiatives

Recent structural changes –

Employee involvement in program – involvement encouraged not compulsory.

Organisation 20

Type of organisation – Finance

Number of employees – 6033

Definition of middle manager – A particular job level grade

Number of middle managers – approx. 500

Selection of sample – Random sample (computer selected)

Usable questionnaire response - 100

Questionnaire sample as % of middle managers in organisation – 20%

Employees interviewed – Nil (interviews requested)

Quality manager in senior management position? – Yes

External recognition of quality initiatives – Company gained a reputation for being a leading exponent of the TQM approach in the service industries. Recipient of an Australian Quality Award. More recently some ISO 9000 Certification. At the time of the questionnaire survey, late 1996, the direction of the organisation was being reviewed. This review included an examination of the quality management approach that had been part of the organisation's culture for some years. The results from this survey were used as part of the review process.

Brief details of quality program – See above

Recent structural changes – Shortly after the questionnaire survey was administered this organisation amalgamated (they were the most powerful partner) with another financial institution.

Employee involvement in program –

Organisation 21

Type of organisation – Manufacturing

Number of employees – 850

Definition of middle manager – Employees responsible for running teams

Number of middle managers - 35

Selection of sample – Convenience

Usable questionnaire response - 14

Questionnaire sample as % of middle managers in organisation – 40%

Employees interviewed – Three middle managers

Quality manager in senior management position? – Yes

External recognition of quality initiatives – Some ISO 9000 Certification

Brief details of quality program – A lot of engineering quality requirements. Some ISO 9000 initiatives

Recent structural changes – Downsizing through natural attrition

Employee involvement in program – involvement generally expected.

Organisation 22

Type of organisation – Utility

Number of employees – 1900 (was 4200 in 1985)

Definition of middle manager – Band below executive level, did not include supervisors

Number of middle managers – Approximately 80

Selection of sample – Sent to all available middle managers

Usable questionnaire response - 32

Questionnaire sample as % of middle managers in organisation – 40%

Employees interviewed – Business Quality Manager., one Senior Manager., one middle manager

Quality manager in senior management position? – Yes

External recognition of quality initiatives – Australian Quality Award winner. ISO Certification

Brief details of quality program – Started to develop a customer focus in 1985. QA directed particularly at suppliers. An internal QA initiative started in 1988, with 32 hours of training for all employees, a

significant investment. This was considered a costly initiative, but considered effective in starting to change culture by Business Quality Manager. First public utility to win an Australian Quality Award in early 1990s. Instigated supplier awards program based on their performance. Started to move towards certification in business units, to improve capability. More recently the whole business has been restructured on process lines, to replace functions. There are process owners and process operators e.g. there is no longer an engineering function this is now identified with specific products and processes. Follow the Florida Light and Power 7 step process of continuous improvement. Have some concerns about the work "quality" and are thinking of replacing it.

Recent structural changes? About at the time of the survey middle management level downsized. A significant reduction in employee levels since 1985. 20% of work now done by contractors.

Employee involvement in program – involvement generally expected.

Appendix 5F - Summary of participating organisations

Organisation	No. emp.	Definition of middle mgr.	No. & % of middle Managers	Quality Manager in Senior Position?	Current Approach to Quality
1 Utility	1,920	level below executive level	200 (10.5%)	yes	TQM and ISO 9000
2 Manufacturing	130	above sup. level below directors	36 (28%)	yes (director)	TQM and ISO 9000
3 Information technology	1,100	above sup. below top mgt.	80 (7%)	yes	TQM and ISO 9000
4 Public Sector	618	branch mgrs. & their deputies	40 (6.5%)	yes	TQM and ISO 9000
5 Finance	2,200				
6 Finance	49,100			yes	approach being evaluated
7 Public Sector	2500	work team managers	100 (4%)	yes	re-evaluating approach at time of survey
8 Information technology	1,300	group below top management	150 (11.5%)	yes (director)	TQM and ISO 9000
9 Manufacturing	1,400	N.A.	N.A.	yes	TQM and ISO 9000
10 Manufacturing	240	level below senior managers	38 (15.8%)	yes	TQM and ISO 9000
11 Distribution public sector	13,500	level below executive group	137 (1%)	yes	TQM and ISO 9000
12 Distribution private sector	437	level below senior managers	36 (8%)	yes	TQM and ISO 9000
13 Manufacturing	300	level below senior managers	30 approx. (10%)	yes	TQM and ISO 9000
14 Communications	73,000			yes	TQM and ISO 9000
15 Manufacturing	4,000			yes	TQM and ISO 9000
17 Manufacturing	492	level below top mgt. 3 rd tier	10 (2%)	yes	TQM and ISO 9000
18 Manufacturing	2600			yes	TQM and ISO 9000
19 Transport	8611			yes	TQM and ISO 9000
20 Finance	6033	level below senior managers	500	yes	TQM and ISO 9000
21 Manufacturing	850	those resp. for running teams	35 (4%)	yes	TQM and ISO 9000
22 Utility	1900	level below executives	80 (4%)	yes	TQM and ISO 9000

Continued over

Details of participating organisations (continued)

Organisation	ISO 9000 Cert.?	Quality Award?	Approx. time involved with formal quality	Interviews Carried Out?	Miscellaneous
1 Utility	yes	yes	8 years	yes	use own self-assessment process
2 Manufacturing	yes	yes	8 years +	yes	combine ISO 9000 and ISO 14000
3 Information technology	yes	never entered	6 years	yes	
4 Public Sector	yes	yes	12 years	yes	an early Australian Quality Awd. winner
5 Finance		no	3 years	no	org. taken-over
6 Finance	no	no	1 year	no	
7 Public Sector	yes	no	8 years +	yes	
8 Information technology	yes	yes	10 years	yes	
9 Manufacturing	yes	no	7 years	no	
10 Manufacturing	yes	no	5 years	yes	
11 Distribution public sector	yes	no	8 years	yes	highly multi cultural workforce
12 Distribution private sector	yes	no	5 years	no	
13 Manufacturing	yes	no	8 years	no	
14 Communications	yes	no		no	small sample only
15 Manufacturing	yes		6 years	no	division of a large organisation
17 Manufacturing	yes	no	8 years +	no	
18 Manufacturing		no	3 years	no	
19 Transport	yes	no	4 years	no	
20 Finance	yes	yes	12 years	no	re-evaluating the "qual. mgt." approach
21 Manufacturing	yes	no	5 years	yes	Engineering oriented company
22 Utility	yes	yes	11 years	yes	

Sources: Interviews in ten of the organisations, questionnaire data, personal correspondence with company personnel, company reports. Missing data could not be obtained from organisations or reliably obtained by other means.

Appendix 5G - Questionnaire coding sheet

The coding relates to questionnaire in Appendix 5B

Missing data was coded 99

Where possible the first digit of the variable name is the questionnaire part number followed by the item number e.g. variable q414 refers to part 4, item 14.

Item being Coded	Variable Name and <Coding> and (comments)
Company	company <1,2,3 etc>
Respondent	quest <company number, period, quest. no.> (e.g. 5.12)
Group	group <number> (one organisation requested some group comparisons)
Part 1 item 1 to item 19	q11a <1 to 7> (importance) q11b <1 to 7> (likelihood) q119a q119b
Part 2 item 1 to item 3	q21 <1 to 7> q23
Part 3 item 1 to item 9	q31a <1 to 7> (importance) q31b <1 to 7> (extent) q39a q39b
Part 4 item 1 to item 14	q41 <1 to 7> q414
Part 5 item 1 to item 15	q51 <1 to 7> q515
Part 6 item 1 to item 7	q61a <1 to 7> (desirability) q61b <1 to 7> (likelihood) q67a q67b
Part 7 item 1 to item 3	q71 <1 to 7> q73
Part 8 item 1 item 2 item 3 item 4 item 5 item 6 item 7 item 8 item 9 item 10 item 11 item 12 to item 17	q81 <years> (rounded to nearest 0.5 year) q82 <years> (rounded to nearest 0.5 year) q83 <1 to 4> q84 <1 to 8> q85 <1 to 4> q86 <1 or 2> q87 <years> (rounded to nearest 0.5 years) q88 <1 to 4> q89 <1 to 7> q810 <1 to 7> q811 <1 to 3> q812 <1 to 7> q817 <1 to 7>
Part 9 item 1 item 2 item 3 item 4 item 5	q91 <1 or 2> q92 <1 to 5> q93 <1 to 3> q94 <1 or 2> q94a <1 or 2> (variables q94a to q94d cover types of q94b <1 or 2> training. 1=yes, 2=no) q94c <1 or 2> q94d <1 or 2> q95 <1 or 2> (open ended question 1=comment, 2=none)

Appendix 5H - Interview schedule and question guide

Table 1 Interview schedule

Ref. No.	Type of Organisation	Interviewees (note titles of quality managers have not been given to provide anonymity)	Number
1	Utility	quality manager., 2 middle managers (business improvement and maintenance)., 1 senior manager	4
2	Manufacturing	quality manager (at director level)., 2 middle managers (accounting and planning)	3
3	Information technology	quality manager (senior manager)	1
4	Public sector	quality manager., 2 middle managers (operations and training)., 2 senior managers	5
7	Public sector	quality manager., 2 middle managers (business development and operations)., senior manager (director)	4
8	Information technology	quality manager (senior manager)	1
10	Manufacturing	quality manager., 2 middle managers (product development and purchasing)., senior manager	4
11	Distribution Public sector	quality manager., senior manager	2
21	manufacturing	3 middle managers (production., quality leader., project engineer)	3
22	utility	quality manager., middle manager (operations)., senior manager	3
	Total		30

Interview question guide

Questions for Senior Manager

- 1 Company background recent changes (last 5 years) that may have affected attitudes to quality particularly:
- 2 Downsizing - middle managers
- 3 Change of CEO
- 4 Restructuring - teamwork

Quality program(s)

- 5 Brief history of quality in organisation
- 6 Current definition of quality
- 7 Current aims of quality program - for whom?
- 8 Current approach to quality (ISO/TQM etc.)?
- 9 How is quality deployed/organised/supported?
- 10 Stage of program development?
- 11 External recognition e.g. quality awards, certification?

Views on middle managers and the quality program

- 12 What do you consider the role of middle managers in the program?
- 13 How would you rate the contribution middle managers make to the program (+ve & -ve)?
- 14 How do you think middle managers have adapted to the quality program?
- 15 What support do you provide for middle managers in the quality program?
- 16 What do you think motivates middle managers to get involved in the program?
- 17 Do you provide rewards to middle managers based on their involvement in quality or the program?
- 18 Relative importance of organisational and individual program outcomes?

Questions for quality manager

- 1 Company background recent changes (last 5 years) that may have affected attitudes to quality particularly:
- 2 Downsizing - middle managers
- 3 Change of CEO
- 4 Restructuring - teamwork
- 1 Quality program(s)
- 5 Brief history of quality in organisation
- 6 Current definition of quality?
- 7 Current aims of quality program - for whom?
- 8 Current approach to quality (ISO/TQM etc)?
- 9 How is quality deployed/organised/supported?
- 2 Is program involvement compulsory? Extent of involvement in organisation?
- 10 Support from current CEO - how important do you think this is?
- 11 What would you like top management to be doing to support quality that they are not doing now?
- 12 Stage of program development?
- 13 External recognition e.g. quality awards, certification

Views on middle managers and the program

- 1 13a How were middle managers defined and selected for the purpose of the questionnaire survey?
- 14 What do you consider the role of middle managers in the program?
- 15 How would you rate the contribution middle managers make to the program (+ve & -ve)?
- 16 How do you think middle managers have adapted to the quality program?
- 17 What support do you provide for middle managers in the quality program?
- 18 What do you think motivates middle managers to get involved in the program?
- 19 Do you provide rewards to middle managers based on their involvement in quality or the program?
- 20 Relative importance of organisational and individual program outcomes?

Questions for the middle manager

- 1 What is your job?
- 2 In terms of changes e.g. retrenchments, restructuring etc - how have these changes affected you particularly your beliefs about the quality program? (Retrenchment survivor?)
- 3 Training/education in quality?
- 4 How enthusiastic are you about quality and the quality program?
- 5 What do you think the objectives of the quality program are?
- 6 Are you involved in the quality program? For how long?
- 7 What is your involvement in the program?
- 8 What do you believe the main objectives of the quality program are?
- 9 Who benefits from the program? (top management/middle management/lower level employees - the organisation?)

- 10 What do you get out of the program?
- 11 How clear are you about your role in the quality program? Why?
- 12 How do you assess (gauge/measure) top management support for the program?
- 13 What would you like top management to be doing to support quality that they are not doing now?
- 14 How do you assess if the program is useful?
- 15 How, if at all, has the quality program changed the way you work?
- 16 What do you think about this?
- 17 What things motivate you to support quality and the quality program?
- 18 What kind of things dampen your enthusiasm for the program?
- 19 To what extent do you think training/education in quality and actual experience of participating in the program influence your view on the quality management approach and on your quality program?
- 20 To what extent are you rewarded for effective participation in the quality program? What do you think about this?
- 21 Program support from direct boss, colleagues and top management. Do you see program support from your direct boss and or your colleagues as being an extension of top management support or something separate. Which is most important program support from top management or support from your direct boss and colleagues?
- 22 Relative importance of organisational and individual program outcomes?

General questions

	Yes/No
group/team work in organisation?	
Recent retrenchments affecting middle management?	
Quality program involvement company wide?	
Formal training in quality provided/supported?	
Full-time quality coordinator?	
Quality coordinator at senior management level?	
Program involvement considered compulsory when requested?	
External recognition of quality performance e.g. quality awards, ISO?	
CEO recognised as being a quality program champion?	

Organisational details

- 1 Type of organisation?
- 2 No of employees?
- 3 No of middle managers as defined for the survey?

Appendix 5I - Examples of NUD*IST files

How information was structured in NUD*IST

Free Nodes (32) [Text was coded to these thematic nodes
examples of nodes are: program views-
negative; resource issues; motivation
for quality.]

1 base case

1 person

- 1 tenure in organisation
- 2 level in organisation
- 3 job type
- 4 program involvement?
- 5 rating of effectiveness of TQM approach
- 7 gender
- 8 age
- 9 enthusiasm for quality in the organisation

Numerical data
from questionnaire
responses transferred
into NUD*IST

2 organisation

2 cases

1 person

- 1 1.01
- 2 1.02
- 3 1.05 [i.e. questionnaire resp. no.5, from organisation 1]
-
-
- 295 22 Widburn [i.e. Interviewee from organisation 22]
- 296 22 Laurie
- 297 22 Douglas

2 organisation

- 1 [name of organisation 1]
- ..
- ..
- 22 [name of organisation 22]

Example of data entry

Note: This is printed out in NUD*IST report format. The names of organisations have been replaced with [company] for anonymity.

Q.S.R. NUD.IST Power version, revision 4.0.
Licensee: DOUG DAVIS.

PROJECT: TEST, User doug davis, 1:34 pm, Mar 28, 2000.

+++++
+++++
+++ ON-LINE DOCUMENT: 1 [company] open ended
+++ Document Header:
*[COMPANY] OPEN ENDED

+++ Retrieval for this document: 100 units out of 127, = 79%
++ Text units 1-100:
OPEN ENDED [COMPANY]

*1.01

IECS
External audits have given me a better understanding of ISO 9000

*1.02

IECS
The ideas and concepts of quality are very good. I am in a position now in which they can be used to great effect. However, quality in this organisation means becoming accredited to ISO 9000. I believe that there are elements in ISO 9000 which shouldn't be applied, because the value gained does not compensate for the cost of the paper-work/trail that is required. This means a lot of effort is applied with little gain, giving quality a bad name. Trust should be placed in the people doing the work, as the cost of checking and verification can be enormous.

Example of a report on text coded to the free node "quality training"

Note: The names of organisations have been replaced with [company] for anonymity.

Q.S.R. NUD.IST Power version, revision 4.0.

Licensee: DOUG DAVIS.

PROJECT: TEST, User doug davis, 1:46 pm, Mar 28, 2000.

(F 3) //Free Nodes/quality training

*** No Definition

+++++

+++ ON-LINE DOCUMENT: 12 [COMPANY] OPEN ENDED

+++ Retrieval for this document: 2 units out of 21, = 9.5%

++ Text units 4-5:

*12.03

I believe the essence of the quality program is theoretically positive, however employee preference to its guidelines and principles seems lacking due to tight resource allocation/not enough training - study time to put into practice.

+++++

+++ ON-LINE DOCUMENT: 13 [company] open ended

+++ Retrieval for this document: 2 units out of 11, = 18%

++ Text units 4-5:

*13.04

I personally have always had a "do it right first time" attitude. However, quality improvement education really highlighted the cost of errors, mistakes etc to a company (and at home) and the fact that these errors mistakes etc must be eliminated. Quality improvement programs are essentially for long term competitiveness. Quality improvement education MUST be kept simple and practical. (ie less theory and more real life examples) to get the message across. Initially our quality improvement program failed because it involved too much paperwork and technical jargon! However, we learned from our mistakes.

Appendix 6A - Questionnaire variables, summary statistics and missing data

Notes:

a) See Appendix 5B for questionnaire

b) First digit of variable name denotes part of questionnaire, following digits denote the question number and sub question number (if applicable). *a* and *b* denote first or second response in cases where the question has a two part response e.g. Q1,1,5b is part 1, question 15, likelihood response.

Variable	Mean	Std. Dev.	Min.	Max.	Max. Poss. N	Valid N	Missing Data	% Miss. Data
Q1,1a	6.20	0.95	2	7	562	562	0	0
Q1,1b	4.94	1.23	1	7	562	562	0	0
Q1,2a	6.01	1.10	1	7	562	561	1	0.18
Q1,2b	4.61	1.32	1	7	562	560	2	0.36
Q1,3a	6.14	1.12	1	7	562	560	2	0.36
Q1,3b	4.71	1.43	1	7	562	558	4	0.71
Q1,4a	6.16	0.91	2	7	562	561	1	0.18
Q1,4b	4.96	1.12	1	7	562	560	2	0.36
Q1,5a	5.76	1.12	1	7	562	561	1	0.18
Q1,5b	4.28	1.35	1	7	562	560	2	0.36
Q1,6a	5.40	1.34	1	7	562	561	1	0.18
Q1,6b	4.43	1.38	1	7	562	558	4	0.71
Q1,7a	5.79	1.23	1	7	562	561	1	0.18
Q1,7b	3.48	1.53	1	7	562	561	1	0.18
Q1,8a	5.78	1.05	2	7	562	557	5	0.89
Q1,8b	4.25	1.47	1	7	562	556	6	1.07
Q1,9a	5.50	1.19	1	7	562	557	5	0.89
Q1,9b	3.80	1.42	1	7	562	558	4	0.71
Q1,10a	5.96	0.98	1	7	562	562	0	0
Q1,10b	4.41	1.40	1	7	562	562	0	0
Q1,11a	6.06	0.90	2	7	562	559	3	0.53
Q1,11b	5.02	1.33	1	7	562	560	2	0.36
Q1,12a	6.07	0.95	2	7	562	562	0	0
Q1,12b	4.87	1.31	1	7	562	562	0	0
Q1,13a	5.36	1.50	1	7	562	560	2	0.36
Q1,13b	3.97	1.57	1	7	562	561	1	0.18
Q1,14a	4.99	1.57	1	7	562	561	1	0.18
Q1,14b	3.83	1.58	1	7	562	560	2	0.36
Q1,15a	4.91	1.62	1	7	562	560	2	0.36
Q1,15b	3.51	1.65	1	7	562	560	2	0.36
Q1,16a	5.87	1.17	1	7	562	562	0	0
Q1,16b	4.24	1.52	1	7	562	560	2	0.36
Q1,17a	5.15	1.38	1	7	562	560	2	0.36
Q1,17b	3.88	1.44	1	7	562	559	3	0.53
Q1,18a	5.09	1.39	1	7	562	562	1	0.18
Q1,18b	3.91	1.54	1	7	562	559	3	0.53
Q1,19a	5.28	1.55	1	7	562	561	1	0.18
Q1,19b	3.66	1.58	1	7	562	560	2	0.36

cont.

Variable	Mean	Std. Dev.	Min.	Max.	Max. Poss. N	Valid N	Missing Data	% Miss. Data
Q2,1	5.64	1.14	1	7	562	559	3	0.53
Q2,2	5.43	1.20	1	7	562	559	3	0.53
Q2,3	5.62	1.17	1	7	562	559	3	0.53
Q3,1a	5.98	1.17	1	7	562	557	5	0.89
Q3,1b	4.68	1.48	1	7	562	561	1	0.18
Q3,2a	5.85	1.19	1	7	562	557	5	0.89
Q3,2b	4.38	1.52	1	7	562	562	0	0
Q3,3a	5.90	1.18	1	7	562	555	7	1.25
Q3,3b	4.32	1.59	1	7	562	560	2	0.36
Q3,4a	5.67	1.16	1	7	562	557	5	0.89
Q3,4b	4.02	1.55	1	7	562	562	0	0
Q3,5a	5.64	1.13	1	7	562	554	8	1.42
Q3,5b	3.81	1.54	1	7	562	559	3	0.53
Q3,6a	5.47	1.22	1	7	562	557	5	0.89
Q3,6b	3.80	1.61	1	7	562	559	3	0.53
Q3,7a	5.87	1.18	1	7	562	556	6	1.07
Q3,7b	4.76	1.63	1	7	562	559	3	0.53
Q3,8a	5.80	1.16	1	7	562	554	8	1.42
Q3,8b	4.82	1.16	1	7	562	557	5	0.89
Q3,9a	5.53	1.24	1	7	562	556	6	1.07
Q3,9b	4.21	1.46	1	7	562	558	4	0.71
Q4,1	5.33	1.29	1	7	562	562	0	0
Q4,2	5.41	1.28	1	7	562	562	0	0
Q4,3	4.50	1.57	1	7	562	560	2	0.36
Q4,4	4.59	1.18	1	7	562	562	0	0
Q4,5	4.36	1.69	1	7	562	562	0	0
Q4,6	5.76	1.10	1	7	562	560	2	0.36
Q4,7	3.88	1.72	1	7	562	562	0	0
Q4,8	5.08	1.66	1	7	562	560	2	0.36
Q4,9	5.12	1.36	1	7	562	562	0	0
Q4,10	3.88	1.70	1	7	562	562	0	0
Q4,11	4.38	1.67	1	7	562	561	1	0.18
Q4,12	4.19	1.69	1	7	562	561	1	0.18
Q4,13	4.62	1.34	1	7	562	562	0	0
Q4,14	3.68	1.71	1	7	562	562	0	0
Q5,1	5.93	1.11	1	7	562	562	0	0
Q5,2	5.43	1.39	1	7	562	561	1	0.18
Q5,3	2.69	1.83	1	7	562	562	0	0
Q5,4	3.47	1.71	1	7	562	560	2	0.36
Q5,5	4.86	1.42	1	7	562	562	0	0
Q5,6	5.54	1.34	1	7	562	562	0	0
Q5,7	3.96	1.57	1	7	562	561	1	0.18
Q5,8	4.40	1.45	1	7	562	562	0	0
Q5,9	3.23	1.64	1	7	562	562	0	0
Q5,10	5.31	1.33	1	7	562	559	3	0.53
Q5,11	3.24	1.75	1	7	562	561	1	0.18
Q5,12	3.71	1.69	1	7	562	561	1	0.18
Q5,13	5.77	1.24	1	7	562	562	0	0

cont.

Variable	Mean	Std. Dev.	Min.	Max.	Max. Poss. N	Valid N	Missing Data	% Miss. Data
Q5,14	4.52	1.45	1	7	562	561	1	0.18
Q5,15	1.78	1.23	1	7	562	561	1	0.18
Q6,1a	6.45	1.57	1	9	562	560	2	0.36
Q6,1b	4.69	1.31	1	7	562	559	3	0.53
Q6,2a	7.15	1.36	1	9	562	562	0	0
Q6,2b	4.65	1.37	1	7	562	561	1	0.18
Q6,3a	7.50	1.32	2	9	562	562	0	0
Q6,3b	4.02	1.56	1	7	562	562	0	0
Q6,4a	7.44	1.19	2	9	562	560	2	0.36
Q6,4b	4.58	1.47	1	7	562	559	3	0.53
Q6,5a	4.38	2.03	1	9	562	561	1	0.18
Q6,5b	4.86	1.53	1	7	562	561	1	0.18
Q6,6a	4.70	1.78	1	9	562	561	1	0.18
Q6,6b	3.34	1.49	1	7	562	558	4	0.71
Q6,7a	6.38	1.68	1	9	562	560	2	0.36
Q6,7b	3.95	1.52	1	7	562	559	3	0.53
Q7,1	5.14	1.34	1	7	165	162	3	1.82
Q7,2	5.09	1.31	1	7	165	162	3	1.82
Q7,3	5.22	1.35	1	7	165	162	3	1.82
Q7,5	2.19	0.79	1	3	399	396	3	0.75
Q8,1	12.56	9.42	0.5	42	562	559	3	0.53
Q8,2	2.92	2.92	0.5	22	562	560	2	0.36
Q8,3	2.96	0.68	1	4	562	562	0	0
Q8,4	4.78	2.26	1	8	562	560	2	0.36
Q8,5	2.54	0.77	1	4	562	562	0	0
Q8,6	1.36	0.48	1	2	562	562	0	0
Q8,7	4.07	4.08	0.5	35	360	351	9	2.50
Q8,8	1.90	1.06	1	4	360	355	5	1.39
Q8,9	5.33	1.27	1	7	360	360	0	0
Q8,10	5.71	1.27	1	7	360	359	1	0.28
Q8,11	1.29	0.71	1	3	202	199	3	1.49
Q8,12	4.55	1.27	1	7	202	197	5	2.48
Q8,13	4.34	1.35	1	7	562	559	3	0.53
Q8,14	3.82	1.57	1	7	562	560	2	0.36
Q8,15	5.10	1.32	1	7	165	164	1	0.61
Q8,16	5.20	1.29	1	7	165	163	2	1.21
Q8,17	5.46	1.18	1	7	562	557	5	0.89
Q9,1	1.19	0.39	1	2	562	559	3	0.53
Q9,2	3.08	0.89	1	2	562	559	3	0.53
Q9,3	2.81	1.19	1	2	562	559	3	0.53
Q9,4	1.78	0.41	1	2	562	559	3	0.53
Q9,4,2a	1.19	0.39	1	2				
Q9,4,2b	1.46	0.50	1	2				
Q9,4,2c	1.69	0.46	1	2				
Q9,4,2d	1.87	0.34	1	2				
Q95	1.52	0.50	1	2				

Appendix 6B - Miscellaneous reasons for becoming actively involved or not becoming actively involved in company quality program.

Data is taken from questionnaire returns and comments are produced verbatim. Numbers identify the questionnaire from which the data was transcribed. See Appendix 5B for a copy of the questionnaire.

List a) Miscellaneous reasons for becoming actively involved in quality program.

From part 8, question 8 of questionnaire. Comments in bold indicates the respondent was a quality specialist

- 1.28 Told to do it.
- 1.52 Almost everyone is involved in some respect, either in teams or in developing procedures or in carrying out work according to workplace instructions.
- 1.58 Process improvement [through].
- 2.06 Quality is part of working for organisation.
- 2.08 Position requirement.**
- 3.22 My role needs involvement.
- 3.24 Part of job description.
- 4.02 As an active team member and later as a manager.
- 4.06 Always part of the office culture.
- 4.08 Involvement as part of my supervisory/management duties.
- 4.11 Quality principles were integrated into our strategic planning process that I am involved in.
- 5.01 Job role.
- 6.16 Supervisor/manager volunteered for me to become involved.
- 7.02 I am section Quality Champion as part of my job description.**
- 7.06 Part of job description.
- 7.23 Part of job description.
- 9.10 Part of my job.**
- 9.16 My position evolved such that quality became more aligned.
- 9.17 Company involved and more than happy to take part.
- 10.01 Part of how work is done.
- 10.10 Began with self-assessments.
- 10.32 Took on new position, quality program is part of accountabilities.
- 11.05 Part of the job.
- 11.11 It's now the norm.
- 11.18 Expected to help offices achieve ISO 9000 plus quality.
- 12.03 Mandatory.
- 14.06 Applied for advertised position [quality specialist].**
- 15.01 Managed a department involved in implementing quality program.
- 17.03 Develop[ing] communications program.
- 22.16 Staff member offered.???
- 20.23 It is a part of my role as I perceive it.
- 20.57 Became quality manager for retail division.**
- 20.60 As part of how I work on a daily basis.
- 20.64 Applying TQM principles day-to-day.
- 21.11 Due to job role.

- 22.19 Involvement is an integral part of being a manager in this organisation e.g. departmental procedure to comply with ISO 9000 required.
- 22.20 Involvement mandatory in my line of work.
- 22.21 Implementation within area I manage.

List b) Miscellaneous reasons for not becoming actively involved in quality program

From part 8, question 11 of questionnaire.

- 1.11 Organisation has not caught up with changes now in place. I expect I will be [involved].
- 1.23 Previously involved – work load does not allow sufficient time.
- 1.27 Newly appointed, role to champion quality as a cultural acceptance.
- 1.40 Merged organisation, the organisation I came from did not have a quality program.
- 1.41 Not previously available until now.
- 1.55 Quality co-ordinator established in each branch.
- 3.04 In NSW no quality program exists
- 3.17 Role seems to strong a word to describe the minimal activities in which I have so far played a part.
- 4.05 Not sure of this question. I implement and act for quality but am not involved in TQC committee etc.
- 5.19 Nothing happening in that area at the moment.
- 5.21 No involvement.
- 6.07 Can't do everything!
- 6.32 Just starting TQM.
- 7.16 Quality program not considered important by senior management as customers internal.
- 10.31 ????
- 12.06 Too busy.
- 12.16 Handle[d] by operations manager.
- 12.18 New to role, involvement will increase.
- 12.20 We have teams - business improvement – and you do it for only 6 months. I have done mine.
- 17.05 No training.
- 19.03 The area in which I work does not have a formal quality program, although other parts of it do.
- 20.04 Quality activity not explicit.
- 20.09 Rep [in quality?] until current position accepted.
- 20.14 Too busy with issues management.
- 20.53 Structure of organisation.
- 20.76 Was involved though voluntary, now part of day-to-day planning, operations etc. [sees quality as an internal part of all that I do, so I am not involved in specific initiatives but in my day-to-day work.
- 20.87 Role accepted, but no longer active.
- 22.05 [no reason given].
- 22.12 Employ quality rep.

Summary

Involved

5/38 = 13% involved because they are quality specialists (note these are only the ones who answered "other reason" to why involved and there are more quality specialists).

18/38 = 53% are involved as they see quality to be integral part of their job role. This does not include quality specialists.

Not involved

A wide range of miscellaneous reasons is given as to why respondents are not actively involved in their organisations quality program.

4/30 = 13% indicate that they are not actively involved in their quality program because they are too busy, they do not have enough time.

Appendix 6C - Results of factor analysis

Table 1: Factor analysis for program outcomes – parts 1 and 6 of questionnaire
(see Appendix 5B for questionnaire)

Items (products of value and expectation)	h ²	Factors				
		Fa-1	Fa-2	Fa-3	Fa-4	Fa-5
Q1,11-Improved processes and procedures throughout the organisation	0.66	0.77				
Q1,12-A culture of continuous improvement throughout the organisation	0.67	0.76	0.22			
Q1,1-Improved quality of our goods and services	0.65	0.74			0.25	
Q1,10-Improved communication throughout the organisation	0.69	0.73	0.31	0.21		
Q1,4-Improved relationships with our customers	0.63	0.70			0.31	
Q1,5-Improved interdepartmental cooperation	0.56	0.69	0.22			
Q1,3-Improved company long term survival prospects	0.63	0.62	0.26		0.41	
Q1,2-Improved competitiveness	0.64	0.61			0.48	
Q1,6-Improved relationships with our suppliers	0.52	0.61	0.24		0.29	
Q1,8-More emphasis on long term planning	0.53	0.61	0.33			
Q1,9-Less overreacting to short term goals	0.57	0.61	0.34			0.23
Q1,7-Significant reduction in "red tape" and bureaucracy	0.54	0.59	0.31			0.266
Q1,16-An increase in your overall job satisfaction	0.62	0.53	0.51	0.21		
Q1,14-Maintaining or enhancing your status in the organisation	0.81	0.20	0.86			
Q1,15-Improved chances of promotion for you	0.77		0.85			
Q1,13-Maintaining or enhancing your position in the organisation	0.80	0.24	0.85			
Q1,18-New important duties for you	0.65	0.26	0.75			
Q1,17-Retention of duties that you consider to be important	0.61	0.29	0.70			
Q1,19-Maintenance or improvement in your job security	0.64	0.33	0.70			
Q6,2-More opportunity for employees at lower levels to get involved in decision making	0.68	0.24		0.75		
Q6,7-Lower level employees taking over some of your duties	0.53			0.70		
Q6,1-More group work in the organisation	0.54	0.34		0.62		
Q6,3-Rewards (pay etc) based on quality performance	0.57			0.43	0.58	
Q6,4-Greater accountability for your job performance	0.61	0.28	0.21	0.41	0.57	
Q6,6-A reduction in the monitoring of your performance	0.59					0.76
Q6,5-An increase in your overall workload	0.62				0.52	0.57

Notes: Number of cases = 510

The KMO measure of sampling adequacy = 0.94

Bartlett's test of sphericity, prob. = 0.001

h² is the communality of the variable. This value indicates the proportion of the variance that is accounted for by the common factors in factor analysis.

Table 2: Factor analysis for conflict and ambiguity items – part 4 of questionnaire

Items	h ²	Factors	
		Fa-1	Fa-2
Q4,6-I know what my responsibilities are	0.73	0.85	
Q4,9-I know exactly what is expected of me	0.71	0.83	
Q4,2-I have clear planned goals and objectives for my job	0.62	0.78	
Q4,1-I feel certain about how much authority I have	0.55	0.73	
Q4,13-Explanation is clear of what has to be done	0.48	0.67	
Q4,4-I know I have divided my time properly	0.23	0.49	
Q4,12-I receive an assignment without adequate resources and materials to execute it	0.54		0.73
Q4,10-I receive incompatible requests from two or more people	0.51	-0.205	0.68
Q4,5-I receive an assignment without the manpower to complete it	0.46		0.67
Q4,11-I do things which are apt to be acceptable by one person but not accepted by others	0.45		0.66
Q4,7-I have to buck a rule (bend/break/ignore a rule) or policy in order to carry out an assignment	0.42		0.64
Q4,3-I have to do things that should be done differently	0.34		0.58
Q4,8-I work with two or more groups who operate quite differently	0.31		0.56
Q4,14-I work on unnecessary things	0.34		0.55

Notes: Number of cases = 554

The KMO measure of sampling adequacy = 0.85

Bartlett's test of sphericity, prob. = 0.001

h² is the communality of the variable. This value indicates the proportion of the variance that is accounted for by the common factors in factor analysis.

Table 3: Factor analysis for important others – part 3 of questionnaire

Items (products of value and expectation)	h ²	Factors	
		Fa-1	Fa-2
Q3,2-Top management in our organisation provides strong leadership in the quality program	0.84	0.86	0.32
Q3,3-Top management's actions clearly show that they support the quality program	0.83	0.85	0.33
Q3,5-Top management provides useful feedback on how the quality program is going	0.79	0.84	0.30
Q3,1-Top management in our organisation is committed to the quality program	0.79	0.83	0.31
Q3,4-Top management keeps us informed of their plans regarding the quality program	0.74	0.81	0.28
Q3,6-Top management makes it easy for me to communicate my feelings about the quality program to them	0.68	0.72	0.40
Q3,8-My direct boss encourages and supports my involvement in the quality program	0.89	0.28	0.90
Q3,7-My direct boss is committed to the quality program	0.86	0.33	0.87
Q3,9-Most of my colleagues support the quality program	0.64	0.36	0.72

Notes: Number of cases = 543

The KMO measure of sampling adequacy = 0.90

Bartlett's test of sphericity, prob. = 0.001

h² is the communality of the variable. This value indicates the proportion of the variance that is accounted for by the common factors in factor analysis.

Table 4: Factor analysis for organisational commitment – part 5 of questionnaire

Items	h ²	Factors		
		Fa-1	Fa-2	Fa-3
Q5,2I talk up this organisation to my friends as a great organisation to work for	0.69	0.78	-0.22	
Q5,1-I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful	0.55	0.74		
Q5,13-I really care about the fate of this organisation	0.54	0.71		
Q5,6-I am proud to tell others that I am part of this organisation	0.70	0.69	-0.37	0.28
Q5,14-For me this is the best of all possible organisations for which to work	0.65	0.62	-0.41	0.31
Q5,10-I am extremely glad that I chose this organisation to work for over others I was considering at the time I joined	0.53	0.55	-0.36	0.30
Q5,15-Deciding to work for this organisation was a definite mistake on my part	0.56	-0.53	0.53	
Q5,5-I find my values and the organisation's values are very similar	0.52	0.50	-0.45	0.26
Q5,9-It would take very little change in my present circumstances to cause me to leave this organisation	0.62		0.76	
Q5,12-Often, I find it difficult to agree with this organisation's policies on important matters relating to its employees	0.57		0.75	
Q5,11-There's not too much to be gained by sticking with this organisation indefinitely	0.59	-0.23	0.71	
Q5,7-I could just as well be working for a different organisation as long as the type of work was similar	0.32		0.52	
Q5,3-I feel very little loyalty to this organisation	0.58	-0.32	0.50	0.48
Q5,8-This organisation really inspires the very best in me in the way of job performance	0.53	0.42	-0.45	0.39
Q5,4-I would accept almost any type of assignment in order to keep working for this organisation	0.65	0.22		0.75

Notes: Number of cases = 552

The KMO measure of sampling adequacy = 0.92

Bartlett's test of sphericity, prob. = 0.001

h² is the communality of the variable. This value indicates the proportion of the variance that is accounted for by the common factors in factor analysis.

Table 5: Main sub scales formed by data reduction using factor analysis

Name (descriptive) of variable	Questionnaire items ¹	Variable name	Cronbach's Alpha	Comments
Organisational benefits	Part 1, items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 (products)	Q1SOLA	0.923 N = 536	
Individual benefits	Part 1, items 13, 14, 15, 17, 18, 19 (products)	Q1SEI	0.915 N = 548	
Devolution of responsibility bipolar scales A	Part 6, items 61, 62, 67 (products)	DORBA	0.657 N = 555	Alternative DOR scale. This version was used in correlation and regression.
Devolution of responsibility bipolar scales B	Part 6, items 61, 62, 67, 64 (products)	DORBB	0.688 N = 551	Alternative DOR scale
Devolution of responsibility bipolar scales C	Part 6, items 61, 62, 67, 64, 63 (products)	DORBC	0.741 N = 551	Alternative DOR scale
Devolution of responsibility unipolar scales A	Part 6, items 61, 62, 67 (products)	DORUA	0.680 N = 555	Alternative DOR scale
Devolution of responsibility unipolar scales B	Part 6, items 61, 62, 67, 64 (products)	DORUB	0.717 N = 551	Alternative DOR scale
Devolution of responsibility unipolar scales C	Part 6, items 61, 62, 67, 64, 63 (products)	DORUC	0.756 N = 551	Alternative DOR scale
Enthusiasm for quality in the organisation	Part 2, items 1, 2, 3 (products)	Q2MEAN	0.908 N = 559	
Enthusiasm for the quality program	Part 7, items 1, 2, 3 (products)	Q7MEAN	0.935 N = 162	
Top management program support and communications	Part 3, items 1, 2, 3, 4, 5, 6 (products)	Q3ST16	0.942 N = 547	
Top management support (for quality)	Part 3, items 1, 2, 3 (products)	Q3ST13	0.944 N = 553	Alternative to top management support and communications
Top management communications (about quality)	Part 3, items 4, 5, 6 (products)	Q3ST46	0.894 N = 550	Alternative to top management support and communications
Boss and colleagues program support	Part 3, items 7, 8, 9 (products)	Q3SBC79	0.868 N = 550	
Role conflict	Part 4, items 3, 5, 7, 8, 10, 11, 12, 14	CONFLICT	0.799 N = 556	
Role ambiguity	Part 4, items 1, 2, 4, 6, 9, 13	AMBIGUITY	0.834 N = 560	
Organisational commitment	Part 5, all 15 items, negative items reversed	Q5COMALL	0.889 N = 552	

¹ "products" denotes that the scales have been formed from items using the value/expectancy approach

Table 6: Alternative sub scales and other variables used in analysis

Name (descriptive) of variable	Questionnaire items ¹	Comments (scales not shown were used in the form they appear on the questionnaires)
Increase in overall job satisfaction (from quality program)	Q116(product)	Single item from Part 1, this item loaded onto two factors
Rewards based on quality performance	Q63(product) – unipolar Q63BP(product) – bipolar	Single item, unipolar variable. Alternative (also included in some versions of devolution of responsibility)
Accountability for job performance	Q64(product) – unipolar Q64BP(product) – bipolar	Single item. Alternatives (also included in some versions of devolution of responsibility)
Overall workload increase (due to quality program)	Q65(product) – unipolar Q65BP(product) – bipolar	Single item. Alternatives.
Organisational tenure	Q81	Years to nearest 0.5 year
Job tenure	Q82	Years to nearest 0.5 year
Level in organisation	Q831 not a manager Q832 lower Q833 middle (top management)	A categorical variable with four categories and three dummy variables coded 2 = yes, 1 = no
Job category	Q84	Broad job categories
Program type	Q851 QA approach Q852 TQM approach Q856 QA and TQM (don't know)	A categorical variable with four categories and three dummy variables coded 2 = yes, 1 = no
Active program involvement	Q86	2 = yes, 1 = no
Program tenure	Q87	Years to nearest 0.5 year
Means of initial program involvement	Q88	
Clarity of program role	Q89	For those actively involved
Intention to continue program involvement	Q810	
Reason for not being involved in program	Q811	
Intention to become involved in program	Q812	For those not actively involved
Perceived stage of program development	Q813	
Time spent on quality related activities	Q814	
Effectiveness of quality management approach	Q817	
Gender	Q91	1 = male, 2 = female
Age group	Q92	
Highest qualification	Q93	
Training/education in quality	Q94	2 = yes, 1 = no
Line or staff job	Q75	

¹ "products" denotes that the variables have been formed from items using the value expectancy approach

Appendix 6D - Comparison of results of using alternative scales for parts 1 and 6 of questionnaire.

DOR = devolution of responsibility 3 items part 6, B&C = boss and colleagues program support, IND = program outcomes affecting individuals, TOP = top mgt support including communication, COY = company program outcomes. (see Appendix 5B for copy of questionnaire)

Scale Construction	Factors Formed	Regression against "enthusiasm for quality in org"	Regression against "increase in overall job satisfaction" (from program)
Unipolar: Outcomes P1 and Important others P3 unipolar 1-7 scales. Outcomes P6 bipolar scales	Comp outcomes Individual outcomes Top mgt, Boss and colleagues, dev of responsibility. Increase in overall job sat loaded onto comp and ind factors	R squared = .375 Beta Sig DOR .051 .211 B&C .351 .000 IND .016 .730 TOP -.161 .003 COY .414 .000	R squared = .504 Beta Sig DOR .133 .002 B&C .054 .236 IND .319 .000 TOP -.058 .235 COY .408 .000
Mixed: 1...7 x -3 -2 -1 0 1 2 3 for P1 and P3, and bipolar scales for P6	Similar to Unipolar and zero to six	R squared = .287 Beta Sig DOR .099 .026 B&C .313 .000 IND .065 .214 TOP -.159 .003 COY .300 .000	R squared = .610 Beta Sig DOR .078 .018 B&C .027 .467 IND .498 .000 TOP -.044 .271 COY .323 .000
Bipolar: all scales -3 -2 -1 0 1 2 3 x -3 -2 -1 0 1 2 3	Changed pattern structure for Part 1 two company benefit factors formed external focus (exfoc) and the other i.e. q18 and q18 long term focus (lrfoc).	R squared = .221 Beta Sig DOR .158 .001 B&C .242 .000 IND .045 .346 TOP -.124 .026 COYexfoc .205 .000 COYlrfoc .082 .096	R squared = .481 Beta Sig DOR .140 .000 B&C .071 .087 IND .335 .000 TOP -.002 .957 COYexfoc .137 .002 COYlrfoc .241 .000
Zero to six: For parts 1 and 3 scales 0 1 2 3 4 5 6 x 0 1 2 3 4 5 6	Parts 1, 3 and 6: 7 factors formed Comp. 11 items (0.918) Ind. 6 items (0.915) increase in job sat loaded equally on F1 & 2 Top 6 items (0.942) B&C 3 items (0.866) Dev of Res 3 items	R squared = .368 Beta Sig DOR .054 .188 B&C .342 .000 IND .009 .840 TOP -.161 .003 COY .419 .000	R squared = .519 Beta Sig DOR .111 .002 B&C .041 .355 IND .355 .000 TOP -.051 .284 COY .388 .000
Square root: sq root (1 2 3 4 5 6 7 x 1 2 3 4 5 6 7) for P1 and P3. Bipolar scales for P6	Similar to unipolar result. Correlation between unipolar product scales and square root scales 0.95	R squared = .375 Beta Sig DOR .060 .140 B&C .351 .000 IND .005 .902 TOP -.147 .006 COY .407 .000	R squared = .506 Beta Sig DOR .118 .001 B&C .058 .191 IND .284 .000 TOP -.042 .382 COY .432 .000
Factor using likelihood of outcome from program items only. Parts 1 and 6 only	Generally similar to solution using unipolar scales.		

Appendix 6E - Descriptive statistics and figures by organisation

Table 1: Age of respondents, organisational tenure and job tenure

Company	N	Age of respondents Mean (years)	Organisational tenure Mean (years)	Job tenure Mean (years)
1	67	41.0	12.8	2.6
2	26	41.5	10.1	2.9
3	26	42.7	8.6	2.2
4	21	47.1	25.6	3.5
5	24	40.8	10.1	3.3
6	37	33.9	9.0	1.7
7	34	38.9	12.8	3.7
8	17	37.6	8.4	1.6
9	18	43.0	12.2	3.5
10	32	40.3	8.2	2.5
11	29	44.1	24.9	3.8
12	20	33.5	4.9	1.5
15	21	45.2	20.2	2.7
20	100	38.8	11.0	3.2
22	32	46.1	16.2	3.0
Totals	504	40.6	12.7	2.8

Table 2: Organisational commitment, role conflict and role ambiguity

Company	N	Organisational commitment Mean ^a	Role conflict Mean ^b	Role ambiguity Mean ^c
1	67	5.22	4.40	2.81
2	26	5.42	3.88	2.33
3	26	5.09	4.50	2.63
4	21	5.15	3.83	2.24
5	24	4.29	4.71	3.03
6	37	4.73	3.80	2.91
7	34	4.25	4.70	3.63
8	17	5.08	4.05	2.88
9	18	5.60	3.90	2.45
10	32	4.96	4.13	2.76
11	29	4.98	4.40	2.88
12	20	5.42	4.47	2.72
15	21	5.16	3.90	2.88
20	100	4.96	4.11	3.02
22	32	5.24	4.40	2.57
Totals	504	5.01	4.22	2.84

a Mean of 15 item scale (negatively worded items reversed) from 1 to 7, larger scores indicate higher commitment

b. Mean of 8 item scale from 1 to 7, higher scores indicate higher role conflict

c Mean of 6 item scale from 1 to 7, higher scores indicate higher role ambiguity

Table 3: Extent of top management support, top management communication, support from direct boss and support from colleagues for quality program

Company	N	Top management support – extent mean ^a	Top management communications – extent mean ^a	Support from direct boss – extent mean ^a	Support from colleagues – extent mean ^a
1	67	5.41	4.42	4.99	4.10
2	26	5.76	5.04	5.69	5.19
3	26	4.07	3.60	4.87	4.00
4	21	4.24	4.60	5.08	4.10
5	24	3.76	2.84	4.25	4.36
6	37	4.23	3.81	4.93	3.86
7	34	3.64	3.19	4.87	3.97
8	17	5.76	4.88	5.09	4.71
9	18	5.33	4.56	5.50	5.00
10	32	4.66	4.34	5.34	4.34
11	29	5.38	4.76	5.59	4.90
12	20	3.87	3.17	3.30	3.30
15	21	4.40	3.51	5.12	4.43
20	100	3.78	3.19	4.14	4.02
22	32	4.75	4.07	5.28	4.47
Total	504	4.51	3.90	4.84	4.24

a. Scales from 1 = very unlikely to 7 = very likely

Table 4: Perceived stage of quality program development, perception of the effectiveness of the quality management approach, enthusiasm for involvement in quality in organisation and time spent on quality related activities

Company	N	Perceived stage of program development mean ^a	Effectiveness of quality management approach mean ^b	Enthusiasm for quality in organisation mean ^c	Time spent on quality related activities mean ^d
1	67	5.05	5.24	5.44	3.74
2	26	5.19	5.96	6.11	4.62
3	26	3.50	5.96	5.82	3.69
4	21	4.71	5.90	5.89	4.48
5	24	4.17	5.38	5.56	3.75
6	37	3.14	5.41	5.35	3.03
7	34	3.32	5.26	5.39	3.56
8	17	4.88	6.24	6.14	4.41
9	18	5.33	6.00	5.98	4.06
10	32	4.25	5.39	5.72	3.75
11	29	4.46	5.66	5.99	4.48
12	20	4.60	5.63	5.15	3.70
15	21	4.10	5.81	5.89	4.19
20	100	4.50	5.12	5.25	3.70
22	32	5.29	5.71	5.70	3.84
Total	504	4.43	5.50	5.59	3.84

a. Scale from 1 = just starting to 7 = fully implemented

b. Scale from 1 = not effective to 7 = very effective

c. Mean of three items in part 2 of the questionnaire, scale from 1 = low to 7 = high level of enthusiasm

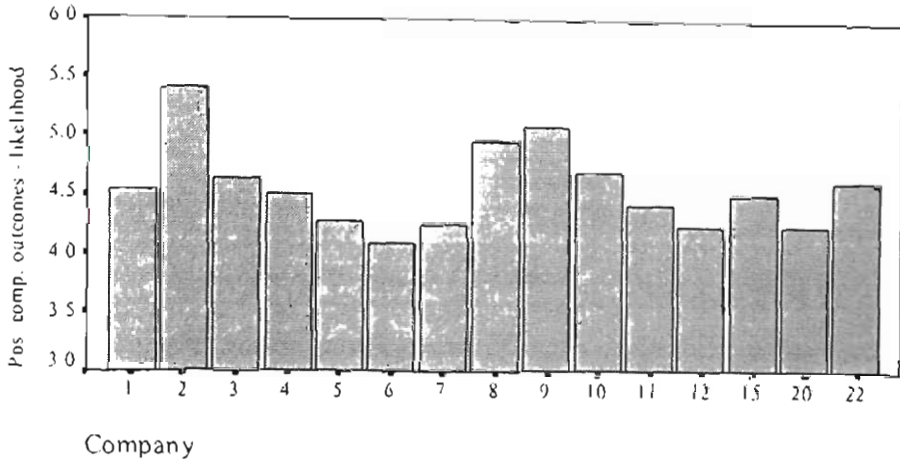
d. Scale from 1 = none of my time to 7 = most of my time

Table 5: Gender balance, education/training in quality, active program involvement and clarity of role in quality program

Company	N	Female respondents %	Education/ training in quality %	Active quality program involvement %	Clarity of role in quality program mean ^a
1	67	12	82	58	5.5
2	26	35	100	92	5.9
3	26	8	96	42	5.5
4	21	14	95	76	5.7
5	24	58	50	25	4.3
6	37	27	38	81	5.0
7	34	3	77	77	4.8
8	17	29	75	100	5.5
9	18	11	89	67	6.3
10	32	19	91	91	5.2
11	29	14	93	79	5.3
12	20	30	50	70	5.6
15	21	5	91	81	5.4
20	100	31	71	41	4.8
22	32	0	90	72	5.5
Total	504	20	78	65	5.3

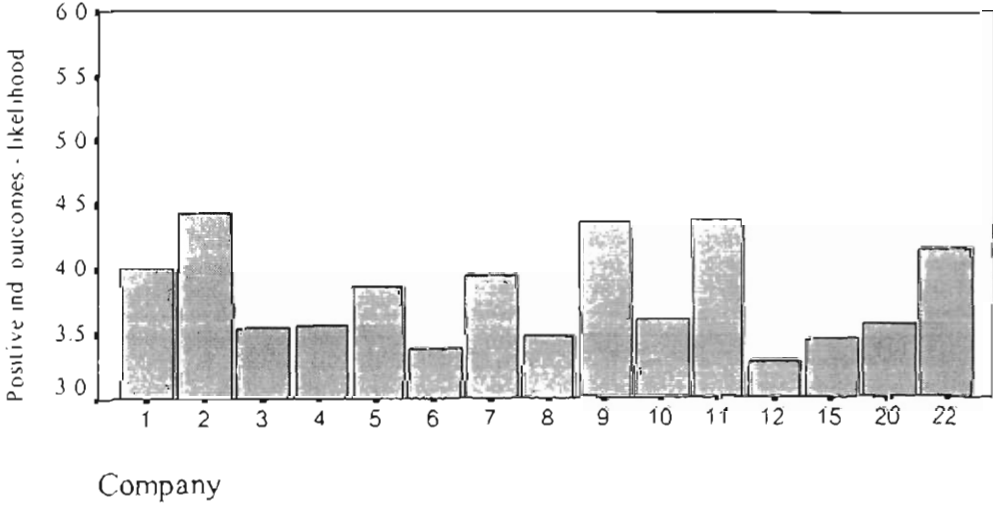
a. Scale from 1 = not clear at all to 7 = very clear

Figure 1: Likelihood of program benefits for organisation – by organisation



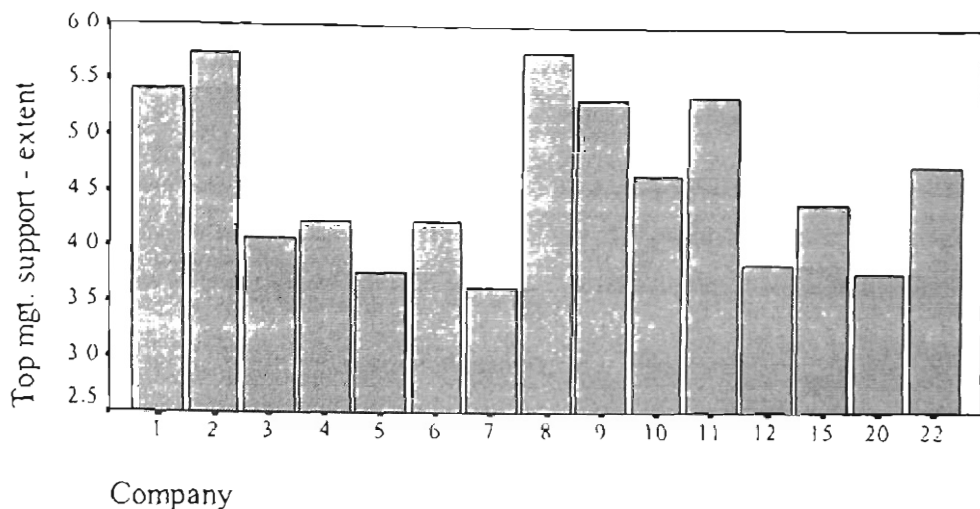
Notes: Variable is mean of likelihood scores for items 1 to 12 in part 1 of the survey questionnaire (see Appendix 5B)
 Scale: from 1= very unlikely to 7= very likely

Figure 2: Likelihood of program benefits for individuals – by organisation



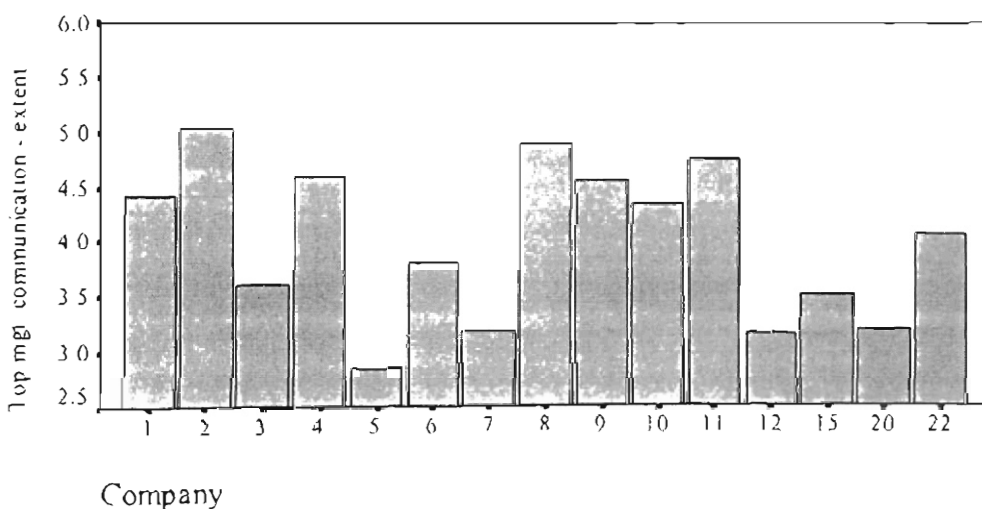
Notes: Variable is mean value of likelihood scores for items 13, 14, 15, 17, 18 and 19 on part 1 of the survey questionnaire (see Appendix 5B)
 Scale: from 1= very unlikely to 7= very likely

Figure 3: Extent of top management support for program – by organisation



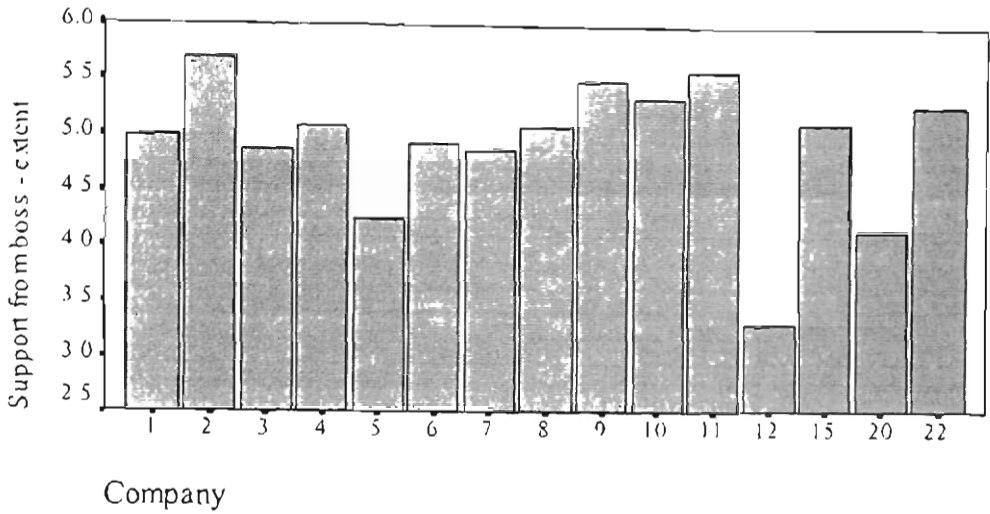
Notes: Variable is mean of extent scores for items 1, 2 and 3 of part 1 on the survey questionnaire (see Appendix 5B)
 Scale: from 1= not at all to 7= to a great extent

Figure 4: Extent of top management program communication – by organisation



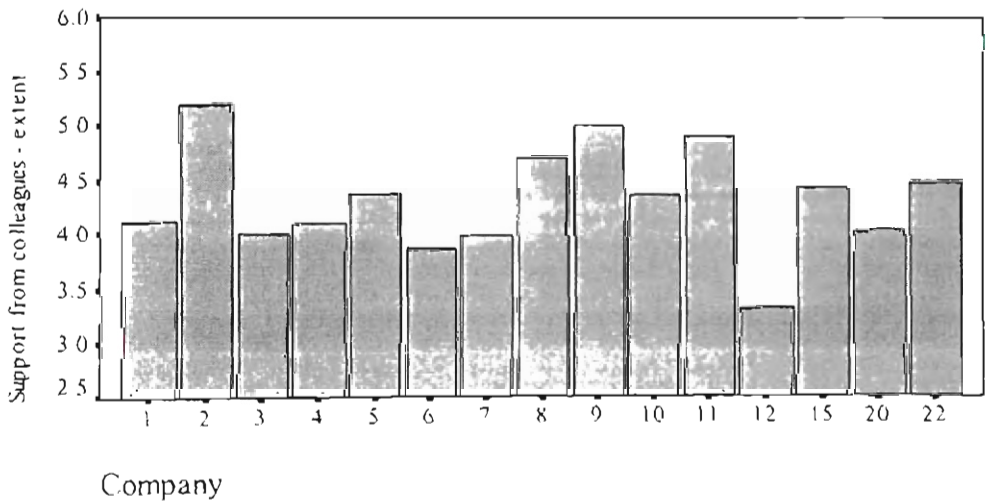
Notes: Variable is mean of extent scores for items 4, 5 and 6 of part 3 of the survey questionnaire (see Appendix 5B)
 Scale: from 1= not at all to 7= to a great extent

Figure 5: Extent of program support from direct boss – by organisation



Notes: Variable is mean of extent scores for items 7 and 8 on the survey questionnaire (see Appendix 5B)
 Scale: from 1= not at all to 7= to a great extent

Figure 6: Extent of program support from colleagues – by organisation



Notes: Variable is the extent score for item 9 in part 3 of the survey questionnaire (see Appendix 5B)
 Scale: from 1= not at all to 7= to a great extent

Appendix 6F - Analysis of differences between organisations.

This appendix presents the results of statistical tests for differences between organisations. The data used is from the questionnaire survey (see Appendix 5B for a copy of the questionnaire). This analysis excludes organisations from which small sample sizes were obtained. Fifteen of the organisations are included, these are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 20, and 22. The minimum sample size is 17. Two types of test are presented. A one-way analysis of variance is used to test for differences in mean values between organisations where variables have a suitable scale e.g. Likert. Where variables are dichotomous e.g. gender, a chi-square test is used to test for a significant difference in category differences between organisations.

Tests on company mean values

A one way analysis of variance (One-way ANOVA) is used to test for significant differences in means between organisations. Where ANOVA yielded a significant result a Post Hoc analysis was carried out in which multiple comparisons were made between organisations. Where the ANOVA test indicated no significant difference in variance between organisations Bonferoni and Scheffé methods are used to report multiple comparisons. The Scheffé test is more stringent than the Bonforoni. The less stringent LSD test usually resulted in a large number of significant differences and the LSD results are therefore generally omitted. In cases where ANOVA indicated a significant difference ($p < 0.05$) between organisation variances Tamhane's T2 test was used to test for paired differences.

Table 1: Tests between company mean values – items from part 1 of questionnaire

(see Appendix 5B for questionnaire)

Scales: Importance; 1= not important to 7= very important

Likelihood; 1=very unlikely to 7= very likely

Variable and Scale	Range of means	One-way ANOVA	Sig. differences in company means ($p < 0.05$)		
			Bonferroni	Scheffé	Tamhane's T2
Q1,1a. Improved quality of goods & service – Importance	5.79 – 6.72	0.001	4>7, 2>7, 9>7		
Q11b. ditto – Likelihood	4.49 – 6.12	0.001	2>1,3,5,6,7, 11,15,20	2>6,20	
Q1,2a. Improved competitiveness – Importance	4.40 – 6.41	0.001	4<all other companies, 11>6	4<1,2,3,5, 7,8,9,10, 11,12,20, 22	4<1,2,3,7,8, 9,10,11,20,22 2>6, 9>6, 11>6
Q1,2b. ditto - Likelihood	3.65 – 5.58	0.001	2>4,6,20 8>4, 9>4	2>4	
Q1,3a. Improved company long-term survival prospects – Importance	5.54 – 6.67	0.001	2>6, 11>6, 9>6, 22>6		2>6, 9>6, 11>6, 22>6
Q1,3b. ditto - Likelihood	4.06 – 5.85	0.001	2>1,4,6,7,15, 20 9>6,7,15 10>7	2>7	2>1,5,6,7,15 20 9>6,7,15, 20 10>6
Q1,4a. Improved relationships with suppliers – Importance	5.68 – 6.57	0.004	4>7		2>7 4>7 11>7
Q1,4b. ditto - Likelihood	4.38 – 5.85	0.001	2>6,7,20 4>6 11>6		

Q1,5a. Improved interdepartmental cooperation – Importance	5.24 – 6.14	0.015			
Q1,5b. ditto - Likelihood	3.59 – 5.27	0.001	2>1,6,7,20 11>7	2>7,20	
Q1,6a. Improved relationships with suppliers – Importance	4.73 – 6.00	0.001	1>6,20 2>6,20		1>20 2>6,20 11>20
Q1,6b. ditto - Likelihood	3.49 – 5.57	0.001	1>6 2>6,12,20 3>6 10>6 11>6 22>6,20	2>6, 20	
Q1,7a. Sig. reduction in red-tape & bureaucracy – Importance	5.00 – 6.29	0.002	1>15 2>15 22>15		
Q1,7b. ditto - Likelihood	2.90 – 4.18	0.026			
Q1,8a. More emphasis on long-term planning – Importance	5.52 – 6.11	n.s.			
Q1,8b. ditto - Likelihood	3.79 – 5.06	n.s.			
Q1,9a. Less overreacting to short-term goals – Importance	5.10 – 5.96	n.s.			
Q1,9b. ditto - Likelihood	3.35 – 4.59	n.s.			
Q1,10a. Improved communication in organisation – Importance	5.70 – 6.62	0.002	4>20 9>20		
Q1,10b. ditto - Likelihood	3.96 – 5.65	0.001	2>1,3,7,5,12, 20,22	2>20	
Q1,11a. Improved processes & procedures – Importance	5.76 – 6.50	0.014			
Q1,11b. ditto - Likelihood	4.43 – 6.06	0.001	1>6,20, 2>5,6,11,20 9>5,6,11,20	2>20	
Q1,12a. Culture of continuous improvement throughout the organisation – Importance	5.71 – 6.59	0.001	(sig differences using LSD)		
Q1,12b. ditto - Likelihood	4.40 – 6.00	0.001	2>6,11,12,20		
Q1,13a. Maintain or enhance your position – Importance	4.76 – 5.79	0.010			
Q1,13b. ditto - Likelihood	3.40 – 4.86	0.001	11>20		
Q1,14a. Maintain or enhance your status -- Importance	4.52 – 5.56	n.s.			
Q1,14b. ditto - Likelihood	3.19 – 4.83	0.001	11>6 11>6,20		
Q1,15a. Improved chances of promotion – Importance	4.23 – 5.44	n.s.			
Q1,15b. ditto – Likelihood	2.95 – 4.27	0.006	2>6		
Q1,16a. Increase in your overall job satisfaction – Importance	5.29 – 6.15	0.023			
Q1,16b. ditto – Likelihood	3.75 – 5.15	0.009	2>20		
Q1,17a. Retention of duties you consider important – Importance	4.33 – 5.76	0.007	1>15		
Q1,17b. ditto - Likelihood	3.29 – 4.38	0.045			
Q1,18a. New important duties for you – Importance	4.48 – 5.58	n.s.			
Q1,18b. ditto - Likelihood	3.28 – 4.65	0.011			
Q1,19a. Maintain or improve your job security - Importance	4.53 – 5.77	0.038			
Q1,19b. ditto – Likelihood	2.95 – 4.58	0.036			

Table 2: Tests between company mean values – questionnaire part 6 questions

(see Appendix 5B for questionnaire)

Scales: Desirability; - 4= very undesirable to +4 = very desirable

Likelihood, -3 = very unlikely to +3 = very likely

Variable	Range of means	One-way ANOVA	Sig. differences in company means (p < 0.05)		
			Bonferroni	Scheffé	Tamhane's T2
Q6,1a. More group work in organisation – Desirability	0.96 – 2.07	0.010			
Q6,1b. ditto – Likelihood	0.28 – 2.00	0.001	2>1,3,4,5,6,7,10,11,12,20	2>6,7,20	2>1,3,4,5,6,7,10,11,12,20
Q6,2a. More opportunities for lower level involvement in decision making – Desirability	1.59 – 2.52	0.001	1>20 8>20 1>20		
Q6,2b. ditto – Likelihood	-0.12 to 1.61	0.001	1>4,5,6,20 2>4,5,6,20 8>6		
Q6,3a. Rewards based on quality performance – Desirability	1.94 – 3.14	0.029			
Q6,3b. ditto – Likelihood	-0.71 to 0.88	0.001	1>4,7 2>4,5,7 11>4 20>7,4 22>4,7		
Q6,4a. Greater accountability for your job performance – Desirability	1.95 – 2.93	n.s			
Q6,4b. ditto – Likelihood	-0.30 to 1.38	0.001	1>6 22>6 2>6		
Q6,5a. An increase in your overall workload – Desirability	-1.48 to 0.07	n.s.			
Q6,5b. ditto – Likelihood	0.38 – 0.87	0.027			
Q6,6a. Rewards based on quality performance – Desirability	-0.70 to 0.36	0.020			
Q6,6b. ditto – Likelihood	-1.40 to -1.19	n.s			
Q6,7a. Lower levels taking over some of your duties – Desirability	0.79 – 2.35	0.001	12>6		
Q6,7b. ditto – Likelihood	-1.00 to 0.88	0.001	1>6 2>5,6		

Table 3: Tests between company mean values – items from part 2 of the questionnaire

(see Appendix 5B for questionnaire)

Scale: 1= strongly disagree to 7= strongly agree

Variable	Range of means	One-way ANOVA	Sig. differences in company means (p < 0.05)		
			Bonferroni	Scheffé	Tamhane's T2
Q2,1. Enthusiasm for applying quality principles in organisation	5.34 – 6.23	0.011			2>20
Q2,2. Encouraging others to take an interest in quality issues	4.85 – 6.04	0.001			2>6,20 11>20
Q2,3. Willingness to provide leadership in quality in organisation	5.23 – 6.18	0.001			2>20 11>20
Enthusiasm for quality in organisation (mean of Q2,1 Q2,2 and Q2,3)	5.12 – 6.14	0.001			2>20 11>20

Table 4: Tests between company mean values – items from part 3 of questionnaire

(see Appendix 5B for questionnaire)

Scales: Importance; 1= not important to 7= very important

Likelihood; 1=very unlikely to 7= very likely

Variable	Range of means	One-way ANOVA	Sig. differences in company means (p < 0.05)		
			Bonferroni	Scheffé	Tamhane's
Q3,1a. Top management commitment to program – Importance	5.56 – 6.65	0.004			
Q3,1b. ditto – Extent	3.82 – 6.00	0.001		1>7,20 2>7,20 8>7,20 11>20	
Q3,2a. Top management provides strong leadership in the quality program – Importance	5.48 – 6.47	0.004	2>20		2>7,20 8>20
Q3,2b. ditto – Extent	3.56 – 5.79	0.001		1>7,20 2>3,5,7,20 8>7,20 11>7,20	
Q3,3a. Top management's actions clearly show they support the quality program – Importance	5.36 – 6.50	0.001	2>20		2>7,20 15>20
Q3,3b. ditto – Extent	3.46 – 5.65	0.001		1>7,20,5 2>7,20,5 8>7,20 11>7,20	
Q3,4a. Top management keeps us informed of their plans regarding the quality program – Importance	5.13 – 6.31	0.004	2>5,20		2>5,20

Q3.4b. Extent	3.04 – 5.31	0.001		1>5,20 2>5,12,20 11>20	
Q3.5a. Top management provides useful feedback on how the quality program is going – Importance	5.23 – 6.27	0.001	2>20 6>20		2>20 6>20
Q3.5b. ditto – extent	2.94 – 5.04	0.001		1>20 2>5,7,20 11>7,20	
Q3.6a. Top management makes it easy for me to communicate my feeling about the quality program to them – Importance	5.21 – 6.00	n.s.			
Q3.6b. ditto – Extent	2.73 – 5.29	0.001		2>20 8>5,7,20	
Q3.7a. My direct boss is committed to the quality program – Importance	5.48 – 6.35	0.001			2>20
Q3.7b. ditto – Extent	3.30 – 5.54	0.001	1>12 2>12,20 3>12 4>12 6>12 9>12,20 10>12,20 11>12,20 15>12 22>12,20		1>12 2>12,20 3>12 9>12 10>12,20 11>12,20 15>12,20 22>12
Q3.8a. My direct boss supports and encourages my involvement in the quality program – Importance	5.36 – 6.23	0.035			
Q3.8b. ditto – Extent	3.30 – 5.85	0.001		2>12 11>12	1>12 2>12,20 6>12 9>12 10>12,20 11>12,20 22>12
Q3.9a. Most of my colleagues support the quality program – Importance	5.23 – 6.15	n.s.			
Q3.9b. ditto - Extent	3.30 – 5.19	0.001	2>6,12,20 9>12 11>12		

Table 5: Tests between company mean values – items from parts 4, 5, and 8 of questionnaire

(see Appendix 5B for questionnaire)

Scales: see individual variables in column 1

Variable and Scale	Range of means	One-way ANOVA	Sig. differences in company means (p < 0.05)		
			Bonferroni	Scheffé	Tamhane's T2
Role ambiguity (scale 1 to 7, higher score higher ambiguity)	2.24 – 3.63	0.001	7>1,2,3,4,9, 10,12,22 20>4	7>2,4	
Role conflict (scale 1 to 7, higher score higher conflict)	3.80 – 4.79	0.002	7>6		
Organisational commitment (scale 1 to 7, higher score higher commitment)	4.25 – 5.42	0.001	1>5,7 2>5,7 3>7 4>7 9>5,7 12>5,7 15>7 20>7 22>5,7	1>7 2>7 9>7	
Enthusiasm for program in organisation (company 20 and 22 only, scale 1= strongly disagree to 7=strongly agree)		n.s.			
Q8.1. Organisational tenure (years)	4.9 – 25.6	0.001			4>1,2,3,5,6, 10,12,20 7>12 11>1,2,3,5,6, 7,8,9,10,12, 20,22 15>3,5,6,8, 10,12 22>8,10,12
Q8.2. Job tenure (years)	1.55 – 3.84	0.027			20>6,8,12
Q8.7. Tenure in quality program (years)	0.98 – 9.63	0.001		4>1,6,8,10, 11,12 20>6 22>6	1>6 2>6 10>6,20,22 11>6 20>6,12 22>6,10,11,12
Q8.9. Role clarity in quality program (only those indicating active program involvement) (scale 1= not clear to 7= very clear)	5.33 – 6.25	0.001	9>20		
Q8.10. Intentions about continuing program involvement (scale 1= definitely intend to leave program to 7= definitely intend to remain in program)	4.5 – 6.73	0.001	9>5,6		2>6 3>6 9>1,6,7,20
Q8.13. Perception of stage of program development (scale 1= just starting to 7= fully implemented)	3.13 – 5.33	0.001		1>3,6,7 2>3,6,7 4>6 8>6 9>6,7 20>6,7 22>3,6	
Q8.14. Time spent on quality related activities (scale 1= none of my time to 7= most of my time)	3.03 – 4.62	0.004	2>6,11		

Q8.17. TQM a useful way to manage an organisation? (scale 1= not effective to 7= very effective)	5.12 – 6.23	0.001	8>20		2>20 3>20 8>20
--	-------------	-------	------	--	----------------------

Table 6: Tests between company mean values – for some of the constructs formed using data reduction

Variable	Range of means	One-way ANOVA	Sig. differences in company means (p < 0.05)		
			Bonferroni	Scheffé	Tamhane's T2
Organisational benefits (scale 1 to 49 i.e. product of Importance and Likelihood scales)	24.4 to 34.5	0.000	2>1,5,6,7,12,15,20 9>6,7,20	2>6,7,20	
Individual benefits (scale 1 to 49 i.e. product of Importance and Likelihood scales)	16.1 to 25.5	0.000	sig. differences using LSD		
Devolution of responsibility (scale -12 to +12 i.e. product of Desirability and Likelihood scales)	1.74 to 4.20	0.000	1>20 2>5,6,20 8>6,20 11>20	2>20	
Top management program support and communication (scale 1 to 49 i.e. product of Importance and Likelihood scales)	17.4 to 34.4	0.000	1>5,7,20 2>5,7,12,20 8>5,7,20 11>5,7,20		1>5,7,12,20 2>3,5,6,7,12,15,20 8>5,7,12,20 9>5,7,12,20 10>5,20 11>5,7,12,20 22>20
Boss and colleagues program support (scale 1 to 49 i.e. product of Importance and Likelihood scales)	18.5 to 34.6	0.000	2>12,20 9>12,20 10>12 11>12,20 22>12	2>12,20	2>12,20 9>12 10>12 11>12,20 22>12

Chi-Squared tests

Note on statistical validity of Chi-Square tests.

According to Berenson and Levine (1992) as a general rule in a large contingency table as long as no more than 20% of cells have theoretical (expected) frequencies below 5 and as long as no cell has a theoretical frequency below 1, the validity of the Chi-Square test is not seriously affected. The tests below all comply with these conditions.

Table 7a: Active program involvement by organisation

Company		Quality program involvement		Total
		involved	not involved	
1 00	Count	39	28	67
	% within Company	58.2%	41.8%	100.0%
	% of Total	7.7%	5.6%	13.3%
2 00	Count	24	2	26
	% within Company	92.3%	7.7%	100.0%
	% of Total	4.8%	4%	5.2%
3 00	Count	11	15	26
	% within Company	42.3%	57.7%	100.0%
	% of Total	2.2%	3.0%	5.2%
4 00	Count	16	5	21
	% within Company	76.2%	23.8%	100.0%
	% of Total	3.2%	1.0%	4.2%
5 00	Count	6	18	24
	% within Company	25.0%	75.0%	100.0%
	% of Total	1.2%	3.6%	4.8%
6 00	Count	30	7	37
	% within Company	81.1%	18.9%	100.0%
	% of Total	6.0%	1.4%	7.3%
7 00	Count	26	8	34
	% within Company	76.5%	23.5%	100.0%
	% of Total	5.2%	1.6%	6.7%
8 00	Count	17		17
	% within Company	100.0%		100.0%
	% of Total	3.4%		3.4%
9 00	Count	12	6	18
	% within Company	66.7%	33.3%	100.0%
	% of Total	2.4%	1.2%	3.6%
10 00	Count	29	3	32
	% within Company	90.5%	9.4%	100.0%
	% of Total	5.8%	6%	6.3%
11 00	Count	23	6	29
	% within Company	79.3%	20.7%	100.0%
	% of Total	4.6%	1.2%	5.8%
12 00	Count	14	6	20
	% within Company	70.0%	30.0%	100.0%
	% of Total	2.8%	1.2%	4.0%
15 00	Count	17	4	21
	% within Company	81.0%	19.0%	100.0%
	% of Total	3.4%	.8%	4.2%
20 00	Count	41	59	100
	% within Company	41.0%	59.0%	100.0%
	% of Total	8.1%	11.7%	19.8%
22 00	Count	23	9	32
	% within Company	71.9%	28.1%	100.0%
	% of Total	4.6%	1.8%	6.3%
Total	Count	328	176	504
	% within Company	65.1%	34.9%	100.0%
	% of Total	65.1%	34.9%	100.0%

Table 7b: Chi-Square tests for active program involvement by organisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	89.640 ^a	14	.000
Likelihood Ratio	97.819	14	.000
Linear-by-Linear Association	5.427	1	.020
N of Valid Cases	504		

^a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.94.

Table 8a: Gender balance by organisation

Company		Gender		Total
		Male	Female	
1.00	Count	59	8	67
	% within Company	88.1%	11.9%	100.0%
	% of Total	11.8%	1.6%	13.3%
2.00	Count	17	9	26
	% within Company	65.4%	34.6%	100.0%
	% of Total	3.4%	1.8%	5.2%
3.00	Count	24	2	26
	% within Company	92.3%	7.7%	100.0%
	% of Total	4.8%	4%	5.2%
4.00	Count	18	3	21
	% within Company	85.7%	14.3%	100.0%
	% of Total	3.6%	6%	4.2%
5.00	Count	10	14	24
	% within Company	41.7%	58.3%	100.0%
	% of Total	2.0%	2.8%	4.8%
6.00	Count	27	10	37
	% within Company	73.0%	27.0%	100.0%
	% of Total	5.4%	2.0%	7.4%
7.00	Count	33	1	34
	% within Company	97.1%	2.9%	100.0%
	% of Total	6.6%	2%	6.8%
8.00	Count	12	5	17
	% within Company	70.6%	29.4%	100.0%
	% of Total	2.4%	1.0%	3.4%
9.00	Count	16	2	18
	% within Company	88.9%	11.1%	100.0%
	% of Total	3.2%	4%	3.6%
10.00	Count	26	6	32
	% within Company	81.3%	18.8%	100.0%
	% of Total	5.2%	1.2%	6.4%
11.00	Count	25	4	29
	% within Company	86.2%	13.8%	100.0%
	% of Total	5.0%	8%	5.8%
12.00	Count	14	6	20
	% within Company	70.0%	30.0%	100.0%
	% of Total	2.8%	1.2%	4.0%
15.00	Count	20	1	21
	% within Company	95.2%	4.8%	100.0%
	% of Total	4.0%	2%	4.2%
20.00	Count	68	31	99
	% within Company	68.7%	31.3%	100.0%
	% of Total	13.5%	6.2%	19.7%
22.00	Count	31		31
	% within Company	100.0%		100.0%
	% of Total	6.2%		6.2%
Total	Count	400	102	502
	% within Company	79.7%	20.3%	100.0%
	% of Total	79.7%	20.3%	100.0%

Table 8b: Chi-Square tests for gender balance by organisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.227 ^a	14	.000
Likelihood Ratio	65.269	14	.000
Linear-by-Linear Association	231	1	.631
N of Valid Cases	502		

^a. 6 cells (20.0%) have expected count less than 5. The minimum expected count is 3.45.

Table 9a: Education/training in quality by organisation

Company		Education and training in quality		Total
		No	Yes	
1 00	Count	12	55	67
	% within Company	17.9%	82.1%	100.0%
	% of Total	2.4%	11.0%	13.3%
2 00	Count		26	26
	% within Company		100.0%	100.0%
	% of Total		5.2%	5.2%
3 00	Count	1	25	26
	% within Company	3.8%	96.2%	100.0%
	% of Total	2%	5.0%	5.2%
4 00	Count	1	20	21
	% within Company	4.8%	95.2%	100.0%
	% of Total	2%	4.0%	4.2%
5 00	Count	12	12	24
	% within Company	50.0%	50.0%	100.0%
	% of Total	2.4%	2.4%	4.8%
6 00	Count	23	14	37
	% within Company	62.2%	37.8%	100.0%
	% of Total	4.6%	2.8%	7.4%
7 00	Count	8	26	34
	% within Company	23.5%	76.5%	100.0%
	% of Total	1.6%	5.2%	6.8%
8 00	Count	4	12	16
	% within Company	25.0%	75.0%	100.0%
	% of Total	8%	2.4%	3.2%
9 00	Count	2	16	18
	% within Company	11.1%	88.9%	100.0%
	% of Total	4%	3.2%	3.6%
10 00	Count	3	29	32
	% within Company	9.4%	90.6%	100.0%
	% of Total	6%	5.8%	6.4%
11 00	Count	2	27	29
	% within Company	6.9%	93.1%	100.0%
	% of Total	4%	5.4%	5.8%
12 00	Count	10	10	20
	% within Company	50.0%	50.0%	100.0%
	% of Total	2.0%	2.0%	4.0%
15 00	Count	2	19	21
	% within Company	9.5%	90.5%	100.0%
	% of Total	4%	3.8%	4.2%
20 00	Count	29	71	100
	% within Company	29.0%	71.0%	100.0%
	% of Total	5.8%	14.1%	19.9%
22 00	Count	3	28	31
	% within Company	9.7%	90.3%	100.0%
	% of Total	6%	5.6%	6.2%
Total	Count	112	390	502
	% within Company	22.3%	77.7%	100.0%
	% of Total	22.3%	77.7%	100.0%

Table 9b: Chi-Square tests education/training in quality by organisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	86.304 ^a	14	.000
Likelihood Ratio	87.884	14	.000
Linear-by-Linear Association	.545	1	.460
N of Valid Cases	502		

a. 5 cells (16.7%) have expected count less than 5. The minimum expected count is 3.57.

Appendix 6G - Comparing values and beliefs about company and individual program outcomes, analysis by organisation

The results for the whole sample show that in general individuals believe that beneficial company outcomes (see Part 1 of questionnaire in Appendix 5B) are more important than beneficial outcomes to themselves. Also respondents believe that beneficial company outcomes are more likely to result from their quality programs than are outcomes beneficial to themselves. Graphical data suggested that this was a general pattern across participating organisations.

The following analysis was carried out to test for differences in a more rigorous way. Only the fifteen organisations with at least 17 respondents were included in this analysis.

Method

The following variables were constructed for each respondent (the item groupings were based on previous data reduction using factor analysis and reported in Section 6.2.5 of the results):

a) Aggregate of **company** program outcome items – respondents' view on their **importance**, specifically:

$$A = (Q1,1a + Q1,2a + Q1,3a + \dots + Q1,12a)/12$$

b) Aggregate of **company** program outcome items – respondents' view on their **likelihood**, specifically

$$B = (Q1,1b + Q1,2b + Q1,3b + \dots + Q1,12b)/12$$

c) Aggregate of **individual** program outcome items – respondents' views on their **importance**, specifically:

$$C = (Q1,13a + Q1,14a + Q1,15a + Q1,17a + Q1,18a + Q1,19a)/6 \text{ note, item 16 omitted as this loaded on organisation an individual program benefits in factor analysis}$$

d) Aggregate of **individual** program outcome items – respondents' views on their **likelihood**, specifically:

$$D = (Q1,13b + Q1,14b + Q1,15b + Q1,17b + Q1,18b + Q1,19b)/6 \text{ note, item 16 omitted}$$

The following ratios were calculate for each respondent and then the mean values for respondents in each of the fifteen organisations was calculated:

- 1) A/C i.e. importance ratio - organisational benefits c.f. individual benefits
- 2) B/D i.e. likelihood ratio - organisational benefits c.f. individual benefits

One-way ANOVA was used to test for differences between means for the four variable A, B, C, D and the two ratios A/C and B/D. The results are presented below.

Table 1: Ratios of company to individual program outcomes – by organisation

Company	N (minimum)	Importance ratio ^a <u>organisational benefits</u> individual benefits	Likelihood ratio ^a <u>company benefits</u> individual benefits
1	65	1.17	1.24
2	25	1.20	1.48
3	25	1.37	1.49
4	16	1.15	1.49
5	24	1.10	1.23
6	34	1.28	1.34
7	30	1.17	1.13
8	16	1.56	1.77
9	18	1.31	1.30
10	31	1.39	1.44
11	26	1.29	1.04
12	20	1.34	1.46
15	20	1.44	1.44
20	93	1.17	1.32
22	32	1.37	1.20
Total	475	1.26	1.33

a. See notes above for an explanation of how this ratio was formed

Table 2: Tests on ratios of organisational benefits and individual program benefits - by organisation

Variable	Range of means	One-way ANOVA	Sig. differences in company means (p < 0.05)		
			Bonferroni	Scheffe	Tamhane's T2
A (organisational benefits – importance)	5.70 – 6.31	p<0.001	2>6,7,20		
B (organisational benefits – likelihood)	4.08 – 5.40	p<0.001	2>1,5,6,7,11,12,20 9>6	2>6,20	
C (individual benefits - importance)	4.53 – 5.54	0.022	LSD 1>3,10,12,15 2>3,10,12,15 4>15 5>3,10,12,15 9>3,15 20>15		
D (individual benefits - likelihood)	3.28 – 4.43	0.002	LSD 1>6,12,20 2>3,4,6,8,10,12,15,20 9>6,10,12,15,20 11>3,4,6,8,10,12,15,20		
A/C (importance ratio)	1.15 – 1.56	n.s.			
B/D (likelihood ratio)	1.04 – 1.77	0.012			10>11 20>11

Appendix 6H - Comparative ranking of organisations on some key dimensions

Item	Company															
	1	2	3	4	5	6	7	8	9	10	11	12	15	20	22	
Program support and communications culture ¹	5	1	11	8	13	10	12	3	4	6	2	15	9	14	7	
Stage of program development	3	3	13	6	11	15	14	5	1	10	9	7	12	8	2	
Time spent on quality related activities	9	9	13	1	7	15	14	3	5	7	1	11	4	11	6	
Enthusiasm for involvement in quality in organisation	11	2	7	5	10	13	12	1	4	8	3	15	5	14	9	
Percentage actively involved in quality program	12	2	13	8	15	4	7	1	11	3	6	10	5	14	9	
Organisational commitment	5	2	8	7	14	13	15	9	1	11	10	2	6	11	4	
Percentage with education/training in quality	9	1	2	3	13	15	10	11	8	5	4	13	6	12	7	
Role ambiguity	8	2	5	1	14	12	15	9	3	7	9	6	9	13	4	
Role conflict	9	3	13	2	15	1	14	6	4	8	9	12	4	7	9	
Quality program role clarity – those actively involved	5	2	8	3	15	12	13	7	1	11	10	4	9	14	6	
Number of ranks above 7	4	9	2	7	0	2	0	6	8	3	5	3	6	0	5	

Ranks based on mean values or percentage of the particular variable. A rank of 1 represents the most favourable e.g. highest percentage trained in quality, highest organisational commitment score. For role ambiguity and role conflict a rank of 1 indicates the lowest mean scores.

¹ This is weighted average of the "to what extent does this happen in your organisation" responses to items in part 3 of the survey questionnaire (see Appendix 5B for copy of questionnaire) calculated as follows:

$$((Q3.1b+Q3.2b+Q3.3b)/3+(Q3.4b+Q3.5b+Q3.6b)/3+(Q3.7b+Q3.8b)/2+Q3.9b)/4$$

Appendix 6I - Analysis of differences between job categories

Tests of means between job categories

Categories are:

- 1 = quality specialist
- 2 = marketing and sales
- 3 = production and operations and purchasing
- 4 = human resources
- 5 = design and R&D and engineering and I.T.
- 6 = accounting and finance and economics
- 7 = general management
- 8 = other

One-way analysis of variance was used to test for significant differences between these job categories for all relevant variables in this research. The variables tested were similar to those listed in Appendix 6F, Tables 1 to 5. The tables below only list results for variables with statistically significant ANOVA results at $p < 0.05$

Table 1: Tests for differences in means between job categories part 1 questions

Only significant results listed

Variable	One-way ANOVA	Sig. differences in means between job categories ($p < 0.05$)		
		Bonferroni	Scheffé	Tamhane's T2
Q1,2a. Improved competitiveness – Importance	0.026	LSD 2>1,5 4>5		
Q1,4a. Improved relationships with suppliers – Importance	0.013			n.s.
Q1,6a. Improved relationships with suppliers – Importance	0.028	LSD 2>5 3>5,6 4>6,7		
Q1,14a. Maintain or enhance your status – Importance	0.015			n.s.
Q1,14b. ditto - Likelihood	0.013	1>5		
Q1,18b. New important duties for you – Likelihood	0.029	LSD 1>4,5,6 7>5		

Table 2: Tests for differences in means between job categories part 2 questions
Only significant results listed

Variable	One-way ANOVA	Sig. differences in means between job categories (p < 0.05)		
		Bonferroni	Scheffé	Tamhane's T2
Q2,2. Encouraging others to take an interest in quality issues	0.001			1>5,6
Q2,3. Willingness to provide leadership in quality in organisation	0.001			1>2,4,5,6
Enthusiasm for quality in the organisation (mean of Q2,1 Q2,2 and Q2,3)	0.001	1>3,4,5,6	1>5,6	

Table 3: Tests for differences in means between job categories part 3 questions
Only significant results listed

Variable	One-way ANOVA	Sig. differences in means between job categories (p < 0.05)		
		Bonferroni	Scheffé	Tamhane's T2
Q3,7b. My direct boss is committed to the quality program – Likelihood	0.035	LSD 1>3,7 5>3		
Q3,8a. My direct boss supports and encourages my involvement in the quality program – Importance	0.031	1>3,7		
Q3,8b. ditto – Extent	0.001	1>2,3,6	1>2,6	

Table 4: Tests for differences between means for job categories – for some of the constructs formed using data reduction
Only significant results listed

Variable	One-way ANOVA	Sig. differences in means between job categories (p < 0.05)		
		Bonferroni	Scheffé	Tamhane's T2
Organisational commitment	0.035	2>5 LSD 2>1,3,4,5		
Individual benefits	0.056	LSD 2>4,5 7>5		
Boss and colleagues program support	0.013	1>2,6		
Q8,14 Time spent on quality related activities	0.001		1>2,3,4,5,6,7	
Q8,17 Effectiveness of quality management approach.	0.003	1>3 LSD 1>2,3,5,6,7, 4,3	1>3	

Chi-Squared Tests

Chi-square tests were carried out to test for differences between job categories for the proportion of:

- Active involvement in the quality program. With quality specialists included $p < 0.001$ (Pearson Chi-Squared), with the quality management group omitted there was no significant difference at the 0.05 level.
- Proportion of respondents indicating they had received training/education in quality. $p < 0.05$ with quality specialist included. With the quality specialist group omitted there was no significant difference at the 0.05 level.

Cross tabulation tables are shown below for all of the job categories.

Table 5: Active program involvement by job category (including quality specialists)

			Quality program involvement		Total
			involved	not involved	
Main job activity	quality specialist	Count	35	3	38
		% within Main job activity	92.1%	7.9%	100.0%
	marketing/sales	Count	36	30	66
		% within Main job activity	54.5%	45.5%	100.0%
	production/operations/purchasing	Count	78	37	115
		% within Main job activity	67.8%	32.2%	100.0%
	HRM	Count	14	13	27
		% within Main job activity	51.9%	48.1%	100.0%
	design/R&D/engineering/IT	Count	65	35	100
		% within Main job activity	65.0%	35.0%	100.0%
	accounting/finance/economics	Count	14	18	32
		% within Main job activity	43.8%	56.3%	100.0%
	general management	Count	65	28	93
		% within Main job activity	69.9%	30.1%	100.0%
	other	Count	52	37	89
		% within Main job activity	58.4%	41.6%	100.0%
Total	Count	359	201	560	
	% within Main job activity	64.1%	35.9%	100.0%	

Table 6: Education/training in quality by job category (including quality specialists)

			Education and training in quality		Total
			No	Yes	
Main job activity	quality specialist	Count	1	37	38
		% within Main job activity	2.6%	97.4%	100.0%
	marketing/sales	Count	15	51	66
		% within Main job activity	22.7%	77.3%	100.0%
	production/operations/purchasing	Count	17	97	114
		% within Main job activity	14.9%	85.1%	100.0%
	HRM	Count	7	20	27
		% within Main job activity	25.9%	74.1%	100.0%
	design/R&D/engineering/IT	Count	27	73	100
		% within Main job activity	27.0%	73.0%	100.0%
	accounting/finance/economics	Count	11	21	32
		% within Main job activity	34.4%	65.6%	100.0%
	general management	Count	19	74	93
		% within Main job activity	20.4%	79.6%	100.0%
	other	Count	25	63	88
		% within Main job activity	28.4%	71.6%	100.0%
Total		Count	122	436	558
		% within Main job activity	21.9%	78.1%	100.0%

Table 6a: Active program involvement and education/training in quality – by job category

Job category	Percentage actively involved in program	Percentage who have received education/training in quality
1. Quality specialist	92	97
2. Marketing/sales	55	77
3. Prod./operations/purchasing	68	85
4. Human resources	52	74
5. Design/R&D/engineering /I.T.	65	73
6. Accounting/finance/economics	44	66
7. General management	70	80
Total	65	79

Line/staff analysis

All relevant variables were tested for differences between those who considered that their role was a line role and those who considered that their role was a staff role. The variables tested were similar to those listed in Appendix 6F, Tables 1 to 5. t-tests were used to test for differences between means and Chi-Square tests for dichotomous variables.

Table 7: Tests between means – staff/line roles

Only variables with significant differences at $p < 0.05$ are shown

Variable	t-test		Mean values
	var. assumed constant	var. not assumed constant	
Q35a. Top management provides useful feedback on how the quality program is going – Importance	0.015	0.017	staff = 5.90 line = 5.54
Q38a. My direct boss supports and encourages my involvement in the quality program – Importance	0.002	0.003	staff = 6.10 line = 5.67
Q66a. Rewards based on quality performance – Desirability	0.027	0.026	staff = 5.00 line = 4.49
Q814. Time spent on quality related activities (scale 1= none of my time to 7= most of my time)	0.028	0.023	staff = 4.04 line = 3.56

Chi-square tests for education/training in quality and active program involvement were not significant at the 0.05 level.

Appendix 6J - Correlations between key variables (Pearson)

Table 1: Correlation between some key variables (Pearson)

	1	2	3	4	5	6	7	8	9
1. Enthusiasm for quality in organisation		.60	.39	.42	.02	.21	.28	-.07	-.33
2. Effectiveness of quality management approach	.60		.33	.34	.07	.12	.29	-.14	-.38
3. Time spent on quality related activities	.39	.33		.23	-.05	.06	.12	-.04	-.22
4. Increase in job satisfaction from program (likelihood)	.42	.34	.23		.00	.18	.34	-.19	-.32
5. Highest qualification	.02	.07	-.05	.00		-.04	-.04	.04	.01
6. Age group	.21	.12	.06	.18	-.04		.14	-.06	-.22
7. Organisational commitment	.28	.29	.12	.34	-.04	.14		-.35	-.50
8. Role conflict	-.07	-.14	-.04	-.19	-.04	-.06	-.35		.31
9. Role ambiguity	-.33	-.38	-.22	-.32	.01	-.22	-.50	.31	
10. Top mgt. program support & communication	.38	.39	.27	.46	.01	.14	.47	-.25	-.44
11. Boss and colleagues program support	.52	.45	.32	.44	.00	.11	.32	-.21	-.41
12. Organisational benefits from program	.55	.51	.26	.64	.03	.18	.44	-.19	-.45
13. Program benefits for individual	.36	.30	.28	.61	-.07	.06	.32	-.07	-.28
14. Devolution of responsibility	.31	.29	.21	.39	.13	.16	.28	-.20	-.24
15. Rewards based on quality performance	.12	.15	.10	.34	.06	.08	.28	-.19	-.20
16. Increase in overall job sat. due to program (product)	.46	.35	.22	.92	-.01	.16	.35	-.15	-.33
17. Workload increase due to program	.09	.11	.06	.16	-.13	.09	.11	-.15	-.12
18. Greater accountability for your job performance	.23	.21	.12	.39	.07	.16	.31	-.14	-.30
19. Perceived stage of program development	.18	.23	.26	.26	.03	.16	.32	-.17	-.34

$p \leq 0.05$ for correlations greater than approximately 0.08 (2-tailed)

$p \leq 0.01$ for correlations greater than approximately 0.11 (2-tailed)

N minimum = 529

continued over

Table 1 continued

	10	11	12	13	14	15	16	17	18	19
1. Enthusiasm for quality in organisation	.38	.52	.55	.37	.31	.12	.46	.10	.23	.18
2. Effectiveness of quality management approach	.39	.45	.51	.30	.29	.15	.35	.11	.21	.23
3. Time spent on quality related activities	.27	.32	.26	.28	.21	.10	.22	.06	.12	.26
4. Increase in job satisfaction from program (likelihood)	.46	.44	.64	.61	.39	.34	.92	.16	.39	.26
5. Highest qualification	.01	.00	.03	-.07	.13	.06	-.01	-.13	.07	.03
6. Age group	.14	.11	.18	.06	.16	.08	.16	.00	.16	.16
7. Organisational commitment	.47	.32	.44	.32	.28	.28	.35	.11	.31	.32
8. Role conflict	-.25	-.21	-.19	-.07	-.20	-.19	-.015	-.15	-.14	-.17
9. Role ambiguity	-.44	-.41	-.45	-.28	-.24	-.20	-.33	-.12	-.30	-.34
10. Top mgt. program support & communication		.67	.67	.49	.41	.38	.48	.10	.40	.42
11. Boss and colleagues program support	.67		.62	.45	.37	.27	.45	.07	.36	.26
12. Organisational benefits from program	.67	.62		.61	.46	.39	.67	.14	.49	.38
13. Program benefits for individual	.49	.45	.61		.33	.28	.65	.16	.38	.29
14. Devolution of responsibility	.41	.37	.46	.33		.40	.39	.12	.44	.27
15. Rewards based on quality performance	.38	.27	.39	.28	.40		.38	.16	.56	.30
16. Increase in overall job sat. due to program (product)	.48	.45	.67	.65	.39	.31		.17	.39	.21
17. Workload increase due to program	.10	.07	.14	.16	.12	.16	.17		.18	.07
18. Greater accountability for your job performance	.40	.36	.49	.38	.44	.56	.39	.18		.30
19. Perceived stage of program development	.42	.26	.38	.29	.27	.30	.22	.07	.30	

$p \leq 0.05$ for correlations greater than approximately 0.08 (2-tailed)

$p \leq 0.01$ for correlations greater than approximately 0.11 (2-tailed)

N minimum = 529

Appendix 6K - Correlations between key variables, by organisation

(For 15 organisations with sample size of 17 and above)

Table 1: Correlations with enthusiasm for quality in the organisation - by organisation (quality specialists excluded from sample)

Org.	Age group	Org. commit.	Role ambiguity.	Top management program support & comm.	Boss & colleagues program support	Organisation program benefits	Individual program benefits	Increase in job satisfaction from program	Devolution of responsibility	Greater accountability for job performance
1	.18	.50***	-.45***	.37**	.54***	.59***	.47***	.57***	.45***	.40**
2	.47*	.18	-.06	.39	.37	.68***	.43	.41	.38	.54**
3	.21	.04	.11	.38	.40*	.40	.24	.35	.08	.34
4	-.11	.48*	-.47*	.42	.49*	.55*	.50*	.58**	.29	.36
5	.14	.43*	-.45*	.39	.59**	.63**	.67**	.68**	.09	.32
6	.45	.14	-.12	-.04	.19	.13	.03	.03	.15	.01
7	-.08	.06	-.26	.17	.40*	.47**	.38*	.54**	.53**	.35*
8	.37	.42	-.43	.14	.23	.48	.13	.19	-.03	.29
9	.45*	.45	-.58*	.84***	.77*	.64**	.17	.58**	.52**	.60*
10	.25	.51**	-.13	.50**	.43*	.60**	.49**	.49*	.24	.27
11	.25	.28	-.61**	.61**	.51**	.49*	.48*	.33	.29	.15
12	-.46*	.29	-.22	.17	.18	.54*	.45*	.61**	.02	-.16
15	.46	.40	-.18	.27	.35	.40	.05	.62**	.64**	.36
20	.09	.24*	-.38***	.37***	.65***	.56***	.42***	.46***	.22**	.08
22	.09	.39*	-.32	.45*	.46*	.60***	.17	.58**	.31	.19
All above	.21***	.31***	-.34***	.38***	.52***	.54***	.37***	.48***	.30***	.22***

* $p \leq 0.05$

** $p \leq 0.01$

*** $p \leq 0.001$

Note: there were no significant correlations with the item "increase in your overall workload (product)" or "role conflict" "rewards based on quality performance" was only significant for organisation 1 (at $p < 0.05$ level)

Table 2: Correlations with the likelihood of an increase in overall job satisfaction resulting from the quality program - by organisation (quality specialists excluded from sample)

Org.	Age group	Org. commit.	Role ambiguity	Role conflict	Top mgt. program support & comm.	Boss & colleagues program support	Org. program Benefits	Individual program benefits	Dev. of responsibility	Rewards based on quality perform.	Greater account. for job perform.	Increase in overall workload
1	.16	.48***	-.34*	-.28*	.46***	.46***	.66***	.71***	.55***	.32**	.37**	.08
2	.47*	.28	-.20	-.30	.18	.21	.50*	.49*	.23	.29	.19	.23
3	.14	.16	.02	-.27	.44*	.55**	.46*	.33	.31	.51*	.69***	-.01
4	-.14	.45*	-.19	-.16	.55**	.60**	.88***	.72***	.57**	.55**	.73***	-.48*
5	.25	.43*	-.41	-.20	.47	.36	.71***	.79***	.50*	.51*	.37	-.08
6	-.01	.40*	.07	-.14	.47**	.27	.61***	.61***	.31	.60***	.67***	.40*
7	.10	.38*	-.48**	-.15	.58**	.29	.82***	.73***	.75***	.62***	.33	.46**
8	.20	.29	-.55*	-.29	.58*	.39	.56*	.56	.40	.48	.45	.75**
9	.30	.42	-.58*	-.26	.23	.26	.65**	.25	.25	.64**	.74**	.60*
10	.05	.43*	-.33	-.07	.52**	.50**	.63***	.36*	.56**	.09	.40*	-.28
11	.36	.08	-.54**	-.02	.48*	.40*	.48*	.57**	-.03	-.04	.24	.20
12	.23	.36	.19	-.26	.24	.55*	.48*	.58**	-.33	-.14	.07	-.11
15	.10	.58*	-.56*	-.42	.66**	.44	.66**	.28	.60*	.47	.63*	.24
20	.03	.37***	-.31**	-.26*	.47***	.42***	.63***	.71***	.18	.27**	.17	.16
22	-.08	.31	-.22	-.29	.36*	.30	.74***	.16	.42*	.01	.34	.07
All above	.16***	.37***	-.31***	-.21***	.46***	.44***	.65***	.60***	.39***	.33***	.39***	.16**

* p ≤ 0.05
 ** p ≤ 0.01
 *** p ≤ 0.001

Table 3: Correlations with time spent on quality related activities - by organisation (quality specialists excluded from sample)

Org.	Enthusiasm for quality in organ.	Org. commit.	Role ambiguity	Top mgt. program support & comm.	Boss & colleagues program support	Org. program benefits	Individual program benefits	Devolution of responsibility.	Rewards based on quality perform.	Increase in job sat. from program.	Increase in workload
1	.32*	.11	-.30*	.17	.32*	.14	.29*	.21	.18	.17	-.11
2	-.04	-.23	.18	.06	.17	-.07	.04	-.27	.02	.06	.01
3	.18	.14	-.16	.39	.22	.20	.18	-.05	-.11	.13	.08
4	.58**	-.01	-.42	.19	.14	.10	.11	.24	.07	.26	-.02
5	.38	.38	-.38	.63**	.29	.26	.55**	.27	.40	.58**	-.09
6	.37*	.07	-.04	.16	.27	.26	.42*	.12	.18	.32	.18
7	.25	.22	.02	.16	.16	.24	.31	.06	-.07	.28	-.08
8	.23	.34	-.59*	.24	.25	.42	.80**	.25	.14	.51	.65*
9	.45	.12	-.27	.44	.31	.37	-.18	.38	.59*	.41	.53*
10	.39*	-.02	.06	-.07	.00	.19	.18	.38*	-.13	.26	-.16
11	.45*	-.13	-.27	.63**	.38	.51**	.49*	.06	.07	.46*	.13
12	.32	-.07	-.35	.19	.17	.21	.27	.38	.21	-.01	.20
15	.09	-.21	-.25	-.03	-.19	-.24	.40	.09	-.28	-.03	.22
20	.41***	.17	-.21*	.32**	.45*	.23*	.27**	.23*	.05	.35***	.11
22	.32	.25	-.20	-.07	.16	.20	.19	.12	-.05	.30	.22
All above	.36***	.14**	-.23***	.25***	.28***	.24***	.29***	.20***	.10*	.29***	.08

* p ≤ 0.05
 ** p ≤ 0.01
 *** p ≤ 0.001

Note: there were no significant correlations (at the p<0.05 level) with "age group" or "role conflict"

Appendix 6L - Multiple regression results

Table 1: Multiple regression with “enthusiasm for quality in the organisation” as the dependent variable (excluding quality specialists)

Variables	1	2	3	4	5	6
Gender	-.03	-.02	-.03	-.02	.00	.01
Age group	.22***	.19	.16**	.16*	.14**	.11*
Organisational tenure		.04	.02	-.01	-.04	-.05
Job tenure		-.04	-.03	-.05	.00	.01
Job level not mgr.		-.09	-.08	-.05	-.06	-.02
Job level lower mgr.		-.08	-.04	.01	-.02	.01
Job level middle mgr.		-.03	.04	.02	.01	.04
Organisational commitment			.27***	.17**	.13**	.08
Role Conflict				.05	.08	.07
Role Ambiguity				-.25***	-.12*	-.07
Top mgt. support & communication for program					-.04	-.15*
Boss & colleagues support for program					.45***	.30***
Organisation benefits						.31***
Individual benefits						-.03
Devolution of responsibility						.02
Inc. in overall job sat.						.18**
Rewards based on quality performance						-.10*
Overall workload increase						-.04
Accountability for job performance						.04
Perceived stage of program						-.07
Perceived program ISO						.06
Perceived program TQM						.12
Perceived program ISO & TQM						.11
Active program involvement						.06
Education/training in quality						.17***
R ²	.05	.06	.13	.18	.32	.47
F	12.0***	4.2***	8.5***	9.5***	17.3***	14.8***
Δ R ²		.01	.07	.05	.14	.15
F		1.1	36.6***	11.6***	46.5***	8.8***

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

Removing “increase in overall job satisfaction” from regression did not significantly change other results
All numbers are standardised regression coefficients (Beta values)

Table 2: Multiple regression with belief about the “effectiveness of the quality management approach” as the dependent variable (excluding quality specialists)

Variables	1	2	3	4	5	6
Gender	.06	.06	.05	.06	.07	.09*
Age group	.01**	.16*	.13*	.12*	.10*	.07
Organisational tenure		-.02	-.05	-.08	-.10*	-.10*
Job tenure		-.07	-.06	-.08	-.04	-.04
Job level not mgr.		-.05	-.03	-.01	-.02	.03
Job level lower mgr.		-.08	-.03	-.01	-.01	.01
Job level middle mgr.		-.05	-.02	.01	.00	.03
Organisational commitment			.31***	.17**	.12*	.09
Role Conflict				-.02	.04	.03
Role Ambiguity				-.31***	-.20***	-.15**
Top mgt. support & communication for program					.04	-.07
Boss & colleagues support for program					.28***	.17**
Organisation benefits						.33***
Individual benefits						-.03
Devolution of responsibility						.07
Inc. in overall job sat.						-.02
Rewards based on quality performance						-.06
Overall workload increase						-.06
Accountability for job performance						.05
Perceived stage of program						-.02
Perceived program ISO						.07
Perceived program TQM						.11
Perceived program ISO & TQM						.09
Active program involvement						.06
Education/training in quality						.16***
R ²	.02	.03	.12	.19	.26	.36
F	4.3*	2.0	7.5***	10.0***	12.7***	9.2***
ΔR^2		.01	.09	.07	.07	.09
F		1.3	39.9***	16.8***	26.4***	5.6***

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$

Removing “increase in overall job satisfaction” from regression changed the Beta value for “devolution of responsibility in block 6 to .10*, other results were not significantly affected.

Including quality specialist in sample gave similar results except the Beta for “devolution of responsibility” became .10*

All numbers are standardised regression coefficients (Beta values)

Table 3: Multiple regression with likelihood of “increase in overall Job satisfaction” from quality program as the dependent variable (excluding quality specialists)

Variables	1	2	3	4	5	6
Gender	.04	.05	.04	.04	.06	-.01
Age group	.16**	.12*	.09	.08	.06	.01
Organisational tenure		.12*	.09	.07	.04	.08
Job tenure		-.07	-.07	-.07	-.01	-.04
Job level not mgr.		-.01	.01	.01	.01	-.01
Job level lower mgr.		-.04	.01	.01	.00	.00
Job level middle mgr.		-.03	.01	.02	.01	.01
Organisational commitment			.34***	.25***	.16**	.05
Role Conflict				-.08	-.05	-.08*
Role Ambiguity				-.14	-.01	.02
Top mgt. support & communication for program					.19**	-.10*
Boss & colleagues support for program					.24***	.06
Organisation benefits						.41***
Individual benefits						.30***
Devolution of responsibility						.10*
Rewards based on quality performance						.07
Overall workload increase						.00
Accountability for job performance						.03
Perceived stage of program						-.03
Perceived program ISO						-.01
Perceived program TQM						-.01
Perceived program ISO & TQM						-.01
Active program involvement						.01
Education/training in quality						.02
R ²	.02	.04	.15	.17	.27	.52
F	5.2**	2.3*	9.3***	8.7***	13.8***	19.4***
Δ R ²		.02	.11	.02	.10	.25
F		1.0	56.0***	5.6**	32.9***	18.5***

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

All numbers are standardised regression coefficients (Beta values)

Table 4: Multiple regression with “time spent on quality related activities” as the dependent variable (excluding quality specialists)

Variables	1	2	3	4	5	6
Gender	.09	.10*	.09	.10*	.11*	.11*
Age group	.05	.01	-.00	-.01	-.02	-.04
Organisational tenure		.12*	.10	.08	.06	.06
Job tenure		-.11*	-.11*	-.12*	-.09	-.10*
Job level not mgr.		-.10	-.08	-.06	-.08	-.07
Job level lower mgr.		-.03	-.00	.02	.02	.02
Job level middle mgr.		-.08	-.06	-.05	-.05	-.06
Organisational commitment			.16***	.07	.02	.00
Role Conflict				.05	.06	.05
Role Ambiguity				-.24***	-.17**	-.13*
Top mgt. support & communication for program					.08	-.03
Boss & colleagues support for program					.15*	.14*
Organisation benefits						-.10
Individual benefits						.16**
Devolution of responsibility						.10
Inc. in overall job sat.						.03
Rewards based on quality performance						-.02
Overall workload increase						-.07
Accountability for job performance						.02
Perceived stage of program						.17***
Perceived program ISO						.04
Perceived program TQM						.04
Perceived program ISO & TQM						.04
Active program involvement						.01
Education/training in quality						.09
R ²	.01	.03	.06	.09	.12	.19
F	1.6	2.0	3.2***	4.5***	5.2***	4.0***
Δ R ²		.02	.03	.03	.03	.07
F		2.1	11.5***	9.3***	7.8***	2.6**

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

Removing the variable “stage of program development” did not significantly alter the regression results
All numbers are standardised regression coefficients (Beta values)

Table 5: Multiple regression with “enthusiasm for quality in the organisation” as dependent variable (those actively involved in their quality programs, excluding quality specialists)

Variables	1	2	3	4	5	6	7
Gender	-.06	-.05	-.06	-.06	-.04	-.01	-.03
Age group	.23***	.20**	.16*	.14*	.11	.12	.11
Organisational tenure		-.00	.02	.00	-.01	-.04	-.07
Job tenure		-.04	-.06	-.05	-.04	.01	-.01
Job level not mgr.		-.10	-.10	-.10	-.11	-.09	-.08
Job level lower mgr.		-.21**	-.14*	-.11	-.09	-.05	-.02
Job level middle mgr.		-.10	-.08	-.05	-.03	.00	-.02
Organisational commitment			.29***	.22***	.20**	.16**	.11
Role Conflict				.00	.01	.03	.03
Role Ambiguity				-.18**	-.12	.01	-.05
Program role clarity					.21***	.22***	.14*
Program tenure					.08	.09	.08
Top mgt. support & communication for program						-.02	-.13
Boss & colleagues support for program						.39***	.27***
Organisation benefits							.26**
Individual benefits							.06
Devolution of responsibility							.03
Inc. in overall job sat.							.16*
Rewards based on quality performance							-.08
Overall workload increase							-.09
Accountability for job performance							.03
Perceived stage of program							-.06
Perceived program ISO							-.03
Perceived program TQM							.01
Perceived program ISO & TQM							.01
Education/training in quality							.11*
R ²	.06	.10	.18	.20	.24	.36	.45
F	9.1***	4.1***	7.1***	6.6***	6.8***	10.2***	7.7***
Δ R ²		.04	.08	.02	.04	.12	.09
F		2.1	25.0***	4.2*	6.5***	23.4***	3.5***

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

Removing “increase in overall job satisfaction” from regression did not significantly change other results

All numbers are standardised regression coefficients (Beta values)

Table 6: Multiple regression with “perception of effectiveness of quality management approach” as dependent variable (those actively involved in their quality programs, excluding quality specialists)

Variables	1	2	3	4	5	6	7
Gender	-.01	-.03	-.04	-.05	-.02	.01	-.02
Age group	.18**	.23***	.20**	.18**	.16*	.16**	.13
Organisational tenure		-.10	-.10	-.13	-.12	-.15*	-.16*
Job tenure		-.08	-.09	-.09	-.08	-.03	-.03
Job level not mgr.		.06	.06	.05	.04	.05	.07
Job level lower mgr		-.16*	-.09	-.06	-.03	-.01	.03
Job level middle mgr.		-.06	-.04	.00	.02	.05	.07
Organisational commitment			.28***	.19**	.16**	.09	.05
Role Conflict				-.02	-.01	.01	.01
Role Ambiguity				-.24***	-.18**	-.06	-.07
Program role clarity					.20**	.18**	.13*
Program tenure					.01	.04	.02
Top mgt. support & communication for program						.15	.02
Boss & colleagues support for program						.22**	.15*
Organisation benefits							.28**
Individual benefits							-.02
Devolution of responsibility							-.01
Inc. in overall job sat.							.06
Rewards based on quality performance							-.03
Overall workload increase							-.07
Accountability for job performance							.06
Perceived stage of program							-.03
Perceived program ISO							.01
Perceived program TQM							-.10
Perceived program ISO & TQM							-.09
Education/training in quality							.08
R ²	.03	.08	.16	.21	.23	.32	.37
F	4.3*	3.2**	6.1***	6.6***	6.5***	8.3***	5.3***
Δ R ²		.05	.08	.05	.02	.09	.05
F		2.9*	23.2***	7.5***	4.8**	15.2***	1.6

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

84% had received formal education/training in quality

All numbers are standardised regression coefficients (Beta values)

Table 7: Multiple regression with “increase in overall job satisfaction” from quality program as dependent variable (those actively involved in their quality programs, excluding quality specialists)

Variables	1	2	3	4	5	6	7
Gender	.02	.04	.03	.03	.06	.08	.01
Age group	.18**	.12	.08	.06	.07	.08	-.01
Organisational tenure		.12	.13	.11	.14	.11	.14*
Job tenure		-.08	-.07	-.06	-.06	-.02	-.01
Job level not mgr.		-.01	-.04	-.05	-.06	-.06	-.05
Job level lower mgr.		-.13	-.04	-.04	-.02	.01	-.01
Job level middle mgr.		-.07	-.05	-.03	-.04	.00	-.01
Organisational commitment			.38***	.34***	.32***	.24***	.12*
Role Conflict				-.05	-.04	-.03	-.06
Role Ambiguity				-.08	-.05	.08	.04
Program role clarity					.12	.11	.02
Program tenure					-.09	-.06	-.09
Top mgt. support & communication for program						.16*	-.07
Boss & colleagues support for program						.25***	.05
Organisation benefits							.35***
Individual benefits							.24***
Devolution of responsibility							.18**
Rewards based on quality performance							.00
Overall workload increase							.02
Accountability for job performance							.09
Perceived stage of program							-.06
Perceived program ISO							-.05
Perceived program TQM							-.08
Perceived program ISO & TQM							-.04
Education/training in quality							-.06
R ²	.03	.05	.19	.20	.22	.32	.52
F	4.1*	2.1*	7.7***	6.5***	5.9***	8.5***	10.7***
Δ R ²		.02	.14	.01	.02	.10	.20
F		1.2	44.8***	1.4	2.9	18.8***	9.6***

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

All numbers are standardised regression coefficients (Beta values)

Table 8: Multiple regression with “time spent on quality related activities” as dependent variable (those actively involved in their quality programs, excluding quality specialists)

Variables	1	2	3	4	5	6	7
Gender	-.02	.00	.00	.00	-.01	.00	-.02
Age group	.02	.02	.01	.02	-.05	-.05	-.07
Organisational tenure		.07	.07	.05	.00	.02	-.02
Job tenure		-.16*	-.16*	-.16*	-.16*	-.13*	-.15*
Job level not mgr.		-.09	-.09	-.09	-.08	-.07	-.04
Job level lower mgr.		-.07	-.04	.02	.02	.04	.06
Job level middle mgr.		-.11	-.11	-.06	-.03	-.01	-.03
Organisational commitment			.13*	.05	.05	.06	-.06
Role Conflict				.08	.06	.07	.05
Role Ambiguity				-.28***	-.26***	-.19**	-.17*
Program role clarity					.03	.03	-.04
Program tenure					.18**	.19**	.15*
Top mgt. support & communication for program						.08	-.08
Boss & colleagues support for program						.15*	.09
Organisation benefits							.06
Individual benefits							.14
Devolution of responsibility							.00
Inc. in overall job sat.							.11
Rewards based on quality performance							.03
Overall workload increase							-.05
Accountability for job performance							.02
Perceived stage of program							.17*
Perceived program ISO							.06
Perceived program TQM							.01
Perceived program ISO & TQM							.09
Education/training in quality							.12
R ²	.00	.03	.05	.11	.14	.17	.24
F	0.1	1.3	1.7	3.2***	3.4***	3.7***	3.0***
Δ R ²		.03	.02	.06	.03	.03	.07
F		1.8	4.3*	8.7***	3.9*	5.2**	2.0*

* p ≤ 0.05

** p ≤ 0.01

*** p ≤ 0.001

Removing variable “program tenure” and “stage of program development” reduced R² in block 7 to .20 but did not affect Beta values for other variables significantly.

All numbers are standardised regression coefficients (Beta values)

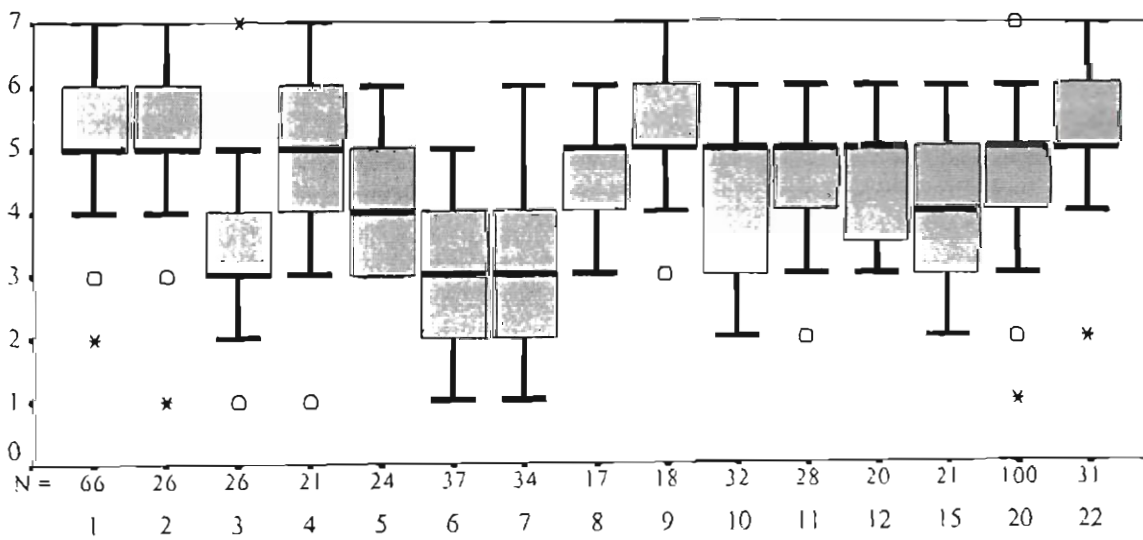
Appendix 6M - Differences in beliefs about quality within organisations

Table 1: Differences in beliefs about type of quality program – by organisation

Company	Respondents' belief about approach to quality in their company			
	QA	TQM	QA & TQM	Not sure
1	5 + 1 ^a	10	44 + 3	4
2	1		21 + 4	
3	6	5	13 + 1	1
4		17	2	2
5		14 + 1	5	3 + 1
6		19 + 2	6	10
7	7 + 1	14	9 + 1	2
8		2	12 + 3	
9	4 + 1		12 + 1	
10	4	1	24 + 2	1
11	3 + 1	1	23 + 1	
12	5	1	13	1
15	3	7	7 + 4	
20	2	78 + 2	9	9
22	2	4	26	

a. Number of quality specialists are shown in bold, numbers in all other job categories shown in regular font

Figure 1: Perceived stage of program development – by organisation

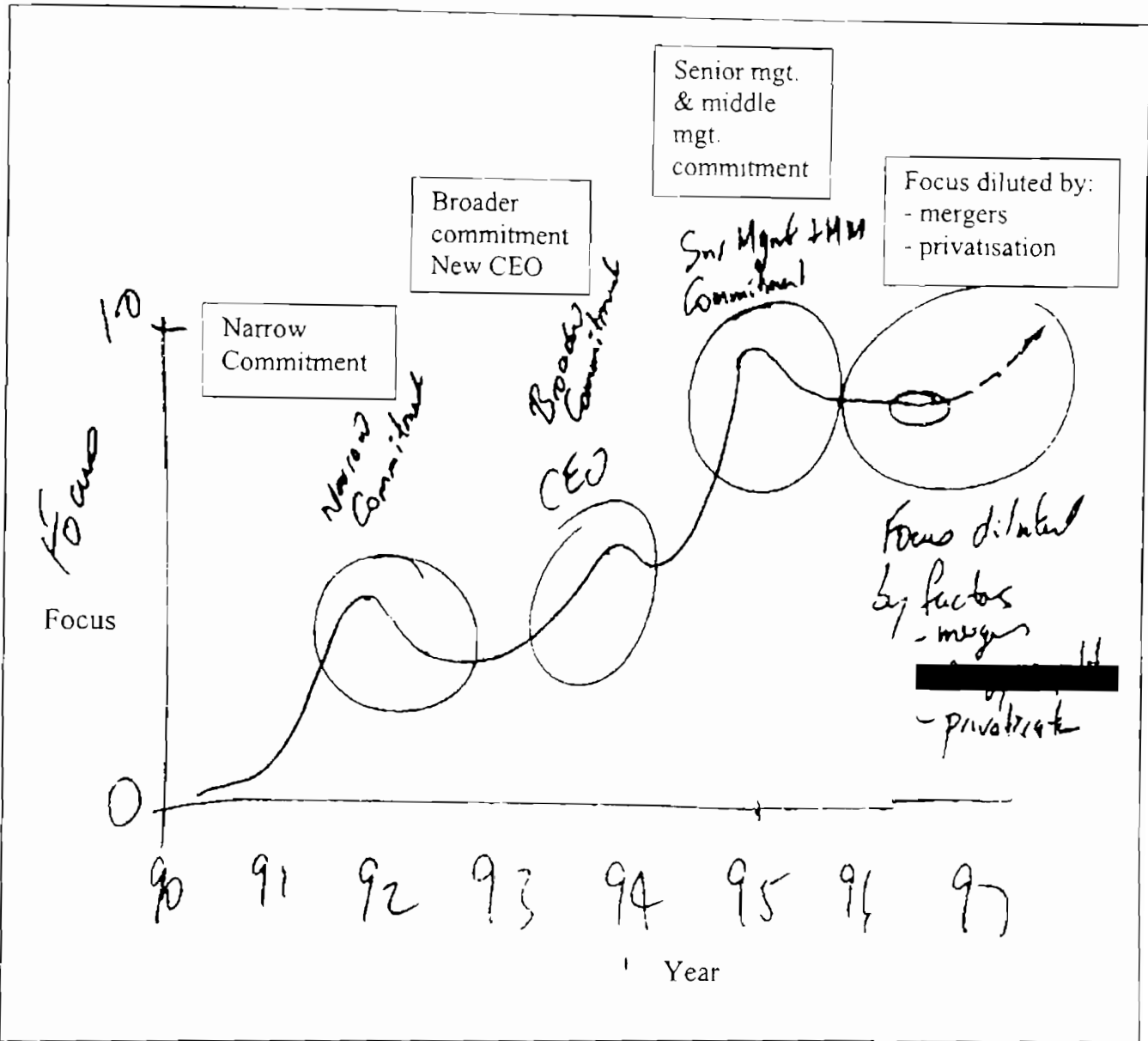


Company

Notes: Scale from 1 = just starting to 7 = fully implemented

Plots show the largest, upper quartile, median, lower quartile, smallest, outliers 'o' and extremes '*'.

Appendix 6N - Sketch of quality program history for organisation 1



Notes: a senior manager in organisation 1 to illustrate some of the major events in the development of the organisation's quality activities drew this sketch. Some information has been removed to maintain anonymity.

REFERENCES

REFERENCES

- Abraham, M., Fisher, T. and Crawford, J. 1997. "Quality culture and the management of organizational change", *International Journal of Quality and Reliability Management*, vol. 14, no. 6, pp. 616-636.
- Abrahamson, E. 1991. "Managerial fads and fashions: the diffusion and rejection of innovations", *Academy of Management Review*, vol. 16, no. 3, pp. 586-612.
- Adams, S. 1997. *The Dilbert Principle*, Harper Collins Publishers Inc. New York.
- Adebanjo, D. and Kehoe, D. 1998. "An evaluation of quality culture problems in UK companies", *International Journal of Quality Science*, vol. 3, no. 3, pp. 275-286.
- Ahire, S.L. and O'Shaughnessy, K.C. 1997. "The role of top management commitment in quality management: an empirical analysis of the auto parts industry", *International Journal of Quality Science*, vol. 3, no. 1, pp. 5-37.
- Ajzen, I. 1988. *Attitudes Personality and Behaviour*, Open University Press, Milton Keynes.
- Ajzen, I. and Fishbein, M. 1980. *Understanding Attitudes and Predicting Social Behavior*, Prentice Hall, Englewood Cliffs, New Jersey.
- Albrecht, K. 1990. *Service Within: Solving the Middle Management Leadership Crisis*, Dow Jones-Irwin, Homewood, Ill.
- Anderson, J.C., Rungtusanatham, M. and Schroeder, R.G. 1994. "A theory of quality management underlying the Deming management method", *Academy of Management Review*, vol. 19, no. 3, pp. 472-509.
- Anderson, N. and Schalk, R. 1998. "The psychological contract in retrospect and prospect", *Journal of Organizational Behaviour*, vol. 19, (special issue: the psychological contract of work), pp. 637-647.
- AOQ 1999. About the Australian Organisation for Quality, *Web Address*, <http://www.aoq.asn.au/general.html>
- AQAF 1995. *The Australian Quality Awards 1995, Assessment Criteria Plus Application Guidelines*, Australian Quality Awards Foundation Limited.
- AQC 1998. *Australian Quality Awards for Business Excellence: Guidelines and Application Form*, Australian Quality Council.
- AQC 1999. *Australian Business Excellence Framework*, Australian Quality Council
- Australian Bureau of Statistics 1998. *Labour Force Australia*, Canberra: cat. no. 6203.0.

Australian Manufacturing Council 1994. *Leading the Way: A Study of Best Manufacturing Practices in Australia and New Zealand*, Australian Manufacturing Council, Melbourne.

Bardoel, E.A. and Sohal, A.S. 1999. "The role of culture audit in implementing quality improvement programs", *International Journal of Quality and Reliability Management*, vol. 16, no. 3, pp. 263-276.

Barker, J. R. 1993. "Tightening the iron cage: concertive control in self-managing teams", *Administrative Science Quarterly*, vol. 38, pp. 408 – 437.

Barnwell, N.S. (2000) *Methods of Organisational Control and Their Relationship to Organisational Technology*, Unpublished Doctoral Thesis, University of Technology, Sydney.

Bell, M., Harrison, D.A. and McLaughlin, M.E. 1997. "Asian American attitudes towards affirmative action in employment", *Journal of Applied Behavioral Science*, vol.33, vo.3. pp.356-377.

Bettenhausen, K. 1991. "Five years of group research: what we have learned and what needs to be addressed", *Journal of Management*, vol. 17, no. 2, pp. 345-381.

Berenson, M.L. and Levine, D.M. 1992. *Basic Business Statistics – Concepts and Applications*, 5th edn, Prentice Hall, Englewood Cliffs, New Jersey.

Bolman, L.G. and Deal, T.E. 1991. *Reframing Organizations: Artistry, Choice and Leadership*, Jossey-Bass Publishers, San Francisco.

Borucki, C. and Byosiere, P.H.R. 1992. "The process of enlightenment: re-architecting the role of middle management in North America", *Paper presented at the Annual Meetings of the Academy of Management*, International Management Division, Las Vegas, Nevada.

Bourmois, F. and Livian, Yves-Frédéric 1997. Chapter 2 – 'Leitende Angestellte': Some landmarks about managerial group titles and definitions, in Livian, Yves-Frédéric and Burgoyne, J.R. (eds) *Middle Managers in Europe*, Routledge, London and New York.

Brennan, M. 1991. "Mismanagement and quality circles: how middle managers influence direct participation", *Employee Relations*, vol. 13, no. 5, pp. 22-32.

Brossard, M. 1990. "Workers' objectives in quality improvement", *Employee Relations*, vol. 12, no. 6, pp. 11-16.

Brown, A. and Van der Wiele 1995. "Industry experience with ISO 9000", *Asia Pacific Journal of Quality Management*, vol. 4, no. 2, pp. 8-17.

- Burgelman, R.A. 1991. "Intraorganizational ecology of strategy making and organizational adaption: theory and field research", *Organization Science*, vol. 2, pp. 239-262
- Burgelman, R.A. 1994. "Fading memories: a process theory of strategic business exploring dynamic environments", *Administrative Science Quarterly*, pp. 24-57
- Burris, D. 1994. *Technotrends*, Harper Collins, New York.
- Capel, P. 1992. "Endangered middle managers", *American Demographics*, vol. 14, no. 1 January, pp. 44-47.
- Cartwright, D. and Zander, A. 1960. *Group Dynamics – Research and Theory*, 2nd edn. Tavistock Publications, London.
- Cashman, K. 1989. National Industry Extension Scheme (NIES) National Quality Forum, Strategic Plan, Commonwealth of Australia, Department of Industry, Technology and Commerce, (in house publication).
- Conners, J.L. and Romberg, T.A. 1991. "Middle management and quality control: strategies for obstruction", *Human Organisation*, vol. 50, pp. 61-65.
- Cooper, D.R. and Schindler, P.S. 1995. *Business Research Methods*, 6th edn, Irwin/McGraw Hill, Boston, MA.
- Cordery J.L. 1985. "Multi skilling and its implications for work design", *Human Resource Management Australia*, August, pp. 55-58.
- Cortina, J.M. 1993. "What is Coefficient Alpha? an examination of theory and applications", *Journal of Applied Psychology*, vol. 78, no. 1, pp. 98-104.
- Crosby, P.B. 1979. *Quality is Free*, McGraw Hill Book Company, New York.
- Crosby, P.B. 1984. *Quality Without Tears*, McGraw Hill Book Company, New York.
- Curtin, R. 1987. "Career path development and job restructuring", *Work and People*, vol. 13, no. 3, pp. 17-24.
- Dailey, R., Young, F. and Barr, C. 1991. "Empowering middle managers in hospitals with team-based problem solving", *Health Care Management Review*, vol. 16, no. 2, Spring.
- Dale, B.G. and Duncalf, A.J. 1985. "Quality related decision making: a study of six companies", *International Journal of Operations and Production Management*, vol. 5, no. 1. pp. 15-25.

- Davis, D. 1995. "The development of instruments to assess individuals' attitude towards quality management", *Asia Pacific Journal of Quality Management*, vol. 4, no. 2, pp. 79-81.
- Davis, D. 1997. "Exploring individuals' attitudes to quality – a survey of graduate students", *Proceedings of the Forth International Meeting*, Decision Science Institute, Sydney, pp. 627-631.
- Davis, D. and Fisher, T.J. 1994. "The pace of change: a case study of the development of a total quality organization", *International Journal of Quality and Reliability Management*, vol. 11, no. 8, pp. 5-18.
- Dawson, P. 1994. *Organisational Change: A Processual Approach*, Paul Chapman Publishing Ltd., London.
- Dawson, P. 1996. *Technology and Quality: Change in the Workplace*, International Thomson Business Press, London.
- Dawson, P. and Palmer, G. 1995. *Quality Management: the Theory and Practice of Implementing Change*, Longman Australia Pty. Ltd.
- Dean, J.W. and Bowen, D.E. 1994. "Management theory and total quality: Improving research and practice through theory development", *Academy of Management Review*, vol. 19, no. 3, pp. 392-418.
- Deming, W.E. 1982. *Quality, Productivity and Competitive Position*, Massachusetts Institute of Technology, Center for Advanced Engineering Study, Cambridge, MA
- Deming, W.E. 1986. *Out of the Crisis*, Massachusetts Institute of Technology, Center for Advanced Engineering. Cambridge, Mass
- Deming Prize Committee 1992. *The Deming Prize Guide – for Oversea (sic) Companies*, Union of Japanese Scientists and Engineers.
- Dopson, S. and Stewart, R. 1993. "Information technology, oranzizational restructuring and the future of middle management", *New Technology, Work and Employment*, vol 8, no. 1, pp. 10-20.
- Dopson, S. and Stewart, R. 1994. "What is happening to middle managers in Europe? problems and promises associated with their changing roles and responsibilities", *The International Executive*, vol. 36, no. 1, January/February, pp. 55-78.
- Drucker, P.F. 1989. "Managing in the 90's: tomorrows restless managers", *Industry Week*, vol 236, no. 8, April, pp. 25-27.
- Drucker, P.F. 1988. "The coming of the new organization", *Harvard Business Review*, vol 66, no. 1, January/February, pp. 45-53.

Duncalf, A.J. and Dale, B.G. 1988. "Quality management effectiveness – an analytical approach", *International Journal of Operations and Production Management*, vol. 8, no. 5, pp. 3-45.

Dunphy, D. and Stace, D. 1990. *Under New Management - Australian Organizations in Transition*, McGraw-Hill Book Company, Sydney.

Eagly, A.H., and Chaiken, S. 1993. *The Psychology of Attitudes*, Harcourt Brace Jovanovich, Fort Worth, TX.

Edwards, P., Collinson, M. and Rees, C. 1998. "The determinants of employee responses to total quality management: six case studies", *Organization Studies*, vol. 19, no. 3, pp. 449-475.

Eiser, J.R. and van der Pligt, J. 1988. *Attitudes and Decisions*, Routledge, London and New York.

Evans, J.R., Lindsay, W.M., Preston, A. and Saunders, I. 1997. Panel discussion on quality practices in Australia and the U.S., *Fourth International Meeting, Decision Science Institute*, Sydney.

Feigenbaum, A.V. 1961. *Total Quality Control*, 3rd edn, McGraw Hill Book Company, New York.

Fenton-O'Creevy, M. 1996. "Middle manager: friend or foe of employee involvement", *Journal of Applied Management Studies*, vol. 5, no. 1, pp. 47-62.

Fenton-O'Creevy, M. 1998. "Employee involvement and the middle manager: evidence from a survey of organizations", *Journal of Organizational Behavior*, vol. 19, pp. 67-84.

Fisher, K. 1986. "Management roles in the implementation of participative management systems", *Human Resource Management*, vol. 25, no. 3, pp. Fall, pp. 459-479.

Fisher, K. 1993. *A Guide to Developing New Team Leadership Skills*, McGraw Hill, New York.

Fisher, T.J. 1990. "Quality management and productivity – a preliminary study", *Australian Journal of Management*, vol. 15, no. 1, pp. 107-127.

Fisher, T.J. 1998. *Personal correspondence*.

Floyd, S.W. and Wooldridge, B. 1990. "The strategic process, middle management involvement, and organizational performance", *Strategic Management Journal*, vol. 11, pp. 231-241.

Floyd, S.W. and Wooldridge, B. 1992. "Middle management involvement in strategy and its association with strategic type: a research note", *Strategic Management Journal*, vol. 13, pp. 153-167.

Floyd, S.W. and Wooldridge, B. 1994. "Dinosaurs or dynamos? recognizing middle management's strategic role", *Academy of Management Executive*, vol. 8, no. 4, November, pp. 47-54.

Floyd, S.W. and Wooldridge, B. 1997. "Middle management's strategic influence and organizational performance", *Journal of Management Studies*, vol. 34, no.3, May, pp. 465-487.

Flynn, B.B., Schroeder, R.G. and Sakakibara, S. 1994. "A framework for quality management research and an associated measuring instrument", *Journal of Operations Management*, vol. 11, pp. 339-366.

Foley, K. 1987. *Report of the Committee of Review of Standards, Accreditation and Quality Control and Assurance*, Department of Industry, Technology and Commerce, Australian Government Publishing Services, Canberra.

Foley, K., Barton, R., Busteed, K., Hulbert, J. and Sprouster, J. 1997. *Quality, Productivity and Competitiveness: The Role of Quality in Australia's Social and Economic Development*, The Wider Quality Movement, Standards Australia, Sydney.

Frohman, A.L. and Johnson, L.W. 1993. *The Middle Management Challenge: Moving from Crisis to Empowerment*, McGraw Hill, New York.

Garvin, D.A. 1983. "Quality on the line", *Harvard Business Review*, vol. 83, no. 5, September-October, pp. 65-75.

Garvin, D.A. 1988. *Managing Quality*, The Free Press, New York.

Garvin, D.A. 1991. "How the Baldrige Award really works", *Harvard Business Review*, vol. 69, no. 6, November-December, pp. 80-93.

Gleeson, J., McPhee, J. and Spatz, L. 1988. "Training needs of supervisors and middle managers: participation and productivity", *Work and People*, vol. 13, no. 3, pp. 32-36.

Glover, J., Shames, G. and Friedman, H. 1994. *Developing Cultural Assets*, Cultural Assets Management Inc., HI

Grant, R.M., Shani, R. and Krishnan, R. 1994. "TQM's challenge to management theory and practice", *Sloan Management Review*, Winter, pp. 25-35.

Hallier, J.H. and James, P. 1997. "Middle managers and the employee psychological contract: agency protection and advancement", *Journal of Management Studies*, vol. 34, no. 5, pp. 703-728.

- Hammer, M. and Champy, J. 1994. "Reengineering The Corporation: A Manifesto for Business Revolution", Allan and Unwin, St. Leonards, New South Wales, Australia.
- Harber, A.D. 1991. *Employee Participation in Total Quality Control: The Effect of Key Organisational Constructs and the Influence of Demographic Variables*, Unpublished Doctoral Thesis, The Graduate School of Management, University of Melbourne.
- Hardie, N. 1995. *A Framework to Integrate Models and Definitions of Quality*, Unpublished Doctoral Thesis, Graduate School of Business, University of Sydney.
- Harrison, N.J. and Lemonis, M. 1994. *Australian Manufacturing in the Asia Pacific Region*, Executive Summary of the 1994 Australian Manufacturing Futures Survey, The Manufacturing Futures Project, Macquarie Graduate School of Management, Macquarie University.
- Hartwick, J. and Barki, H. 1994. "Explaining the role of user participation in information systems", *Management Science*, vol. 40, no. 4, April, pp. 440-465.
- Hausner, A. and Arndt, G. 1999. "Linking quality management practices and business performance", *Proceeding of the Third International and Sixth National Research Conference on Quality Management*, Centre for Management Quality Research, RMIT University, ed. J.F. Dalrymple, pp. 227-236.
- Hewstone, M. and Young, L. 1988. "Expectancy-value models of attitude: measurement and combination of evaluation and beliefs", *Journal of Applied Psychology*, vol. 18, no. 11, pp. 958-971.
- Hicks, R.L. 1971. "Developing the top management group in a total systems organisation", *Personnel*, vol. 50, pp. 675-682.
- Hill, S. 1991. "Why quality circles failed but total quality management might succeed", *British Journal of Industrial Relations*, vol. 24, no. 4, December, pp.541-568.
- Hilmer, F.G. and Donaldson, L. 1996. *Management Redeemed: Debunking the Fads that Undermine Corporate Performance*, The Free Press, Sydney.
- Himmelfarb, S. (1993) Chapter 3 - The measurement of attitudes, in Eagly, A.H. and Chaiken, S. (eds) 1993. *The Psychology of Attitudes*, Harcourt Brace Jovanovich, Fort Worth, TX.
- Horton, T.R. and Reid, P.C. 1991. "What fate for middle managers?", *Management Review*, vol. 80, no. 1, January, pp. 22-23.
- Imai, M. 1986. *Kaizen: the Key to Japan's Competitive Success*, McGraw-Hill Publishing Company, New York.
- Ishikawa, K. 1985. *What is Total Quality Control? The Japanese way*, Prentice-Hall, Englewood Cliffs, NJ.

James, G. (1999) Information Activities Assistant, National Quality Program, home of the Malcolm Baldrige National Quality Award, National Institute of Standards and Technology, *personal correspondence*.

Jick, T.D. 1983. "Mixing qualitative and quantitative methods: triangulation in action", in Van Maanen, J. 1993. *Qualitative Methodology*, Sage Publications, Beverly Hills, pp. 135-148.

Jones, A.P., Glaman, J.M. and Johnson, D.S. 1993. "Perceptions of a quality program and relationships with work perceptions and job attitudes", *Psychological Reports*, no.72, pp. 619-624.

Joseph, I.N., Rajendran, C., Kamalanabhan, T.J. and Anantharaman, R.N. 1999. "Organizational factors and total quality management – an empirical study", *International Journal of Production Research*, vol. 37, no. 6. pp. 1337-1352.

Juran, J.M. (ed) 1974. *Quality Control Handbook*, 3rd edn, McGraw Hill, New York

Juran J.M. and Gryna, F.M. 1993. *Quality Planning and Analysis*, McGraw Hill, New York.

Juran. J.M. 1988. *Juran on Planning for Quality*, The Free Press, New York

Kanter, R.M. 1982. "The middle manager as innovator", *Harvard Business Review*, vol. 60, no. 4, July-August, pp. 95-105.

Kanter R M. 1989a. "The new managerial work", *Harvard Business Review*, vol. 67, no. 6, November-December, pp. 85-92.

Kanter R M. 1989b. *When Giants Learn to Dance: Mastering the Challenges of Strategy, Management and Careers in the 1990s*, Simon and Schuster, London.

Kaplan, R.S. and Norton, D.P. 1992. "The balanced scorecard - measures that drive performance", *Harvard Business Review*, vol. 70, no. 1, January-February, pp. 71-79.

Katz, R.L. 1974. "The skills of an effective administrator", *Harvard Business Review*, vol. 52, no. 5, September-October, pp. 90-102.

Ketheeswaran, K. and Ezrakhovich, A. 1999. "ISO 9000 in the year 2000 – your total update", *The Quality Magazine*, vol. 8. no. 3. June, pp. 8-19.

Knights, D. and McCabe, D. 1997. "How would you like to manage something like that?: quality in a retail bank", *Journal of Management Studies*, vol. 34, no. 3 May, pp. 371-388.

Knights, D. and McCabe, D. 1999. "Are there no limits to authority?" TQM and organizational power", *Organization Studies*, vol. 20, no. 2. pp. 197-224.

Lawler, E.E., Mohrman, S.A. and Ledford, G.E. Jr. 1992. *Employee Involvement in Total Quality Management: Practices and Results in Fortune 1000 Companies*, Jossey-Bass Publishers, San Francisco.

Lawler, E.E., Mohrman, S.A. and Ledford, G.E. Jr. 1995. *Creating High Performance Organizations: Practices and Results of Employee Involvement and Total Quality Management in Fortune 1000 Companies*, Jossey-Bass Publishers, San Francisco.

Leavitt, H. and Whistler, L. 1958. "Management in the 1980s", in Levitt, H. and Pondy, L.R. (eds) 1964. *Readings in Managerial Psychology*, The University Press, Chicago, pp. 578-592.

Legge, K. 1995. *Human Resource Management: Rhetorics and Realities*, Macmillan Press Ltd, Basingstoke, England.

Lewin, K. 1951. *Field Theory in Social Science*, Harper and Row, New York.

Livian, Yves-Frédéric and Burgoyne, J. R. 1997. *Middle Managers in Europe*, Routledge, London and New York.

Lock, E. and Schweiger, D. 1979. "Participation in decision-making: one more look" in B. Straw, (ed) *Research in Organizational Behavior*, JAI Press, Conn.

Lorick, J. 1991. "Managing when there's no middle". *Canadian Business*, vol. 64, no. 6 June, pp. 86-94.

Mann, R. and Kehoe, D. 1995. "Factors affecting the implementation and success of TQM", *International Journal of Quality and Reliability Management*, vol. 12, no. 1, pp. 11-23.

Masters, R.J. 1996. "Overcoming the barriers to TQM's success", *Quality Progress*, vol. 29, no. 5, pp. 53-55.

McLean, G.N. and Persico, J. 1990. "An undated model for implementing a quality and productivity system", *Journal of Managerial Psychology*, vol. 5 no. 1. pp. 23-32.

Magjuka, R.J. and Baldwin, T.T. 1991. "Team-based employee involvement programmes: effects of design and administration", *Personnel Psychology*, vol. 44, pp. 793-812.

McGraw, P. and Dunford, R. 1987. "The strategic use of quality circles in Australian industrial relations", *The Journal of Industrial Relations*, June, pp. 150-168.

Miller, J.O. and Longair, R. 1985. *New Direction in Middle Management - A Dilemma*, The Australian Institute of Management, Victoria.

Mintzberg, H. 1973. *The Nature of Managerial Work*, Harper and Row, New York.

- Mooney, J.D. 1947. *The Principles of Organization*, rev. ed. Harper and Row, New York
- Morehead, A., Steele, M., Alexander, M., Stephen, K. and Duffin, L. 1997. *Changes at Work: The 1995 Australian Workplace Industrial Relations Survey*, Addison Wesley, Longmans Australia Pty. Ltd. South Melbourne.
- Morrow, P. C. (1993) "The theory and measurement of work commitment", *Monographs in Organizational Behavior and Industrial Relations*, vol. 15, ed. Bacharach, S.B. JAI Press Inc. Greenwich, Conn.
- Morrow, P.C. 1997. "The measurement of TQM principles and work-related outcomes", *Journal of Organizational Behavior*, vol. 18, pp. 363-367.
- NATA 1998. About Nata – National Association of Testing Authorities Australia, *Web Address*, <http://www.nata.asn.au/laboratorycertificationall.htm>
- NIST, 1999. *Baldrige National Quality Program 1999 – Criteria for Performance Excellence*, United States Department of Commerce Technology Administration, National Institute of Standards and Technology, Baldrige Quality Program, Gaithersberg U.S.A. (Web Address, <http://www.asq.org>).
- Newman, G. 1991. "The death of middle managers", *Across the Board*, vol. 28, no. 4, April, pp. 10-11.
- Nonaka, I. 1994. "A dynamic theory of organizational knowledge creation", *Organization Science*, vol. 5, no. 1, February, pp. 14-37.
- Nonaka, I. and Takeuchi, H. 1995. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York.
- NUD*IST 1997. *GSR NUD*IST 4 Users Guide*, Qualitative Solutions and Research Pty. Ltd., (Box 171, La Trobe University PO, Victoria, Australia).
- Osland, A. 1997. "Impact of total quality management training and worker context on attitudes towards supervision", *The International Journal of Organizational Analysis*, vol. 5, no. 3, pp. 291-301.
- Osterlind, S.J. 1983. *Test Item Bias*, Sage Publications, Newbury Park.
- Palmer, I. and Dunford, R. 1997. "Organising for Hyper-Competition: New Organisational Forms for a New Age", *New Zealand Strategic Management*, Summer, pp. 38-45.

- Palmer, I. and Dunford, R. 1999. "Beyond rhetoric? a systematic investigation of new organization form practices", *ANZAM 99 Conference Proceedings*, on CD ROM, eds. Dowling, P.J., Hanson, D., Garnham, J. and Lehman, K. Published by ANZAM C/- Macquarie Graduate School of Management, Macquarie University.
- Peach, R.W. (ed) 1997. *The ISO 9000 Handbook*, 3rd edn, Irwin Professional Pub. Chicago.
- Porter, L. and Lawler, E. 1968. *Managerial Attitudes and Performance*, Irwin, Illinois.
- Porter, L.W., Steers, R.M., Mowday, R.T. and Boulian, P.V. 1974. "Organizational commitment, job satisfaction and turnover among psychiatric technicians", *Journal of Psychology*, vol. 59, no. 5, pp. 603-609.
- Powell, T.C. 1995. "Total quality management as competitive advantage: a review and empirical study", *Strategic Management Journal*, vol. 16, pp. 15-37.
- Pugh, D.S., Hickson, D.J., Hinings, C.R. and Turner, C. 1968. "Dimensions of organizational structure", *Administrative Science Quarterly*, vol. 13, pp. 65-91.
- Ramsay, J. 1998. "The value of ISO 9000 certification to a small business" *Proceeding of the Second International and Fifth National Research Conference on Quality Management*, The Quality Management Research Unit, Department of Management, Monash University, pp. 145-156.
- Rao, S.S., Solis, L.E. and Raghunathan, T.S. 1999. "A framework for international quality management research: development and validation of a measurement instrument", *Total Quality Management*, vol. 10, no. 7, pp. 1047-1074.
- Remenyi, D., Williams, B., Money, A. and Swartz, E. 1998. *Doing Research in Business and Management*, Sage Publications, London.
- Rizzo, J.R., House, R.J. and Lirtzman, S.I. 1970. "Role conflict and ambiguity in complex organizations", *Administrative Science Quarterly*, vol. 15, pp.150-163.
- Roth, P.L. and Switzer, F.S. 1995. "A monte carlo analysis of missing data techniques in a HRM setting", *Journal of Management*, vol. 21, no. 5, pp. 1003-1023.
- Rotter, J.B. 1954. *Social Learning and Clinical Psychology*, Prentice Hall. New York.
- Safizadeh, M.H. 1991. "The case for workgroups in manufacturing operations", *California Management Review*, Summer, pp. 61-82.
- Saken, A. 1992. "The incredible shrinking organisation: what does it mean for middle management", *Supervisory Management*, vol. 37, no. 1, January, pp. 1-3.
- Samson, D. 1997. "Progress in total quality management: evidence from Australasia", *International Journal of Quality Science*, vol. 2, no. 4, pp. 214-235.

- Saraph, V.J., Benson, P.J. and Schroeder, R.G. 1989. "An instrument for measuring the critical factors of quality management", *Decision Science*, vol. 20, pp. 810-829.
- Saunders, I.W. and Preston, A.P. 1994. "A model and research agenda for Total Quality Management", *Total Quality Management*, vol. 5, no. 4, pp. 185-202.
- Sayles, L.R. 1993. "Doing things right: a new imperative for middle managers", *Organizational Dynamics*, vol. 21, no. 4, Spring, pp. 5-14.
- Scase, R. and Goffee, R. 1989. *Reluctant Managers. Their Work and Lifestyles*, Unwin Hyman, London.
- Schonberger, R.S. 1982. *Japanese Manufacturing Techniques*, The Free Press, New York
- Senge, M.P. 1990. *The Fifth Discipline: The Art and Practice of the Learning Organisation*, Doubleday, New York.
- Sewell, H.B. and Alhaji, U.A. 1989. "The impact of information explosion on middle management", *Engineering Management International*, vol. 5, no. 4, May, pp. 252-257.
- Sohal, A.S., Samson, D. and Ramsay, L. 1998. "Requirements for successful implementation of total quality management", *International Journal of Technology Management*, vol. 16, nos. 4, 5 and 6, pp. 505-519.
- Sohal, A.S. and Terziovski, M. 2000. "TQM in Australian manufacturing: factors critical to success", *International Journal of Quality and Reliability Management*, vol. 17, no. 2, pp. 158-167.
- Sparks, P., Hedderley, D. and Shepard, S. 1991. "Expectancy-value models of attitudes: a note on the relationship between theory and methodology", *European Journal of Social Psychology*, vol. 21, pp. 261-271.
- Steensma, H. and Tetteroo, A. 2000 "Attitudes to cross-functional quality project groups: net utility and procedural justice", *Total Quality Management*, vol. 11, no. 1, pp.123-128.
- Stewart, R. 1967. *Managers and Their Jobs*, Macmillan, London.
- Subramanian, S.K. 1990. "Managing technology - the Japanese approach", *Journal of Engineering and Technology Management*, vol. 6, nos. 3 and 4, May, pp. 221-236.
- Sun, H. 1996. "Patterns of implementing TQM vis-à-vis ISO 9000", *Proceedings of the First International Conference on Quality Management*, Mount Eliza, Sohal, A.S. and Terziovski, M. eds. Faculty of Business and Economics, Monash University, pp. 91-102.

Terziovski, M., Samson, D. and Dow, D. 1995. "The value of ISO 9000 certification in Australian and New Zealand manufacturing" *Proceedings of the second National Research Conference on Quality Management*, Mount Eliza, Sohal, A.S. ed. Faculty of Business and Economics, Monash University, pp. 235-248.

Terziovski, M., Sohal, A. and Moss, S. 1999 "Longitudinal analysis of quality management practices in Australian Organisations", *Total Quality Management*, vol. 10, no. 6, pp. 915-926.

Terziovski, M. and Samson, D. 1999. The link between total quality management practice and organisational performance, *International Journal of Quality and Reliability Management*, Vol. 16, No. 3, pp. 226-237.

Tharenou, P. 1988. Professor of Management, Monash University, Melbourne, *personal correspondence*.

Thomas, R. and Dunkerly, D. 1999. "Careering downwards? middle managers' experiences in the downsized organization", *British Journal of Management*, vol. 10, no. 2, June, pp. 157-169.

Torrington, D. and Weightman, J. 1987. "Middle management work", *Journal of General Management*, vol. 13, no. 2, Winter, pp. 74-79.

Vouzas, F. 1997. Chapter 9 - Middle management and quality improvement – evidence from five countries, in Livian, Yves-Frédéric and Burgoyne, J.R. (eds) *Middle Managers in Europe*, Routledge, London and New York.

Wild, R. 1972. *Mass-Production Management*, John Wiley and Sons, London.

Willing, R. 1993. "Quality and organisational culture change NRMA – a case study", *Proceedings of the Total Quality Management Institute, First International Conference*, Sydney, pp. 153-184.

Wilkinson, A. 1993. "The other side of quality: 'soft' issues and the human resource dimension", *Total Quality Management*, vol. 3, no. 3, pp. 323-329.

Wilkinson, A., Godfrey, G. and Marchington, M. 1997. "Bouquets, brickbats and blinkers: total quality management and employee involvement in practice", *Organization Studies*, vol. 18, no. 5, pp. 799-819.

Wilkinson, A., Marchington, M. and Dale, B. 1993. "Enhancing the contribution of the human resources function to quality movement", *Quality Management Journal*, vol. 1, pp. 35-46.

Wilkinson, A., Marchington, M., Goodman, J. and Ackers, P. 1992. "Total quality management and employee involvement", *Human Resource Management Journal*, vol. 2, no. 4, pp. 1-21.

Wilkinson, A., Redman, T. and Snape, E. 1994. "Quality management and the manager", *Employee Relations*, vol. 16, no. 1, pp. 62-70.

Wilkinson, A. and Witcher, B. 1991. "Fitness for use? Barriers to full TQM in the U.K.", *Paper presented British Academy of Management Fifth Annual Conference*, University of Bath, September.

Wilkes, N. and Dale, B.G. 1998. "Attitudes to self-assessment and quality awards: a study in small and medium-sized companies", *Total Quality Management*, vol. 9, no. 8, pp. 731-739.

Wren, D.A. 1994. *The Evolution of Management Thought*, 4th edn, John Wiley and Sons Inc. New York.

Zbaracki, M.J. 1998. "The rhetoric and reality of total quality management", *Administrative Science Quarterly*, vol. 43, no. 3, pp. 602-636.

Zeithaml, V.A., Parasuraman, A. and Berry, L.L. 1990. *Delivering Quality Service: Balancing Customer Perceptions and Expectations*, The Free Press, New York.

Zuboff, S. 1988. *In the Age of The Smart Machine: The Future of Work and Power*, Basic Books, New York.