TOWARDS A METHODOLOGY TO HELP PREDICT AND REDUCE THE IMPACT OF PROJECTS ON LONG-TERM COSTS, CORPORATE STRATEGY AND EXISTING IT INFRASTRUCTURE

By

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A dissertation submitted in fulfilment of the requirements for the degree of Doctor of Project Management

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Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature:

[Signature]

Amela Peric
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<td>AIPM</td>
<td>Australian Institute of Project Management</td>
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<td>BA</td>
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Abstract

This thesis contributes to the body of project management and systems development knowledge, by investigating the success of a project beyond the standard criteria of project budget, objectives and timelines used to judge project performance.

This research has been conducted as part of the UTS “Doctor of Project Management” course, which encourages extension of the theoretical study of project management to a commercial environment - by investigating problems related to practical applications of project management.

This research attempts to highlight the unforeseen and unplanned impacts created by projects which are often neglected and excluded from project evaluation and strategic alignment. The goal of this study is to find ways to increase the overall benefits to organisations achieved through projects, while minimising unplanned and unforeseen negative impacts caused by projects.

To identify long-term impacts caused by projects, a case study is conducted with a real example, focusing on a large, deemed to be successfully completed project within an Australian financial organisation. The case study explores the environment, processes and events throughout project cycle and identifies various factors that influence project flow and create unforeseen impacts outside the planned project actions and outcomes. The case study analysis showed that some crucial decisions made about the project would have been different if some of those unplanned impacts were discovered earlier, for example during the discovery stage of the project. The unplanned impacts resulting from this project were manifested through extended timeline, additional costs and numerous post-project systems interdependencies. Since the original decisions about the way in which the project was implemented were largely based on financial factors, these impacts would have been highly relevant to project planning and could have changed some important decisions crucial to the conduct of the project by the organisation. The case study is representative of how projects are managed in the case study organisation.
The findings from the case study are further extended through a mini-survey of 123 professionals, who confirmed that unplanned impacts created by projects are worth considering and managing. The survey respondents indicated that projects in their organisations were mainly concentrated on short-term, often isolated business needs and had little alignment with the overall strategy and coordination with other projects and initiatives. While organisations are aware of the problem and keen to improve management of unforeseen impacts and associated post-project costs, their efforts so far are largely informal. Both the case study and survey indicated the need for a formal way of managing the post-project impacts and alignment between projects and strategy within organisations.

Based on the literature review, case study and survey results, the research arrived at a set of findings and suggestions.

The suggestions are articulated through an organisational strategy alignment framework, covering four management areas: strategy and senior management, business management, systems development and project management. The main focus of the recommended actions is around effective management of vendor relationship, strategic alignment and unforeseen project impacts.

The recommended actions are grouped around the management areas as follows:

- **Strategy and Senior Management Suggestions**
  - Vendor management strategy directions
  - Strategy alignment directions
  - Roles and responsibilities

- **Business Management Suggestions**
  - Business impact analysis approach
  - Project success evaluation
  - Effective communication

- **Systems Development Suggestions**
• Technical impact analysis approach
• Solutions evaluation
• Business and vendor communication

• Project Management Suggestions
  • Project planning and impact analysis
  • Solution evaluation
  • Strategy alignment
  • Project success evaluation
  • Utilisation of past experiences
  • Effective communication

The findings and resulting suggestions of this research contribute to:
  • Project management theory
  • Project management and systems development practice
  • Project management, strategic and IT management practice

The main focus of this research is the identification of factors that cause unforeseen impact caused by projects on the IT environment and organisations. While the study provides a number of suggestions to improve the effective management of these factors, the detailed analysis of the recommended actions is not within the scope of this study and is suggested as an area for further research.
The Document Structure

The document is organised under the following structure:

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Research Methodology

Chapter 4: Case Study

Chapter 5: Survey Analysis

Chapter 6: Conclusion

Figure 1 - Document Structure

Chapter 1: Introduction. The first chapter starts with the introduction into the research topic, project management background, project success and impacts on the existing environment within organisations. It then concentrates on the problem: unforeseen and unplanned impacts created by projects, impacting people, infrastructure, business, technology and finally costs. The research question and related statements are presented. The importance of the study (which is conducted primarily around information technology projects within the Australian financial industry) is stressed.

Chapter 2: Literature Review. The second chapter presents the review of the relevant literature, concentrating on topics around project management and the application of project management in the areas of information technology projects, strategy and financial industry. The literature review establishes the basis upon which the research topic is further analysed through the case study and survey.

Chapter 3: Research Methodology. The third chapter describes the research methodology that is applied to this study, namely the methods utilised for the case study and survey data collection and analysis. Data sources, data types and general approach to
collection and analysis of data are also described.

**Chapter 4: The Case Study.** This chapter contains the main body of the research and analysis, covering the project case study and related observations. The case study is aimed at analysing in detail one typical information technology project within an Australian financial organisation, with the goal at identifying the unforeseen and unplanned project impacts and the factors behind those impacts. Some of the case study findings are then further evaluated through survey.

**Chapter 5: Survey Analysis.** This chapter covers the analysis of data collected throughout the survey, which concentrated around the case study findings and the elements related to research statements. The goal of the survey analysis is to add additional perspective to the case study findings and help establish the case for possible patterns of behaviour and impacts across other projects, organisations and industries, while addressing the research statements.

**Chapter 6: Conclusion.** The final chapter presents the summary of the main findings, reflection on the overall research and the validity of the research statements, as well as the suggestion for further studies on the same topic.

**References and Appendices.** All referred sources are acknowledged. The appendices contain research data, interview and survey questions, as well as relevant forms required for research consent and data privacy assurance.
1 Chapter 1 – Introduction

This chapter introduces the research topic and the related problem that is being addressed. It describes the importance of this study and the application of the research results.

The chapter starts with the description of the project management practice and the links with the information technology (IT). Then it gives a brief overview of the project management history, explores the approach towards evaluation of project success and the elements that make the project successful.

The background around the study is described, linking the research question with project impacts, especially those unforeseen and unplanned impacts created by projects. The details of the study are presented, as well as a description of the financial industry as a research environment context.
1.1 Project Management and Information Technology (IT)

We live in a world of constant change. Organisations have often used project management methods to control and manage change. Standard principles of project management methodology have been applied to several types of projects, across many industries.

Different industries have conducted research into project management using a variety of research methods. The diversity of those methods are reflected in the literature. For example: construction industry (Oberlender c1993), medical industry (Martin 2002.), hospitality (Huffadine c1993), information technology (Hartman and Ashrafi 2002) and manufacturing (Badiru c1996.).

We also live in a world that is increasingly using technology, and in particular Information Technology (IT). Computers have become an important part of almost every human activity. IT projects are high on the priority list for many organisations.

Initially IT projects were looked on as possible ways to address the existing manual processes in order to improve efficiency and achieve competitive advantage, but today these projects have become essential implementing strategies for survival. The increasing influence of IT project management in several industries has become very obvious with the rapid development of information systems over the past decade, especially in e-Business and e-Commerce applications. The US Government Census in 2008 reflected on the growth trend of e-Commerce based US sales for the period 2000-2008:
Figure 3 - e-Commerce Sales Trend in US (2000-2008)

1.2 Project Success

A common characteristic of the basic project management and different industry-specialised project management streams is that all of them concentrate on projects, from the beginning until the end, either looking from the process or from industry perspective. The common goal for all of them is to successfully deliver projects, to customer expectation and within allocated budget and resources.

Projects can be observed from various angles: the process of project management, or the overall project benefit and related deliverables. What does make a project successful: following processes and achieving project goals (in terms of time, effort, budget, quality) or wider implementation and benefit of the project deliverables in a wider organisational and strategic context?

A clear distinction between project management performance and project performance has been analysed by Bryde (2003). Even though both areas are very much interlinked, they are still quite separate. This researcher went further by developing a model for project management performance indication, which can help see just how successful and effective project management was during a project, regardless of the project success/failure.

For example, the project itself can be marked as successful and deliver what customers specified in their requirements. However, the project management practices used to successfully deliver those requirements might either be just a tool for that successful delivery, or maybe something more: long-term value for the organisation, reflected in improved leadership, staff satisfaction, abilities, skills, effectiveness and efficiency, formed partnerships, improved communication and improved project life cycle process.

This brings forward the question of the success criteria for projects: should projects be evaluated only against project objectives, or should the context of evaluation include other factors, such as alignment with strategy, solution efficiency and maintainability?
And, should those additional evaluation factors be included in project objectives and processes?
1.3 The Problem: Unforeseen Long-term Project Impacts

From the organisational perspective it is becoming increasingly important to establish just how much benefit each successful IT project brings, whether or not the overall changes to the organisation could have been more positive if benefits were carefully considered while determining project objectives or conducting impact analysis. It is especially important to consider whether there are any negative long-term impacts (on any parts of the organisation) that were not foreseen before and during the life of a project.

As commitment to IT solutions is a long-term commitment, proven to be significant ongoing expense for organisations, it is even more important to ensure that all IT project solutions are aligned with the existing organisational IT infrastructure and that the outcomes of those projects are evaluated not just within the project objectives, but within the whole organisational (and especially IT) strategy.

1.3.1 Problem Background

When looking at IT project management activity within various industries (in Australia and around the world) over the last decade, some of the recent trends can be identified that influence IT project development in general, such as rapid technology development, competition through globalisation and changes in government regulations to control changing industry environments. (KPMG)

These global drivers, combined with other elements internal to each company (such as internal politics, organisational mission, project management process, IT infrastructure, management structure, financial and strategic planning) can cause serious impacts on organisations in the areas of information technology, as well as costs associated with IT.

With ever-changing IT development, the complexity and impact of the existing structure is increasing with every new addition introduced by projects. Business units responsible for maintenance and flexibility of IT structure in many organisations are faced with the
ongoing challenge to effectively and efficiently maintain (and often to increase) the integrity and reliability of systems, and at the same time, to be cost-wise and customer-friendly.

Major research firms are continuously tracking and forecasting business trends. Some of the expected trends relevant to the topic of this study are (Jedd, 2006):

- Compression of Product Life Cycle - The velocity of new product development and product turnover has increased exponentially.
- Knowledge/Technology Explosion - Improved knowledge and technology support innovation are increasing at a rapid pace and impact on projects.
- Global Competition - Businesses now compete with and have access to products, labour, and new marketing techniques from all over the world.
- Customer Power – Customers have higher expectations and are becoming the determining factor in the success or failure of organisations.

For companies within the financial industry this challenge is increased by the combination of effects related to both the IT trends and global financial trends, where new and attractive IT solutions increase the competition. The organisations competing at the global level require more flexibility, fast delivery and above all, very high quality of IT solutions implemented as part of strategic projects.

Therefore, such demanding requirements on IT systems and IT projects within organisations in the financial industry require high-level coordination, alignment with the overall business strategy, as well as set of reliable and effective methods incorporated in both project management and systems development and maintenance practices.

Hi-tech and e-Commerce developments often involve implementation of cutting-edge technology. Integration of such technology with the existing systems can be a real challenge and often impose long-term impacts on the whole IT infrastructure. These aspects of impact are rarely appropriately addressed, if at all, as people involved in such
projects are mainly concentrated on the benefits those projects bring, rather than on the long-term impacts they can create on the organisations. (Damanpour, 2001)

The reviewed literature points to various hybrid forms of project management that have been used with IT projects in order to extend the use of project management methods to include integration with the outside systems and networks. For example, Pant and Ravichandran (2001) recognise EBIS (e-business information systems) as a new breed of commercial information systems that use technology capabilities beyond closed computer system within a company or a commercial network. Such new systems present almost unlimited capabilities for connection with customers and partners – the capability that could not be successfully match the traditional IT environments. Information technology solutions integrated with other systems through internet capabilities also indicate new paths for business, therefore becoming a new and important driver for business strategy and development.

There are various models created for e-business systems development (Vitale, Ives et al. 1986; Martin 1989; Applegate 1995), but the integration of the new e-business based information systems into the traditional infrastructure models still remains a big challenge.

Often competition to gain market share can influence organisations to select short-term solutions to be implemented to achieve immediate competitive advantage. But, long-term impacts can sometimes override the benefits of those decisions. Practical examples show that IT projects often require implementation of last-minute scope/requirements changes or major design modifications in order to achieve business project objectives.

It is rare that anyone in the project team can take time to analyse the full impact of those unplanned and often urgent changes on long-term objectives and maintenance of the overall IT infrastructure. It is often left to the post-project maintenance teams to deal with any such impacts.
Many companies have not so far demonstrated that they are good learners from their past mistakes. Especially, IT projects and effective integration of IT solutions after project completion has been shown to be very costly, especially in the highly competitive financial industry. (Harris 2002) interviewed 42 bank managers and industry consultants over 18 months and used his own knowledge from a 10-year observation of the industry to conclude that an absence of learning from the mistakes from projects is very evident. His study indicated that effective knowledge sharing within organisations and within the industry is clearly absent, as the only use of the past lessons is evident within small groups of projects, where the same people were managing similar tasks and used their prior experiences. This individualistic approach to organisational learning has a strong impact on the overall IT costs within the financial industry preventing effective and efficient use of the new opportunities brought through these IT developments.

Companies also tend to choose low-cost solutions to change their business models and/or IT strategies in order to comply with certain requirements or regulations directed by government or watchdog authorities. They often choose the cheapest and quickest solution offered to them at the time, without attempting to perform in-depth analysis of cost effectiveness that a particular solution provides. Examples of such drivers were evident with deadline-driven projects such as Y2K, GST and company tax changes in Australia. (KPMG)

Organisations usually execute a number of different projects in progress at the same time, each as a result of same or different business drivers, each managed by a different project team and project owners, each concentrating on their business objectives, schedules and deliverables. It is essential to coordinate all these projects and to have an overall strategy so that different organisational initiatives could have the best common solution in the long term. Organisations attempt to address multiple projects via program or programme management, where projects related to common objectives or business areas are managed and monitored together (OGC 2005).

Some organisations do not have formal programme management. Rather, they have
regular business and technology impact meetings where current and incoming priorities are discussed, but that is never enough to prevent all problems that can arise from strong project activity and numerous system changes. The need for organisational learning is increasing with every new project and initiative. Good communication and knowledge sharing within the company can provide much assistance in finding the most effective strategy with competing priorities (Currie 1995; Heng 1996).

1.3.2 Problem and Project Management Literature

While project management methodologies and literature (as well as project management processes used within companies) mainly concentrate on how to deliver successful projects, very little emphasis has been put on “the analysis of the existing IT environments that could be impacted by those projects after they are executed, as well as the coordination of multiple projects within the organisation.

Based on their research into the management of IS, Remenyi and Sherwood-Smith (1999) state that “formative” evaluation can help maximise business value from information systems in addition to “summative” evaluation (i.e. post project). They see formative evaluation as a constant iterative process at organisational level, which is required to help determine the best course of action and best mix of short and long-term strategies with projects that influence IS structure. The formative evaluation covers the three main characteristics: frequency of the evaluation cycle, evaluation perception of what is being evaluated and the readiness to accept that objectives of information systems will evolve as a result of formative evaluation. The third characteristic is really the essence of the process, as constant evaluation might influence scope changes, design change, or even indicate need for termination of associated projects. However, the end result is clearly beneficial for the organisation.

This area of evaluation is clearly covered outside the standard project management practices which concentrate more on successful project delivery than on the associated impacts. An aim of this research is to investigate the need for elements of evaluation and strategy in overall project management practices and responsibilities. Impacts IT projects
make on the existing IS are never insignificant enough to be neglected and omitted from the overall evaluation and IS strategy process.

The majority of the reviewed project management literature, such as (Davidson 1994; Meredith 1995; Kerzner 2006; PMI 2000; Schwalbe 2000; Kerzner 2001; Tarnow 2002) concentrate on project deliverables, budget and timeline, researching the best ways to achieve project objectives with the available resources. This literature concentrates mainly on creation and improvement of project management processes, methods and tools.

Even though some project management scholars (Cleland 1999; Back and Moreau 2001; Kerzner 2001) mention the alignment of the organisational strategy and project management in their writing, they concentrate more on the process improvement that would result from successful projects, and not looking at project-introduced impacts on the organisation after those projects are completed successfully.

While the mainstream project management research continues to mainly concentrate on the best and most effective ways to deliver successful projects, there are some authors emerging from different industries, especially IT and finance industries, who have started writing from their practical knowledge of researching and investigating the best ways to improve project management processes. They are looking at much bigger picture of project management, not only as a process of successfully delivering projects, but also as an integral part of the overall business and IT strategy of an organisation, thereby increasing its value to the organisation by going beyond process management.

These authors (such as Koch 2001, Al-Machari 2002; Turner 1995) are often emerging from quality control, business process reengineering and enterprise resource planning (ERP), rather than mainstream project management. One of the goals of this study is to investigate the importance of unplanned and unforeseen project-created impacts on organisations and to prompt actions that would assist with the effective management of such impacts with future projects.
Many companies have applied ERP systems to integrate their new and existing processes and maximise the use of available resources while implementing new technologies to achieve competitive advantage, albeit with limited success. Zeng, Chiang et al. (2003) gave examples of two parallel processes integration of the existing environment and advanced information technology implementation (data warehouse). Their study showed the need for rationalization and integration of the existing systems, with clear objectives and long-term strategy, before any new technology is integrated.

In conclusion, the main focus of the majority of project management-related literature and research is directed towards successful delivery of projects, as well as the analysis of the methods that can contribute to more effective and successful delivery. The involvement of the project management in the overall provision of solutions to organisations terminates with the successful implementation and the handover to the operations. But, should the delivery of project objectives be the only criteria for project success? Should the criteria include impacts made by projects and the overall long-term view of the delivered solution with regard to overall objectives and strategy of organisations?

1.3.3 Problem Impact

When observing project activity within Australian financial companies, it can be seen that projects are often initiated, managed and implemented in isolation from other projects as well as the long-term IT infrastructure and business initiatives that are developed as part of long-term planning process and corporate strategy. Even though projects originate from strategy, they are often isolated and disconnected from strategy soon after initiation.

Such isolation can cause long-term impacts that are not usually covered within individual projects’ scope as they are not predicted or planned for. It has been recognised by Young (1997) that project management is getting more and more involved and influenced by organisational politics. IT strategies are very much influenced by senior management and
any initiative started by IT project management has to win the trust and commitment of senior management.

It has been common practice in Australia that IT management do not have much influence over business and organisational strategy, sometimes even IT strategy (Coghlan and Hurley 1996). Senior management are often unaware of the long-term impacts IT solutions can bring to their organisations and by not including IT expertise as part of their executive decisions, there are many possibilities of missed opportunities and hidden long-term costs.

Based on various reviewed studies and actual observations conducted as part of this research, the following areas seem to be the most vulnerable to the long-term impacts introduced by IT projects in the financial industry:

- Impact on post-project maintenance and change management
- Impact on technology
- Impact on core business\(^1\)
- Impact on people
- Impact on long-term costs

\(^1\)Core business - the main or essential activity of an organisation
1.4 **IT projects and their impact**

IT projects should not be treated as isolated entities and their success should not be solely measured by the success of the delivery of requirements, scope or budget (Bryde 2003). It is becoming more and more important to emphasise the link between the elements that will be delivered by projects and the elements that exist or will exist in the same IT environment.

Every IT project should be evaluated as part of the IT infrastructure and treated as a part of the overall corporate strategy. This approach introduces some additional responsibilities for project teams, the tasks and duties that are usually either ignored, performed by others or performed by systems development/maintenance teams after projects are officially completed (Shi, Specht et al. 1996).

Silverman (1987) recommends “the art” of management of the technical projects by setting up five supporting systems for such projects: forecasting, measuring, project operations, people management and personal style. Each of those systems is created to support the project manager with technical project issues, enabling him/her to use the existing and build new skills and abilities in order to fulfil project requirements. In particular, Silverman highlights the importance of forecasting, and specifies some useful techniques that can complement the existing project management techniques related to scheduling, risk management and creation of task structures.

When IT projects are implemented, typically there are two types of responsibilities where IT infrastructure is concerned: project teams and systems development teams.

Project teams tend to be highly motivated groups of people with clear objectives that are directly defined by their project goals. Their primary objective is to deliver the project on time and to budget, with quality and in line with requirements. They are often ready to “cut corners” and make compromises in other areas, such as infrastructure, design, operations, etc, if required, so that they can achieve their project goals (Soderlund 2002).
The ongoing IT infrastructure processes that are under the responsibilities of systems development and support teams, are usually driven by long-term goals and objectives, “business-as-usual” drivers and carefully planned and fairly fixed costs. People in those teams are usually reluctant to cut corners and implement quick and easy solutions, as they are interested in having long-term stable solutions, in line with the IT strategy (Brown and Hyer 2002).

The common practice with IT project management and systems development has been such that project teams deliver (in isolation) technical solutions as part of their projects and then systems development and support teams undertake the integration and operation, (as well as further maintenance) of those solutions after they are officially implemented as part of the last stages of the project cycle.

Often significant changes to those new technical elements (programs, systems, applications) are made well after the project implementation and completion. Those changes are usually required to make those new systems more effective, efficient and cooperative with other system elements. Those actions are usually taken well after projects are marked as successful and users are happy with the project deliverables. However, all those changes create significant costs for the organisations. Such costs are usually marked as “support and maintenance” costs and go under the overall IT infrastructure costs.

Having many different projects in progress at the same time within an organisation, the maintenance costs initiated by projects can be very high, but fairly invisible to people deciding on initialisation, funding or termination of the individual projects.

Organisational learning and financial objectives are ever competing goals for the organisations, having senior management (who are responsible for the decision making and financial commitment) historically being oriented towards immediate financial objectives (Currie 1995). This further increases the need for IT strategy to be focused on
long-term benefits and long-term solutions, rather than working “ad-hoc” and individually on every project, introducing more and more complexity to the existing IT infrastructure, with every new successful (or less successful) implementation.

If those long-term costs could be taken into consideration as part of projects, it would be possible to plan, manage and reduce them as part of project delivery, rather than ignoring what happens after the project is completed and looking only at the benefits the projects created.

Perhaps project teams should include in their scope, requirements and deliverables, some if not all elements that are related to integration process, so that any elements introduced and incorporated into the overall IT infrastructure are well planned, analysed, designed and tested.

Each IT element that is to be incorporated into the existing IT infrastructure should be designed in such a way that its impact is clearly defined and the long-term costs of the integration and future maintenance are considered as part of project impact analysis, so that the real cost of the initiative is known, not only the project delivery cost. Such analysis would most likely terminate many projects right after the impact analysis stage, as it could indicate that those projects might not have as high potential and profitability expectations as originally thought, when all aspects and elements are considered in detail (Remenyi and Sherwood-Smith 1999).

Some recent examples of successful IT projects within the industry (such as various online systems and internet banking) show the need for and the importance of a long-term approach towards technology solutions. Various first-time e-Commerce solutions that Australian financial companies selected for their web presentation were fairly inexpensive and immediately satisfied needs specified within projects. But, those solutions were not considering the impacts on the core systems and the long-term technology strategy, including future functionality companies might need to add to their web presentation at later stages. Or, various CRM (customer relationship management)
projects that satisfied immediate needs for organisational customer management, but after a while proved to be inflexible and non-expandable, with unsatisfactory performance. (Damanpour, 2001)

Another example where need for long-term perspective when creating technical solutions are rushed data warehouse projects. They often involve solutions that seem so effective when they reached their first objectives of combining data from different sources and presenting attractive-looking reports, but after the real costs of long-term maintenance of data and communication with different data sources surfaced, the idea and the solutions provided as part of the project did not seem as advanced as before. The authors researching data warehousing, such as (1997; Ma, Chou et al. 2000; Counihan, Finnegan et al. 2002; Dobbs, Stone et al. 2002; Preston and Brohman 2002; Zeng, Chiang et al. 2003) agree that data warehousing has to start within business and should not be driven as a technical solution. This goes in line with the notion that projects should not cover only technical solutions, but rather the overall business benefit delivery. The reality shows that many data warehouse solutions ended up being a large technical implementation without relevant business benefit, mainly due to perception that the project deliverables were purely technical.

The quality of what a project is supposed to deliver should not be limited only to business requirements. The quality parameters should also include IT integration, consistent performance, portability, robustness and maintainability as well. Some of those elements and measurement might not be on the business list, as they are not usually related to the business functionality required as main project deliverables. Completing a project to customers’ expectations might not necessarily mean the project was successful for the organisation. A long-term view of many projects could show that the quality delivered to customers is highly overshadowed by the low quality of the long-term usability and compatibility with the existing environment. Examples can be seen with CRM (Customer Relationship Management Systems) or other company-wide integrated data solutions, where it is essential to ensure full quality integration between various systems in order to maintain the integrity of data. Over time, complex processes or manual workarounds
limit the effectiveness of the system and reliability by introducing human error, or dependencies breakdown, leading towards a non-supportable and non-reliable system that did not bring all the benefits as originally thought. Similar examples can be seen in almost every organisation.

Within the systems development and IT projects constantly updating/enhancing the existing infrastructure, the quality-related issues are more likely to occur as a result of an ever-changing system, rather than other cause. To minimise problems occurring as a result of project activity, and therefore reduce the overall costs associated with IT projects and IT support, it is necessary to apply total quality management strategy, adopted by the whole organisation. Such TQM application should be strongly supported by both business and IT strategy. (Laszlo, 1999)

Quality principles described by Peskin and Hart (1996) state that it would be necessary to combine the customer’s principles which define quality with the systems development quality measurements, and ensure that the project management includes them in the overall methodology, therefore adopting and applying the total quality management approach to IT project management.

Organisations are motivated to reduce their operational costs and increase their capital investment. Since projects are often presented as capital investment that increases company value, any increase in post-implementation operational costs presents additional liability on the company’s balance sheet. This presents the question if perhaps project managers and project executives should have the awareness of the financial impact on the overall organisation, not only be responsible of their own project budgets.

This might mean that standard IT project management process should be complemented with additional tools or elements in order to provide more to the organisations than it is required from the project alone – there is definitely a need to go beyond the budget and scope requirements and to apply a more strategic, organisational approach to IT project management.
1.5 The Study

1.5.1 Aims and Objectives of the Study

The aim of this research is to identify and analyse the links and relationships between IT projects and the overall systems development process and to recognise and establish the impacts IT projects have on long-term costs associated with the maintenance of IT infrastructure.

The following are the main objectives of this research:

- **Objective 1:** To investigate and define long-term impacts created by IT projects within financial organisations in Australia.
- **Objective 2:** To establish links between project management processes and elements and long-term impacts on IT infrastructure and the overall organisational strategy.
- **Objective 3:** To establish the importance of the effective management and prediction of long-term impacts by quantifying some of the main aspects of costs directly related to those impacts and identifying the factors that influence them.
- **Objective 4:** To develop a set of suggestions for further research that will help improve project processes and the overall project management methodology that will assist in managing the long-term impacts created by IT projects and reduce the overall IT-related costs within Australian financial organisations (and wider).

Based on the identified and analysed links between the projects and the long-term costs, mechanism/methods will be defined (as a further research area) that would enable better management of such impacts, preferably eventually incorporating them in the overall project management process.

The study highlights the elements that could be further researched and included in the overall IT project management methodology and used to better manage long-term impacts on the organisations.
The research covers the analysis of a large-scale project within a major Australian financial organisation and evaluates related actions and processes. It also includes an overview of the research topic, review of relevant literature, applied research methodology and the findings from both the case study and the survey.

The study concentrates on:

- Processes and practices prior, during and after the project
- Changes in the project and organisational environment and related outcomes
- The unplanned and unforeseen project impacts and their origin
- The pattern of impacts
- The importance of impacts

1.5.2 Scope of the Study

The research is primarily focused on IT project management process within financial organisations in Australia, as well as the dynamics and relation between IT project activities and the ongoing process of maintenance and support of information systems.

Although this research concentrates on IT projects within the financial industry in Australia, the elements that will be analysed are common to other disciplines and industries.

This study focuses on one major Australian financial company (referred in the text as “the Company”), as a typical representative of financial industry trends and applied IT project management processes. The study examines the project management process and techniques applied to a major successfully implemented project within the Company and attempts to analyse and explain the long-term influence of those processes and techniques on the long-term success of the Company, namely related IT costs and the technical and business infrastructure.

Unlike the majority of project management studies, this study does not research project
management methods to make projects more successful in terms of objectives, schedule and budget. It aims to discuss additional factors that are attached to the successful projects, especially long-term and unforeseen impacts successful projects have on organisations: in particular, the unplanned decisions that are made to ensure success of projects but are impacting other elements of the organisations and have impact on the ongoing and long-term costs, without being included in the project success criteria.

1.5.3 The Research Question

This research was initiated as a result of this researcher’s practical experience and frustration with post-project impacts while working for a financial organisation in Australia. After years of effort to improve project and systems development processes in order to increase efficiency and effectiveness of project resources, the issue of unplanned impacts on the IT infrastructure and the long-term strategy remains and creates a challenge for further improvements to project management theory and practice.

After the observation of the earlier described problem within the Australian financial industry and the initial review of the relevant project management and systems development literature, a research question was formulated, becoming the basis for this study. The main research question can be articulated in the following two points:

• What are the links between successfully completed IT projects and the ongoing IT and business infrastructure, and how do they negatively impact long-term organisational performance within the Australian financial industry?
• Can those impacts be predicted and managed as part of the overall project management process, with the aim of reducing the overall organisational costs?

Expanding on the original research question in more specific detail, and to assist with the research process, the following research statements (RS) are developed:

1. (RS#1) Problem confirmation.

   There are unforeseen and unplanned impacts created by projects that are highly
relevant to organisations and successful project management.

2. **(RS#2) Willingness to address the issue.**
   Organisations are willing to address this problem.

3. **(RS#3) Impact factors.**
   There are number of discoverable and manageable factors that influence the existence and degree of unplanned and unforeseen impacts created by the project. By clearly identifying these factors, the research can come closer to effectively managing them, therefore reducing the overall impact created by projects.

4. **(RS#4) Cross-Industry Relevance.**
   This problem is not only relevant to the observed financial industry. The patterns and impacts are applicable to other industries where IT projects are conducted.

5. **(RH#5) Actions.**
   By improving project and strategy processes within organisations, the overall project, post-project and maintenance costs can be reduced and more effective use of the available resources could be made, maximising project benefits for organisations.

The above statements will be referred to in the text, so they are marked as numbered references, for easier reading.

The main research question and the supporting statements outline the core elements of this research and the intended areas of contributions for this study.

The aim, objectives, research questions and statements are summarised in the following table:
<table>
<thead>
<tr>
<th>Aim</th>
<th>Objectives</th>
<th>Research Question</th>
<th>Research Statements</th>
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| To identify and analyse the links and relationships between IT projects and the overall systems development process and to recognise and establish the impacts IT projects have on long-term costs associated with the maintenance of IT infrastructure. | **Objective 1:** Investigate and define long-term impacts created by IT projects within financial organisations in Australia  
**Objective 2:** Establish links between project management processes and elements and long-term impacts on IT infrastructure and the overall organisational strategy  
**Objective 3:** Establish the importance of effective management and the prediction of long-term impacts by quantifying some of the main aspects of costs directly related to those impacts and identifying the factors that influence them.  
**Objective 4:** Develop a set of suggestions for further research that will help improve project processes and the overall project management methodology that will assist in managing the long-term impacts created by IT projects and reduce the overall IT-related costs within Australian financial organisations (and wider) | What are the links between successfully completed IT projects and the ongoing IT and business infrastructure, and how do they negatively impact the long-term organisational performance within the Australian financial industry?  
Can those impacts be predicted and managed as part of the overall project management process, with the aim of reducing the overall organisational costs? |  
• **(RS#1) Problem confirmation**  
There are unforeseen and unplanned impacts created by projects that are highly relevant to organisations and successful project management  
• **(RS#2) Willingness to address the issue**  
The research will attempt to prove the assumption that organisations are willing to address the issue of long-term unforeseen impacts on their business.  
• **(RS#3) Impact factors**  
There are a number of discoverable and manageable factors that influence the existence and degree of unplanned and unforeseen impacts created by the project. By clearly identifying these factors, the research can come closer to effectively managing them, therefore reducing the overall impact created by projects.  
• **(RS#4) Cross-Industry Relevance**  
This problem is not only relevant to the observed financial industry. The patterns and impacts are applicable to other industries where IT projects are conducted.  
• **(RH#5) Actions**  
By improving project and strategy processes within organisations, the overall project, post-project and maintenance costs can be reduced and more effective use of the available resources could be made, maximising project benefits for organisations. |

*Table 1 - Research Aim, Objectives, Question and Statements  
Source: Developed for this research*
1.5.4 Importance of the Study

The costs of implementing and maintaining information technology solutions within organisations have become a major element of the companies’ balance sheets. The large spending is related to highly important value information technology provides to financial and other industries. Companies are keen on maximising benefits on their investments by reducing any associated costs that do not impact on successful delivery of projects and operations.

Information technology continues to grow with every large and small development, creating new projects for finance and other industries. The ability to control long-term impacts and related costs of this growth highlights the importance of this and similar studies that are aiming to provide useful information on how to better manage success of projects and their long-term impact on the organisational environment and the overall financial success.

The overall Australian business investment into information technology continues to grow (Figure 4: hardware presented in blue, software in red), increasing from $13bn in 1996-07 to almost $23bn in 2004-05 (both hardware and software included).

![Information Technology Investment - Australia (hardware/software)](image)

**Figure 4 – Australian IT Investment (hardware and software)**
(Source: Australian Bureau of Statistics)
IT workers can be found in a range of industries across the economy (ABS 2006). At the end of 2006, there were around 350,000 people employed as IT professionals, in various positions across various industries (Figure 5).

![Figure 5 – Employed Persons, ICT occupation groups (2000–01 to 2005–06)](Source: Australian Bureau of Statistics)

The IT-specific study conducted by ABS in 2004 (Figure 6) showed that the largest number of IT employees were employed by Property and business services (10% percent of the total number of employees), followed by Communication (9.6%), Finance and the Insurance industry (5.5%).

![Figure 6 – IT Employees - % of Total (2002-03)](Source: Australian Bureau of Statistics)

Information technology is an important driver of the country’s productivity, development
and innovation. Australian companies understand the necessity for and the importance of investing into information technology projects.

1.5.5 Contributions of the Study

This study intends to make contributions to the following areas:

- Project management theory
- Project management and systems development practice
- Project management, strategic and IT management

1.5.5.1 Contributions to Project Management Theory

This study will make an attempt to contribute to project management theory in the area of project management methodology, by outlining suggestions that would assist with the alignment between project management and organisational strategy.

The project management literature generally concentrates on methods and improvements that can increase the degree of success for projects, while post-project impacts and methods to predict and effectively manage them are not given equal attention.

This research hopes to raise the awareness of the importance of a project success being measured beyond immediate project objectives (to include post-project impacts and associated costs), with the goal of further aligning projects with the long-term organisational goals, strategy, IT and cost management.

1.5.5.2 Contributions to Project Management and Systems Development Practice

By examining an example of a large project within Australian financial organisation, this research will work on establishing patterns applicable to practical implementation of project management methodology in the industry, specifically examining the issues between project process and systems development practices.

Furthermore, the study intends to provide practical suggestions that could be used in a commercial environment to effectively manage the interdependencies between project management and systems development.
1.5.5.3 Contributions to Project Management, Strategic and IT Management

The study will examine the co-relation between project management and organisational (business and technology) strategy, identify the issues and explore ways to improve the overall alignment between strategy, project and IT management.

The results of this research will be formulated through a set of management suggestions, outlined in a strategy alignment framework.
1.6 Australian Financial Industry

This study concentrates on a financial industry in Australia and related project processes and practices.

The financial industry sector in Australia has become one of the most important elements of the Australian economy. The structure and nature of the Australian financial industry and marketplace have changed over the last decade, moving from a mainly commodity-based economy, towards a more global and innovative approach for financial services and products.

According to the Australian Bureau Of Statistics (ABS 2008), the Australian financial sector employed over 400,000 people in May 2008, which is 4% of the overall Australian workforce (approximately 10.7 million) – Figure 7. Besides these 400,000 people, there are also professions in other industries that support the financial sector, such as legal services, accounting, information technology, property management and administration. It is interesting that the availability and quality of finance professionals in Australia is
such that both domestic and international firms operating in Australia mainly source from the local labour market.

The Australian financial sector performs a pivotal role in providing credit to all other sectors in the Australian economy. Therefore, the performance of the Australian economy is directly related to and dependant on how well the financial sector performs. Throughout the history, Australia has experienced various impacts influenced by financial crises in the local economy, as well as within other economies in the region and further abroad. A well functioning financial sector is essential in financing the operations of the local economy through both intermediation and auxiliary financial services.

According to the ABS, the financial sector has become the third largest industry sector, with its contribution increasing from 3.5% of GDP in 1986-87 to 7% in 2008. The annual growth of the financial sector over the last decade has been significantly higher than the average growth of the economy itself of 3.6% (ABS 2008).

Australian financial companies are one of the major users of information technology solutions. Most of the Australian financial organisations have their own IT departments and maintain their IT systems in-house.

With outsourcing trends and strong IT developments in the e-Commerce area, many Australian financial companies decided on partially outsourcing the work in development, support and management areas of their computer systems.

IT projects are a strong supporting factor in the overall development of the financial industry within Australia (and wider), so their effectiveness and impact on overall business is very significant.

Most ABS reports from 2006 show that financial industry companies increased their investment into information technology from $912 million in 1996-97 to $1.7 billion in 2004-05 (Figure 8).
Australian financial industry development has been attributed to various factors, with major influences being regulatory changes and technology developments.

1.6.1 Australian Financial Sector – The Structure

Australian financial sector is seen to consist of the following three main overlapping components:

- Financial enterprises (such as banks) and regulatory authorities (Reserve Bank and the Australian Prudential Regulation Authority)
- Financial markets (bond market, equities market, etc) and their participants (issuers such as governments, and investors such as superannuation funds).
- The payments system: the cash, cheque and electronic means by which payments are effected, together with its participants (for example, banks, individual investors or brokers).

The interaction of these components enables funds for investment or consumption to be made available from savings in other parts of the national or international economy.

IT projects have been an important factor in developing all of these components. Over the past decade each of the components have shown significant changes, with IT solutions providing the tool for many improvements to the existing products and services, as well
as development of the new ones.

1.6.2 Study Benefits to the Financial industry

This study is concentrating on a specific large project conducted within an Australian financial company. This project is a typical large-scale project that has all the common characteristics of almost all sizeable projects implemented within the financial industry in Australia and beyond.

The results of this study are expected to apply to other similar organisations within the Australian financial industry, as well as to other industries that are implementing structured IT project management process.

The research also surveys a number of project management and IT professionals to extend the findings resulting from the analysis of the case study and the overall research.

1.6.3 The Company Under Study and Consent Conditions

This research covers a major Australian financial organisation (referred to as “the Company” within this text) with around 600 employees, with various business activities and heavy reliance on information technology.

The research concentrates on a major project conducted over the period 2004-2006 and related strategies, decision making practices and applied project management processes.

This research has been approved by the Company under the following conditions:

- Organisation’s name will not be disclosed
- The name of individuals participating in the data collection will not be specified
- The name of the project will not be disclosed or the names of any associated systems and deliverables

All of the above conditions have been fully respected and complied with during this study.
1.7 Conclusion

This chapter described the study and the background behind the research question, and clarified the areas of contribution this research is aiming for. The next chapter explores the related literature, highlighting the areas most relevant to this research.
2 Chapter 2 - Literature Review

Figure 9 – Chapter 2 – Literature Review
2.1 Introduction

This chapter covers the review of the relevant literature with regard to project management, information systems development and related organisational approaches to business and technology strategy.

It also provides necessary definitions and explanations of the terms used in this research and the approach taken with regard to the later review of processes and procedures applied on the researched project within the Company.

The literature review for this research used the following resources:

- Journals – project management, systems development, financial industry updates
- Theses and dissertations – related to IT project management within financial industry
- Books – covering project management, systems development, information systems management, strategic planning
- References available online (www) – latest updates on project management, systems development, financial industry and relevant industry trends
- Magazines, publications, statistical reports, electronic resources – financial industry updates, trends, etc.

The literature review concentrates on the following areas:

- The basics of project management theory, historical and contemporary developments
- IT project management and information systems (IS) development
- The financial industry in Australia and links with IT project management to understand the industrial environment which this study is concentrating on.

This study focuses on practical application of project management and resolution of specific problems experienced in the commercial environment, rather than theoretical exploration and analysis of various views and opinions expressed in the literature.
The literature review presentation style will therefore be limited to presenting and summarising the relevant views, identifying the gaps between the research so far and the topic of this study - as an introduction to the research problem. The literature review will not cover in-depth evaluations, comparisons and arguments that are usually present in predominantly theoretical studies.
### 2.2 Project Management in Literature

Project management in literature can be looked at from two different perspectives: theoretical and practical. The theoretical approach towards project management mainly concentrates on methodology and “by the book” methods to achieve successful projects, with little or no commercial focus.

A practical approach, even though it includes theoretical component of project management with regards to values and methodology, tends to have a specialist notion, concentrating on a particular area of interest.

A theoretical approach usually equally covers all areas of project management, regardless of the environment and the industry, while practical approach is usually concentrating more on some particular areas that are of crucial interest for the environment in which the research is conducted.

Theoretical project management literature is generalised across various areas of project management activity, concentrating on universal project management practices and methodology. The “practical” project management literature applies the existing general project management theory principles to specific areas of industry or activity, focusing on maximising the benefits of the theoretical methodology.

Current authors and project management experts concentrate on two main areas of project management development: process improvement and integration within an organisation.

Process improvement research is mainly related to finding the best ways to ensure successful project delivery by effectively managing risk and customer expectations.

Integration research concentrates on the best ways to ensure project results and efforts are part of the organisational strategy, therefore helping maximise the effects and benefits projects bring to the organisations.
2.2.1 Project Management - Early History

Looking through known human history, very early, even in ancient times, the first signs of activities that are close to what project management is all about can be noticed, seen in collective, planned efforts directed towards performing large tasks, such as yearly seeding and harvest, as well as complex building activities. Social interaction evolved throughout centuries; so did the organisation of work and life. Complicated building efforts, such as ancient pyramid and the Great Wall of China had to be managed by someone, which involved coordination.

The activities had to be planned, executed and controlled. The outcome of the overall objectives had to be delivered, people had to be managed, resourced distributed appropriately and the outcome assessed. All of those requirements for organising, planning, controlling, etc, over time created a specific function (process) that is known today as project management.

Although project management has always had the same purpose - delivery of certain requirements, project management process evolved throughout the centuries, dealing with different issues and emphasizing different elements of the process. For example, in earlier history, often the question of resources would not be an issue, as the project sponsor would be a ruler of the country or the region and had all the resources at their disposal. In those times, the technology and time would be more an issue than the financial and human aspects of project management as seen today. For example, in Ancient Egyptian times, the Pharaohs would be the wealthiest people with unlimited powers and resources would not be an issue for them. However, a low degree of the industrial advancement in those times would prevent them from achieving all objectives created by their visions, so the projects such as pyramids would often take decades to complete. Pyramids are one of the earliest examples of the requirements for highly organised project management of a huge amount/number of resources and a delivery of gigantic proportions.
Later, with the industrial advancements and historical and social changes, project management started developing out of the need to organise large portions of work with equally large amounts/number of resources.

Silverman (1987) relates early project management to factories in mid 1700s, calling it “patriarchal management” for its heritage in family and church, where everything was managed by one authority, the eldest and the most influential person in the group. Later on, when scientific evolution changed the way people worked, the new management theory, according to Silverman, was created: scientific management. Scientific management was directed towards achieving greater productivity from the workforce. It was based on the belief that people will work better if they have financial incentives. But, soon it was discovered that the human factor is important too. As with factories there was not much creativity involved and therefore motivation was not present even with the financial remuneration. So, the underlying hierarchy within the organisation, called culture, was something worth considering in management. Today a combination of scientific management with the human relations factor incorporated in the overall management approach is often seen.

During the 19th century, when technological advancements provided a decent platform for radical changes in many countries, governments were the main sources of project management activities, especially with large undertakings, such as roads and rail developments, large factories, buildings, bridges and tunnels. These, mainly building activities during the end of 19th and beginning of 20th century initiated the perception that
project management is created only to support building industry’s large-scale projects and initiatives.

![Figure 11 – Industrial Revolution and Projects](source: www.lessons-from-history.com)

With further industrial and scientific developments in the 20th century, together with various social changes, project management was increasingly utilised in other areas of people’s activities.

Two people in particular had a big influence in applying scientific reasoning to management activities. Frederick Taylor (1856-1915) and Henry Gantt (1861-1919) were the first to look at the management process from a scientific perspective, showing that labour can be analysed and improved by focusing on the elementary parts. Taylor analysed tasks that are performed in manufacturing and proved that, with better organisation, work can be made more efficient and effective. Prior to that, the only way to make things more efficient and effective in any area of labour was to make workers work harder. Gantt’s contribution was reflected in his analysis of the ship construction process, where he studied in detail the order of tasks, creating a model known today as the Gantt Chart, where tasks were presented with bars in order of duration and sequence, together with defined milestones. This model remained unchanged for several decades, until the late nineties, when the chart was improved by including more precise dependencies between different tasks and milestones.
Project management as seen today started developing in the early 1960s, after companies realised the real power and capabilities that management and organised work can bring for them. Also, the 1960s were the time when information technology became increasingly involved in business and provided potential for better communication and management across all departments and divisions, creating a need for advanced management methods to make it possible. Soon project management was spreading across all industries, not only building. Science and engineering projects, as well as military and educational, started using the universal project management methods and adopting them to their specific needs, but following the same principles across all industries and activities.

Global competition in recent years improved project management even further. Today, project management is an essential part of every aspect of human activity, especially where business is concerned. In modern times, business cannot survive if all parts are not working their best. Competition in the business world is so strong that even slightest inefficiencies can become huge issues, so management on all levels, and especially project management, are very important drivers that help ensure companies use their available resources in the most efficient way and produce the most effective results.
2.2.2 Projects Defined

Project Management Institute (PMI) describes a project as “a temporary endeavour undertaken to create an unique product or service” (PMI 2000, p. 5)

The majority of project management authors (Hallows 1997; Cleland 1999; Laszlo 1999; Kerzner 2000; Hartman and Ashrafi 2002) use this definition of a project (by the PMI) agreeing that the following characteristics are common for every project, regardless of the industry and the environment they are performed in:

- performed by people
- planned, executed, controlled process
- constrained by limited resources
- delivers new value, product or service
- has beginning, end, deliverable and defined value

P2M Guidebook (PMCC 2001, P. 4) describes a project as “a value creation undertaking, based on a specific mission, which is completed in a given or agreed timeframe and under constraints, including resources and external circumstances.”, adding the “value” dimension to project definition.

There are various approaches to classification of projects and definition of project types. Some authors (Crawford, Hobbs, Turner, 2004) define project types on the basis of specialised areas or industry they are conducted in (construction projects, IT projects, government projects, sporting events, military projects, etc), or the nature of solutions delivered (outsourcing projects, reengineering projects, acquisition projects, strategic projects, procurement projects, etc), or the size (large, small, global, national, international).

This study is concentrating on projects that deliver solutions in the area of information systems within the financial industry. For the purpose of this study, a classification of “IT Projects” will be used to describe projects that come under the scope of this research.
2.2.3 Project Management Defined

Even though most of the contemporary authors agree about the definition of a project, when it comes to the definition of project management and the ways this activity should be performed, their opinions differ. Their views are sometimes influenced by different backgrounds, industries, education and the nature of project those authors deal with.

PMI describes project management as “the application of knowledge, skills, tools, and techniques to project activities to meet project requirements“ (PMI 2000, P. 5). PMBOK looks at project management from a purely processing perspective, where the goal of project management is to deliver set objectives and meet customer requirements.

P2M on the other hand, gives this definition of project management: “…the total framework of practical professional capability to deliver a project product meeting a given mission, by organising a dedicated project team aware of due diligence, effectively combining the most appropriate technical and managerial methods and techniques and devising the most efficient and effective work breakdown and implementation routes.” (PMCC 2001, P. 21). P2M’s definition looks at project management as part of the overall project-driven enterprise strategy.

There are many interpretations of the nature of project management. For example, (Silverman 1987) argues that the nature of the project management discipline is more inclined towards art, rather than science, as it creates a unique product or service, that can be done in many other ways, with a project manager or project team giving their personal creative touch to the final solution, in a similar way that artists create their works. Silverman compares project management steps to artistic systems of standards such as perspectives, colours and drafting, stating that standards do not make a masterpiece, but are a rather necessary and at the same time, incomplete set of resources, which need to be adapted to fit the situation, which is always unexpected – all examples that can be seen in project management theory and practice.

On the other hand Kerzner is more practical, defining project management as “planning
organising, directing and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives”. (Kerzner, 2001, P. 4) Kerzner’s approach to project management represents the focus that is mainly directed towards delivering projects and following process that can help achieve project success.

Authors such as (Gorog c1999) attempt to bring the project management closer to the general management, by seeing it as the way of realising an ad hoc task of constructing or developing a new product or service.

Although different definitions are offered by various authors, based on their research focus and interests, they all agree in principle that project management requires planning, execution and deliverables.

### 2.2.4 Information Technology (IT) Project Management

Information technology (IT) project management can be simply described as project management within an information systems environment, managing IT requirements and resources and delivering IT solutions.

Most of the literature relates to IT projects as “systems development”, while some authors make a clear distinction between systems development and IT project management. For some, for example Tinnirello (1999) assumes that project management is an integral part of the overall technical process, while authors like Kerzner (2001) and Schwalbe (2000) look at IT project management from a more theoretical, process perspective.

The literature on systems development, information systems and IT project management can be classified into three main types based on their coverage:

- mainly theoretical literature, where a softer approach is taken towards IT project management and systems development, and so techniques and methods are described from a theoretical project management perspective
• mainly technical literature, where project management methods are integrated into systems development, as the way of addressing the process of technology management throughout the development process

• mainly organisational approach, where management and development of information systems are structured from corporate perspective, emphasizing strategy and business

Schwalbe (2000) in her work states that IT project management combines project management methods with systems development process, therefore enabling the use of the characteristics of both worlds, all with the same purpose: to deliver quality technology projects.

As mentioned before, different types of projects emphasise different aspects, for example risk management, cost and timing. Similarly, the measurements are prioritised differently for different types of projects.

For IT projects it is typical to prioritise measurements in the following order (Silverman 1987):

• Technical achievement
• Time achievement
• Cost
• Planned (committed) versus actuals

Practical application of IT project management principles shows that it is a common challenge to give equal focus to all priorities above. It is expected that this research will touch on each of the above factors in order to determine factors that impact on the long-term costs and the IT infrastructure.

2.2.5 Project Management Principles and Practices

The terms “project management principles” and “project management practices” are frequently used in project management to refer to project management fundamentals that
form the core of the project management discipline.

From a theory perspective, a “principle” can be defined as a fundamental, primary, or general law or truth from which others are derived, or the method of formation, operation, or procedure exhibited in a given case (Flexner, Stein et al. 1983). Every discipline uses certain principles to define fundamental elements upon which the entire field is based. It is no different with project management principles.

Cleland and Kerzner (1985) define “principle” from a project management perspective as:

- A fundamental rule or law of action based upon desirable ends or objectives. A principle is more basic than a policy or a procedure and generally governs both.
- A fundamental truth, or what is believed to be truth at a given time, explaining relationships between two or more sets of variables, usually an independent variable and a dependent variable; may be descriptive, explaining what will happen, or prescriptive (or normative), indicating what a person should do. In the latter case, principles reflect some scale of values, such as efficiency, and therefore imply value judgments.

A “practice” can be defined as any repeated performance or systematic exercise for the purpose of acquiring skill or proficiency or the action or process of performing or doing something. (Flexner, Stein et al. 1983)

The fundamental pillars of project management are based on the adopted principles and practices, outlined through various project management methodologies, associated processes and procedures.

The laws and truths of project management are experienced through both the development and exploration of the project management methodology, as well as the practical experience acquired while applying the methodology in the real-life environment.
For example, all project management methodologies recognise the importance of planning as one of the fundamental project management principles. Based on theoretical methodology, project managers would utilise planning in accordance with their chosen methodology and go through their own experience in implementing the process steps associated with planning. The experience and lessons learned would then result in new elements associated with the same principle – planning.

Other examples of project management principles relate to commitment, success measures, authority, resourcing, responsibility, environment, communication, skills, tools, etc. While various project management methodologies concentrate on different areas of project management, the main project management principals remain common.

2.2.6 Projects and General Management

There is a great deal of discussion in the literature about the relationship between the project management and general management. Some authors such as Kerzner (2001) and Frame (1995) distinguish between project management and general management, by stating the uniqueness of the project when compared to general management. According to their differentiation, project management has a defined goal of the project (duration, beginning and the end) and therefore can be seen as a definite activity/process within general management. Both of these authors see the project management discipline as a sub-discipline of general management. Kerzner (2000) is even more specific about this relationship between general management and project management, when he states that projects should be done without disturbing the work flow of the organisation and without impacting/changing corporate culture. But, the fact is that projects do change culture and impact the workflow of the organisation. It is just a perception that projects are done quietly so as not to disturb the normal organisation flow, but the reality is that projects introduce new elements into the organisation. Those elements can impact the culture, workflow and other dynamics of the organisation.

(McLeod 1996) also compares “ordinary” management with project management, stating that besides the commonalities such as control, direction and measure (characteristics of
both project and ordinary management) project management contains two additional elements: initiation and termination.

These comparisons between project management and general/ordinary management can be very useful in informing the existing managers (especially senior managers that usually decide about strategies and projects within organisations) what project management is all about and what kind of elements are involved in organising, managing and implementing projects.

One of the objectives of this research is to establish the links between corporate strategy and project management and suggest ways in which the alignment between the two can be addressed. The importance of the cooperation and cross training between project managers and other managers within the organisation is recognised in the literature (Kerzner, 2000). The aim of this cooperation is to achieve maximization of project management benefits for organisations.

Brown and Hyer (2002) present some techniques that could help project managers and their teams to engage their full capabilities into planning, organising, executing and managing projects. The authors claim that most project managers tend to use only the left side of their brain (analytical side) when working on projects, which is supported by the wide variety of tools for project management, such as those helping with scheduling and planning. They present various tips and techniques for “mind mapping”, that would engage the right side of the brain into the full utilisation for project planning, definition, risk management and control purposes. This study is trying to raise the importance of creativity in project management vs. the traditional “administrative” approach, with the objective to bridge the gap discovered in the literature and practical application of project management.

With more creativity and more vision, project managers and team members can do far more for their projects and organisations than just what projects asked of them. With a more open mind, vision and organisational-wide thinking, project management value
would be recognised beyond the projects life cycle, as part of the overall organisational strategy. The literature review points to a need for looking at the coordination of efforts between different management structures within an organisation to realise and maximise project benefits.

When defining the different responsibilities for the overall impacts introduced by the project, it is important to keep in mind both the project execution and the overall organisational direction and benefits. According to Kerzner (2001), general management usually responds well to the concepts of a responsibilities matrix and the analysis of the commonalities and differences between general management and project management responsibilities. This analysis of these differences can really help direct the efforts towards management’s commitment for any steps that should be taken towards better prediction and management of the long-term impacts created by projects. This is especially important for IT projects, as there is a strong perception among some levels of management and non-IT people that IT managers are the same as project managers and vice versa, which can cause some confusion when responsibilities for the integration of IT solutions are assigned.

2.2.7 Project Management Knowledge Areas

The PMI outlines the following nine knowledge areas of project management (PMI 2000):

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management
7. Project Communications Management
8. Project Risk Management
9. Project Procurement Management
The following areas are the most relevant to this research: cost management, integration management, risk management and communication management. The preliminary research has indicated that these elements are closely associated with the long-term impacts and unplanned events that can lead to these impacts.

Project management process heavily relies on all nine core areas, but it is common practice that some project managers or organisations or authors give more emphasis to some of the areas, as they might be more critical for their projects and area of interest. The same applies to theory and practice.

With the literature covering the theory of the standard practices of project management, such as handbooks and textbooks, authors tend to give equal attention to all of the above core areas. In those (basically theoretical) works strong emphasis is given to the administrative and management side of process, techniques and procedures that can be used to deliver any type of project. PMI’s PMBOK Guide (PMI 2000) is a typical representation of such literature.

But, once project management is linked to a particular type of service or industry, the authors (especially those whose publications originate from practice or research) tend to emphasise one or two out of the nine main core areas of project management discipline, as they seem to be more important to their subject of research or practice.

It is essential that project managers assess the relevance of each knowledge areas to their specific project and appropriately concentrate their efforts to ensure success of their projects. Some projects might have low risk and low budget elements, but have strict deadlines, therefore requiring concentration of efforts around resources and schedule management. In the other hand, some projects might be strategically aligned with other projects and require close coordination, therefore increasing the project risk, that would need stronger attention in such a case.
2.2.8 Key Project Roles

Some of the crucial factors associated with the benefits of this study are focused on the alignment between projects and strategy, as well as the steps that help ensure the alignment is closely linked with the relevant roles and responsibilities within the organisation. Without clear responsibility over tasks and process steps, any lessons and suggestions resulting from this study will not be effectively implemented.

The literature and practical examples clearly show that the degree of success of any process implementation is highly dependent on a clear definition of responsibility and accountability for relevant steps, procedures and outcomes.

This points to a need to look closely at roles and responsibilities in the organisation with respect to project governance, namely:

- Executive project roles
- Project manager role
- Program manager role

2.2.8.1 Executive Project Roles

It is important to look at some crucial roles within organisations when studying project management. Project executive roles in literature and practical application usually revolve around Project Sponsors, Project Owners and Project Champions, as the key stakeholder representatives with the financial and/or organisational power, who are expected to perform the executive financial decision making role on projects. Project executives are usually members of steering or other project committees, responsible for project governance.

Looking at the available literature, it can be noticed that authors often concentrate around one of the three mentioned executive roles, either combining the responsibilities of the Project Sponsor and the Project Owner (Turner 1993; Turner 1995) or the Project Sponsor and Project Champion (Clenland 1998), (Dinsmore 1996), or simply blending all
responsibilities into either the Project Sponsor role (Love and Brant-Love 2000; PMI 2000; Kerzner 2001) or the Project Champion role (Nicholas 2004).

Although it is often seen in practice that two or all three mentioned executive roles are combined into one, especially when the same individual is allocated this responsibility, sometimes all three roles have separate responsibilities and are handled by different people. Based on definitions used in the literature (Turner 1993; Turner 1995), (Dinsmore 1996), (Love and Brant-Love 2000; PMI 2000; Kerzner 2001), the three common roles in projects can be defined as follows:

The Project Sponsor role is usually closely linked with the financial aspect of a project, providing the required financial resources to the achievement of the project objectives and benefits to the organisation. This involves the assessment and monitoring of project benefits on an ongoing basis, working closely with other executive members of the project and project manager. The Project Sponsor has the authority to change the direction of the project, approve changes to budget or even terminate a project, if the circumstances require such a decision, as they have the authority to represent the interests of the organisation in terms of project success and benefits.

The Project Owner role is directly related to the business benefits of a project and the ownership over the project outcomes (i.e. products), as the main decision-maker in terms of the functionality, scope, quality and timing of the project. The Project Owner is expected to take responsibility over the post-project outcomes and benefits created by projects.

The Project Champion is a powerful individual (individuals) within organisations, who can use their position within an organisation to promote benefits of the project and raise priority in order for the project to gain access to resources, financial approval and better chances at succeeding (Turner 1995). While this description indicates that both the Project Sponsor and the Project Owner roles assume the characteristics of the Project Champion by default, the benefits in having one or more Project Champions outside the
project and across the organisation can further assist with prioritising and promoting the project within the organisation.

Project Owners and Project Sponsors are expected to have a strong broad knowledge of the organisation (Dinsmore 1996), business and technology, including experience and expertise in the functional areas addressed by the project.

The roles of the Project Sponsor and the Project Owner are often seen as critical to the success of IT projects (Kerzner 2001), and an inappropriate choice of a Project Sponsor or Project Owner can seriously impact the success of the overall project. “Sometimes the existence of a sponsor can do more harm than good, especially if the sponsor focuses on the wrong objectives around which to make decisions…” (Kerzner 2001, p. 483)

The Project Sponsor and the Project Owner roles are perceived as responsible for the alignment between their project objectives and corporate strategy (Curry 1995, Stevens 1998), as well as the realisation of project benefits and the return on investment in the project. This perception is expected to be investigated as part of this research.

2.2.8.2 Project Manager Role

Authors who concentrate on project management process and methods (Silverman 1987; Davidson 1994; Frame 1995; Meredith 1995; Cleland 1999; Kerzner 2001) agree that the primary responsibility of a project success sits with a project manager. This primary responsibility for project delivery within the organisation clearly creates a need for a definition of project manager as a separate profession, rather than the assumption that project management is either just a coordination of tasks, or technical or line leadership, currently assigned to a definite project/organisational goal.

Over the last couple of decades, the project management role has been rapidly developed into a highly respected profession, with its uniqueness when compared to other management disciplines and functions. It is assumed that a project manager who
possesses strong core project management competencies should be able to successfully manage and deliver any type of project, applying the same principles, regardless of industry, environment or nature of projects. At the same time, project managers usually add to their core skills some specific industry or technical skills that allow them to even more contribute to project, by ensuring better understanding and faster and more quality delivery. Often project managers emerge from other professions, such as general management, medicine, military, IT, education or manufacturing. In those cases their professions are often called “IT project managers”, or “manufacturing project managers”, or “educational project managers”. Often, there project managers are “accidentally” assigned this role, mainly due to their hands-on expertise or high-performance background.

Authors such as Mantel and Meredith (1986) agree that some of the overriding factors leading to successful project management do include technical credibility and the ability to use technical knowledge to achieve project goals. This can, however, cause issues (Baca, 2007), where technical project managers can often lose their focus on the project management process or overall organisational goals while concentrating on technical issues.

Besides technical and project management process skills, an additional element of “soft” skills comes to focus when looking into project management competencies. According to Sampson (2007, p. 41): “The skills required for project management are now often divided 50/50 into traditional ‘hard’ skills, such as risk management and scheduling, and ‘soft’, people oriented skills, such as interpersonal communication.”

But, even though such multi-skilled or specialised professionals can contribute to their projects in various ways, the basic concept of project management remains the same, that a good project manager should be able to successfully deliver any project, by applying the same core project management principles and methods.

Kerzner (2001) outlines the following major responsibilities of a project manager:
• To produce end item with available resources and within the constraints of time, cost, performance and technology
• To meet contractual profit objectives
• To make all required decisions whether they be for alternatives or termination
• To act as the customer and upper-level and function management communication focal point
• To negotiate with all functional disciplines for accomplishment of the necessary work packages within time, cost, performance and technology
• To resolve all conflicts, if possible.

All of the above responsibilities are related to the main project goal: to ensure successful completion of projects. There is no reference to a bigger picture where the project manager would have additional responsibilities outside a project he/she manages, but closely linked with the impact project is going to make on the overall infrastructure.

Kerzner (2001) further adds that in order to fulfil all their responsibilities successfully, it is essential for project managers to constantly demonstrate effectiveness in the following areas:

• Interface management (product, project, management, customer, information flow, change of responsibilities, inventory control)
• Resource management (time, manpower, money, facilities, equipment, material, information, technology)
• Planning and control management (equipment utilization, performance efficiency, risk reduction, alternatives to problems, alternative resolutions to conflicts)

Still, these areas are directed at achievement of the same aim: successful completion of projects, and do not demonstrate requirement for skills and abilities that would provide conditions for a wider responsibility for a project manager or any other role within projects. With this summary of responsibilities and skills required of project managers, Kerzner tends to concentrate on technical skills and ignore the soft skills element.
However, almost 30 years ago another author, Russell Archibald (1976) defined a broad range of desired personal characteristics for a project manager that still very much apply today and include soft skills elements as highly important for the project manager’s success:

- Flexibility and adaptability
- Preference for significant initiative and leadership
- Aggressiveness, confidence, persuasiveness, verbal influence
- Ambition, activity, forcefulness
- Effectiveness as a communicator and integrator
- Broad scope of personal interests
- Poise, enthusiasm, imagination, spontaneity
- Able to balance technical solutions with time, cost, and human factors
- Well organised and disciplined
- A generalist rather than a specialist
- Able and willing to devote most of his/her time to planning and controlling
- Able to identify problems
- Willing to make decisions
- Able to maintain a proper balance in the use of time

Although some of the outlined characteristics might appear even Machiavellian to some extent, practical experience shows that with project management (similar as with the general management), a stronger personality can bring benefits, therefore some of the above 30-year old traits are very much applicable today.

Sometimes upper management use wrong criteria when selecting a project manager, even though position description and skills requirements could be clearly defined. Kerzner (2001) gives the following examples of the most common criteria by which the wrong manager might be selected:

- Maturity – some managers relate maturity requirement to age, rather than to experience and knowledge - sometimes managers with long experience have not
had exposure to different types of project, while at the same time someone with shorter career experience might have had more diversity and exposure to different areas, projects and industries

• Availability – sometimes a manager is selected only because he/she is available at the time, regardless of the suitability for a particular project

• Technical expertise – this is common problem with IT projects, when management promotes someone with strong technical knowledge, who cannot move away from a hands-on approach and therefore does not perform full project management function

• Customer orientation – sometimes project managers are selected because customers requested it, but good communication with customers is only one of elements that make a good project manager, not the only one and not the most important one

• New exposure – sometimes people are given opportunities to gain experience in project management without proper training or preparations

• Hard-nosed tactics – often hard-line managers might not be appropriate for projects, so strong-hand management style should not be an indication that a project manager will succeed better than someone who is more diplomatic and reasonable with people

• Company exposure – sometimes people are put into a project management role simply because they worked in different areas of the organisation and they are believed to have more knowledge than others

The choice of a project manager is often a crucial element of project success, so careful definition of the desired profile is always recommended.

P2M Guide (PMCC 2001) divides skills required for today’s effective project management into two main area: common management skills (organisational, general management, leadership, use of resources, etc) and segment management skills (management of project strategy, finance, objectives, relationship, systems approach, etc). Use of all these skills is required in order to deliver successful projects and the value as a
result of project deliverables. The project manager forms and manages a temporary organisation, limited to a specific mission (project), maintaining relations with the parent organisation, all with the aim of adding some kind of value to the parent organisation. In P2M, the mission-achievement-type professionals are classified into three types according to their level of responsibilities: Project Management Specialist (PMS), Project Manager Registered (PMR), or Project Management Architect (PMA).

Some authors recognise the need for constant training of project managers, as well as for the cross-training between functional managers and project managers, to ensure mutual understanding and effective relation between the two types of management.

Loo (1996) takes a detailed look at the importance of training in project management, exploring tailored training activities for different project teams, different team members and different project activities. With some “quick-win” types of tools and techniques, delivered by short training and courses, specially tailored for project team needs, the effectiveness and efficiency of each team member could be significantly improved. However, this only concentrates on the skills required to successfully deliver the project, it does not touch on the training needs that would enable project team members to widen their vision beyond the project’s scope and to provide more long-term value to the organisation. But, still the skills are transferable, and they can be applied to any future project, which overall would reduce costs for the organisation.

Various project management authors are intrigued by the concept of the project management profession and some of them (Hodgson 2002) try to analyse the aspects of today’s project manager, to establish the best professional practices (Loo 2003) and to define what project management today is all about, what kind of discipline should be expected of the project manager and each project team member. Also, some authors are pushing for more recognition for project and program management professions within different industries by developing and promoting different training paths (Gale and Brown 2003), all with the same idea: to help further develop the project management profession and to increase the overall value project managers and project teams can bring
to the organisation, especially in the arena of strategic planning, strategic thinking and decision making (Cicmil 1997).

Turner (2009) demonstrates more recent literature attempts at highlighting the strategic element of project management by acknowledging the importance of strategic thinking among project managers and their responsibly for introducing strategic change into organisations.

While addressing the multi-skilled element required for project managers (process, technical and soft skills), the majority of reviewed literature still largely limits the areas of responsibility of a project manager to the successful completion of a project and does not extend it to considering the impact projects create within the environment in which projects are implemented. However, project managers have under their authority a strong influence over the nature and extent of the impacts on the overall impact to the business environment and it is important to look at additional requirements for a project manager’s role and responsibilities for the overall business strategy within organisations.

2.2.8.3 Program Manager Role

As previously stated, the project manager has primary responsibility for all aspects of their projects: planning, delivery, control. However, that means that quite often project managers can demonstrate a “tunnel-vision” approach towards their deliverables. They can see their project in isolation from other activities within an organisation, especially in isolation from the overall corporate strategy. As several projects are executed in an organisation at the same time, there is a possible risk of these projects not being aligned with each other to effectively contribute to the overall business strategy and common organisational objectives.

The Project Management Institute (PMI) describes those reasons as primary drivers behind the creation of a concept of program management. According to PMI, program management is incorrectly described as one or all of the following:

- Large project management
• Management of multiple projects
• Management of portfolios of projects

PMI defines program management (PgM) as an essential process for managing strategic decisions and delivering business benefits through a combined use of value and project management. Program management links business strategy and objectives beyond multiple-project management, effectively bridging the gap between strategy and projects. Program management life cycle covers the following phases:
• Formulation
• Organisation
• Deployment
• Appraisal
• Dissolution

Kerzner (2001) outlines the following main characteristics that should be recognised in a program manager:
• Team building skills – involves a whole spectrum of management skills required to identify, select, commit, integrate and motivate various tasks groups from the traditional organisational structure into a single program management system.
• Leadership skills – ability to lead the team in both structured and unstructured environment, provide clear vision and direction.
• Conflict resolution skills – ability to understand interaction, motivation, communication within the company in order to successfully identify and manage conflict elements.
• Technical skills – ability to understand technology, markets, environment and business, without having to be an expert in any of those areas
• Planning skills – effective project and program planning is absolutely essential, covering areas such as information processing, communication, resource negotiations, securing commitments, incremental and modular planning, assuring measurable milestones and facilitating top management involvement
• Organisation skills – understanding how an organisation works; ability to create
and maintain various structures that will support program management

- Entrepreneurship skills – ability to see the world through eyes of a general manager, considering elements such as economics, finances, customer satisfaction, future growth, impact on possible other programs that are concurrently running.
- Administration skills – planning, staffing, budgeting, scheduling and other control techniques.
- Management support building skills – understanding of all interfaces within an organisation, ability to build favourable relationships with senior management in order to achieve visibility of program, ongoing credibility, influence priority and to demonstrate accessibility.
- Resource allocation – ability to follow through all initiatives by effective resource management and cooperation with management structures within and outside the program.

Kerzner also notes that it is very important that interpersonal management traits underlying these skills operate to form a homogenous management style. Importance of each of the named skills can vary from program to program, but it is essential that they all exist and are effectively used.

P2M Guide describes program management as “…an undertaking in which a group of projects for achieving a holistic mission are organically combined. Multiple projects are in the strict sense treated separately from programs since their respective projects have weak relations with each other or are independent.” (PMCC 2001, P. 21)

P2M recognises program complexity that arises from interfaces between projects and combining and overlapping project life cycles. This complexity also introduces uncertainty created by environmental changes and completion periods that are usually longer than those with individual projects.

Practical examples show that the contemporary society requires project management to
be closely linked with strategic management of every organisation. Without common
ground and established reporting and links between strategy and project/program
management, the value delivered by a project will not be maximised. The concept of
program management is one of the attempts to combine different project initiatives and
align them with the overall strategy. The first generation of project management has
proven to be very effective when individual projects are concerned, but the second
generation of project management has proven to be even more effective with large-scale
initiatives, programs and “management by project” applications, where strategy-oriented
initiatives are demonstrated, together with more aggressive approaches towards
innovation in organisations.

The process of strategy-aligned project and program management needs to go even
further and engage in the highest level of decision making within organisations, rather
than being just a tool to deliver projects required by strategic orientation. This is
especially the case with information technology, as a long-term commitment, increased
with every new initiative and completed project/program (Archibald 1976; Currie 1995;

Coghlan and Hurley (Coghlan and Hurley 1996) analysed and compared the current
situation of Australian IT senior executives with that of the senior executives of other
fields, as well as IT executives overseas. They recommend that there is a definite need for
IT executives in Australia to be closer to the top-level strategy management, rather than
being just part of execution of decisions made by top management.

The practical examples demonstrate that it is becoming important for IT executives to
possess broader skills and experiences (beyond IT-related) as top-executives need to
appreciate the influence IT has had on the industry and organisations, instead of viewing
it as an overhead and to concentrate on business-related areas. The position of IT
executives within the financial sector in Australia has greatly improved with strong IT
involvement and strong dependency financial organisations developed on IT, especially
e-Commerce solutions, but it still needs to continue to evolve, to ensure full integration
within the top-level management.

2.2.9 Project Success Factors in Literature

Several contemporary project management authors concentrate on the areas of project management process that are most crucial for project success: risk management, communication and requirements management. These elements are closely related to the level and detail of planning performed at each stage of project.

Kerzner (2005) specifies the following criteria that determines project success:

- Within the allocated time period
- Within the budgeted cost
- At the proper performance or specification level
- With acceptance by the customer/user
- When you can use the customers’ name as a reference
- With minimum or mutually agreed upon scope changes
- Without disturbing the main work flow of the organisation
- Without changing the corporate culture

While project success has been a popular area of interest for project management researchers, the overall view of project management within the organisation in the light of the long-term impacts created by IT projects (especially successful projects) is yet to become a strong focus area in the project management literature.

The outlined project success criteria touches on the organisational impact, but only with regards to “disturbing the main work flow of the organisation”.

Prabhakar (2008) recognises that project success is rather elusive concept, with both theoreticians and practitioners disagreeing on what constitutes project success. Crawford (2002) sees project success as an important project management issue, one of the most frequently discussed topics, and recognizes that there is a lack of agreement concerning the criteria by which success is judged.
Freeman and Beale (1992) illustrate different perceptions of project success for different stakeholders: “An architect may consider success in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollars spent under budget, a human resources manager in terms of employee satisfaction, and chief executive officers rate their success in the stock market.” (Freeman and Beale, 1992 p. 8).

Stuckenbruck (1986) also recognised that project success criteria needs to reflect interests and views of different groups: stockholders, managers, customers, employees, etc.

Baccarini (1999) identified two distinct components of project success:
- Project management success (focusing on project process, cost, time, and quality objectives)
- Product success (the effects of the project's final product)

It is common for project management literature to mix these two separate components of project success and present them as a single homogenous group, while they should be kept separately during success evaluation (Prabhakar, 2008).

Freeman and Beale (1992) identified a set of main criteria for measuring the success of projects, based on their literature review. According to them, the following five criteria are the most frequently used for assessment of project success:
- Technical performance
- Efficiency of execution
- Managerial and organisational implications (mainly customer satisfaction)
- Personal growth, and
- Manufacturability and business performance

Similarly, Belassi and Tukel (1996) grouped the following success factors and described the impact of these factors on project performance:
- Factors related to the project
• Factors related to the project managers and the team members
• Factors related to the organisation
• Factors related to the external environment.

While one of their success factors relates to organisation, they do not extend their analysis to the alignment between projects and strategy. They still limit the success factors to the actual project scope: the objectives in terms of cost, time and quality; while stopping short of actual project impact beyond project implementation.

Shenhar at al (2007) see projects as powerful strategic tools, used to achieve a competitive advantage and value for organisations. They recognise the limitation of success evaluation criteria that is limited to costs, schedule, quality and time; asking for a different perspective in terms of value brought by projects, which go beyond the project lifecycle. For example, the construction of the Sydney Opera House was a project that had exceeded the original budget by ten times and extended the timeframe by three years. Based on widely accepted project success criteria (budget, timeline), this project would not be seen as successful. However, looking outside the common success criteria, the Sydney Opera House became one of the most recognised landmarks in the world and therefore is a highly successful accomplishment in the long run.

This prompted another classification of projects: operational and strategic, which gives a different focus on project success criteria. Operational projects are focused on getting the job done within set budget and timelines, while strategic projects are managed as part of long-term goals and organisational value that goes beyond project deliverables (Shenhar at al 2000).

A case study on the topic of project success resulted in the following project success criteria dimensions (Shenhar at al 200):
• First dimension: Meeting time, budget, requirements, goals
• Second dimension: Benefit to the customer
• Third dimension: Benefit to the performing organisation
Fourth dimension: Preparing for the future

The third and fourth dimensions are highly relevant to this research, as they recognise the extension of project success criteria beyond the “usual” elements of budget, benefits to customer and timeline.

While project managers are focused on project goals and often have little or no involvement in other organisational dynamics, it is important that alignment between projects and organisational goals is maintained.

Globerson and Zwikael (2002) conducted a study where project and functional managers evaluated their use of 21 different processes related to project planning. These 21 processes are part of 39 processes required for proper project management and are covered by PMBOK. This study showed that risk management and communications are the areas with the lowest quality of planning and this is related directly to the lack of tools and techniques available to project managers where risk management and communication planning is concerned. Even though this study is motivated by project success drivers, it touches on the organisational-wide perspective by recognizing the need for functional managers to have project management training. This training should be adapted to the roles, responsibilities and existing capabilities of functional managers and such initiative would require organisation-wide cultural changes, where the concept of project management and the long-term planning and functional management are brought closer together.

Raz, et al. (2002) emphasise the importance of proper risk management and the links to project success, in light of technological uncertainty. Their study has shown the lack of detailed risk planning and effective risk management with IT projects. Project managers usually concentrate on managing risk related to requirements, budget, timeline and resources. However, they don’t concentrate enough on the risk of making inappropriate technology decisions and solutions that might not be good for the existing environment. This study still covers only a project life cycle, but it recognises the need for the
development and application of different techniques/skills within the risk management area, that should be adapted to the nature of enquiry and solutions, rather than always using the standard and uniformed approach to project risk. Still, it would not hurt if this study expanded even further beyond project risk and covered the overall technology and organisational risk with multiple projects and solutions each project introduces to the IT environment.

Requirements determination is not a trivial task and many authors emphasise the importance of proper evaluation and analysis of IT project requirements, as one of the critical success factors for projects. Authors such as Shi (Shi, Specht et al. 1996) propose a streamlined consensus priority scheme to enable the best consensus ranking of the requirements for an IS development. Under this concept, customers are presented with the list of requirements and asked to rank each of those requirements. The rankings are sorted into a scheme that helps determine the consensus for requirements.

Some authors (Nord 1997) emphasise the importance of systems requirements, not just business requirements, for the success of IS development. Systems analysis often influence business requirements, as systems capabilities are directly linked to functionality and costs. Systems analysis should not be only limited to project scope, it should include the overall integration dimension and long-term benefits and impacts.

Hartman and Ashrafi (2002) also look at reasons for IT projects failure. They used pre-defined survey questions and interviewed over 35 project owners, suppliers and consultants, related to 12 major projects conduced in Canada. Based on survey/interview results, the authors listed and ranked critical success factors and corresponding project metrics, to help determine how to increase the overall number of successful projects. The 33 predefined critical success factors (CSF) used, helped quantify the overall responses from the participants. The findings showed that most of participants agreed that the project mission, consultation with the owner, good communication and availability of resources are the most important factors for project success.
Their study also shows that neither of the three types of survey participants (owner, consultant, supplier) placed much importance on the overall integrity of the project outcomes, which clearly indicates that project management participants, including project owners/drivers are still very much delivery focused, without a “big picture” view and consideration for the overall organisational strategy. It seems that project management is still very far from the awareness that responsibility for a project does not only include the deliverables of the project itself, but also the responsibility for the integration of project goals in the overall organisational and IT strategy.

Managing change as part of IT project management also has a sociological concept, not only technological and economic (Kuruppuarachchi, Mandal et al. 2002). Project success is determined by the customer’s perception of the outcome of the project, not by budget, timelines or technological sophistication. Change management before, during and after projects is a very big challenge for IT managers, emphasizing the importance of proper and detailed post-implementation planning as part of the project management.

Jiang and Klein (2001) and Jiang, Klein et al. (2002) concentrate on different forms of IS development risks, emphasizing the different types of risks and the various approach on risk mitigation. The risk analysis is related to projects only: they do not look at the integration risk and the overall IT infrastructure risk. Their risk mitigation is directly influenced by the criticality of project success. The authors define three main risk areas: project size, application complexity and technology acquisition. In order to identify the risk sources, the authors look at the different reasons for project failures. Again, looking only within the project domain, not from the organisational level. Project management risk mitigation should include other risks, long-term risks, that are not directly related to project outcome, but rather to long-term IT integration and impacts.

Farrell (2002) is attempting to bring financial management skills into project management, in particular those aspects of financial analysis that can help estimate the real value of what is project set to deliver. This approach, where financial analysis is part of the overall project planning and management, can result in significant changes to
project scope, objectives and solutions. Often it can mean that project should be abandoned or put on hold, as the investment/return analysis might show the low probability of the value of the end product. This study could be expanded further to the combination of projects, giving greater value to the financial aspects of the project and organisational management (Saunders 1992). Also, it could expand towards the overall IT investment/maintenance strategy, where IT projects and business projects could be successfully aligned towards the most effective long-term result for the organisation.

Overall, the review indicates that recent project management literature embraces general management, organisational and strategic factors in determining the elements of project success. While project success continues to be largely evaluated with regards to time, schedule and project deliverables, there is strong shift towards additional success criteria for the project, which should include long-term, strategic elements, ensuring continuous alignment between project and strategy goals.

The aim of this study is to further contribute to this trend of extending the project success factors beyond the project requirements, by including other elements within an organisation (such as strategy goals, overall costs and long-term impacts) as essential elements in validating the project success.
2.3 Project Management Methodologies in Literature

Organisations use different project management methodologies and processes. Existing methodologies seem to focus on the same basic concept: successful delivery of a project. What makes them different are the methods and associated procedures. Still, similarities can be found between some several elements of these methodologies. The main differences seem to be related to the specialised area they are applied to or the organisational framework they need to be aligned to.

Project management authors who have researched into improvements of project management methodologies, propose that projects in general can be successfully managed using the same, basic principles, irrespective of the context or application.

When examining project activity within various industries, there are many examples that support this theory. Basic principles of project management are commonly used in medical, military, IT, architectural, chemical, astronomical, financial, social, sporting and many other types of projects.

However each specific area of activity or industry often puts emphasis on certain parts of project management process, at the same time adding various elements to the process itself, maximizing the value that project management can provide to their projects. For example, space program projects could put strong emphasis on risk management, while being more relaxed with the financial side of the project. Community and social projects would be more concerned about budget but prepared to compromise on risk and quality. IT projects incorporate systems development life cycle into project management process, while military projects involve different protocols that would deal with security, as a very important part of their projects.

While there are several project management methodologies used in practice, two methodologies will be described in some detail as they are often used in IT projects – PRINCE and PMBOK.
2.3.1 PRINCE Project Methodology

PRINCE (Projects in Controlled Environments) was initially developed in 1989 by the Central Computer and Telecommunications Agency (CCTA) as a UK Government standard for information systems (IT) project management, but also applicable to projects outside IT. PRINCE2 was released in 1996 as a generic project management method and has become popular as a primary project management standard in UK, also used in more than 50 other countries. The most recent version of PRINCE2 was released in 2005, by the UK Office of Government Commerce ((OGC) 2005).

![PRINCE 2 Process Diagram](source: OGC (2005))

PRINCE2 is a process-driven, structured project management method. It consists of eight main processes, which cover a further 45 sub-processes (Table 2).

This methodology provides the framework for project management, with methods on how to coordinate people and activities on the project and the process that needs to be followed if the project is not going as planned. It clearly defines processes with their inputs and outputs, as well as the goals for each step before it can be declared completed.
PRINCE2 is strongly focused on effective management of resources and approval process within the organisation. The methodology clearly defines each role in the project and can be adaptable to specific skills and complexity of the organisation.

PRINCE2 is often seen as a documentation-oriented process which is not always appropriate for small projects, due to approval and process overhead in maintaining required documentation. Also, clear definition of roles and responsibilities can sometimes prevent flexibility with roles and responsibilities promoting the teamwork at various
stages of the project and therefore providing an element for blame among the project team and reducing productivity and effectiveness of resources.

The application of PRINCE2 (and any other methodology) does not guarantee a successful project. The methodology itself does not bring success for a project – it only gives a set of tools that assist in a structured approach towards project management within the organisation. At the same time, not every aspect of this or any other methodology is applicable to every project or organisation. Organisations should choose the project management methodology that best fits with the organisational environment, project management maturity and systems development approach.

2.3.2 PMBOK Guide

The PMBOK (Project Management Body of Knowledge) Guide is an international standard that gathers and provides the fundamentals of project management applicable to various industries and areas of activities (PMI 2000).

The PMBOK Guide was first created and published by the Institute of Project Management as a white paper in 1987, in an attempt to standardize known best practices in project management. So far there have been four editions of the Guide: 1996, 2000, 2004 and 2008.

The PMBOK Guide has been and is widely accepted as the standard for definitions of various elements of project management: skills, practices and processes.

PMBOK is a process-based approach, described in terms of inputs, outputs and tools and techniques. The Guide covers five basic process groups:

1. Initiating,
2. Planning,
3. Executing,
4. Controlling and Monitoring, and
5. Closing.
The Guide also covers the nine knowledge areas mentioned earlier in the text:

10. Project Integration Management
11. Project Scope Management
12. Project Time Management
13. Project Cost Management
14. Project Quality Management
15. Project Human Resource Management
16. Project Communications Management
17. Project Risk Management
18. Project Procurement Management
The knowledge areas contain processes that need to be achieved in order to perform effective project management and achieve project goals. Those processes are also linked to process groups.

Figure 16 – PMBOK-Based Project Management Methodology
(Source: PMBOK (PMI 2000))

The goal of the PMBOK Guide is to provide a general guide to most projects most of the time. There are specialised versions of the Guide, such as Construction Extension\(^2\), or Government Extension\(^1\), which provide more specific tools to the areas of focus.

\(^2\) (PMI 2000)
2.4 Projects and Information Systems Development in Literature

IT projects are closely related to the ongoing systems development, maintenance and operational functions within organisations. For IT projects it is typical to expect that after the project is completed, some level of ongoing maintenance will be required in the future, to keep in line with business needs and technical adjustments.

There are usually two types of IT projects when it comes to information systems development: those that are initiated as a result of an idea, and those that are initiated as a result of a problem. In literature, this classification is defined as: maintenance and development projects. Some authors (Cornford 1993, 1998) go so far as to claim that all initiations of projects in information systems actually happen as a result of a “problem”. Thorough investigation of the actual problem, followed by the analysis of the needs for an information system, together with the feasibility study of proposed solutions, seems to be, in view of these authors, a common start of an IT project, regardless of “problem” being a technical issue that needs to be resolved (maintenance project requirement) or a business idea that cannot be delivered within current systems (development project requirement).

Some of the reviewed literature (Johnson, Scholes et al. 2005; [edited by] Ralph H. Sprague 2006; Cleland and Ireland 2006; Kerzner 2006; Kerzner 2006) agrees with the importance of the close connection between projects and ongoing systems development and maintenance. However, reality is that within the literature, as well as the practical implementation of project management methodology, little or no consideration has been put on the post-project impacts and activities.

Project management literature (Raz, Shenhar et al. 2002; Tarnow 2002; Nicholas 2004; (OGC) 2005; Cleland and Ireland 2006; Dinsmore and Cooke-Davies 2006) concentrates on the ways to ensure project success, while information systems literature deals with the effectiveness and management of technology solutions. Both literature streams are specialised around the main objectives, so the area of long-term unforeseen impacts
between projects and IT infrastructure remain without adequate attention within the project management literature.

It is important to take various elements within the relevant project management literature, as well as their link with information systems development and use as the basis for this research, from both definition and procedural perspectives.

### 2.4.1 Systems Development Process Defined

The Management Information Systems Glossary (MIS) defines systems development as: “… process of developing information systems through investigation, analysis, design, implementation and maintenance” (MIS 2002).

Systems development process and procedures are an integral part of the IT project management methodology as the framework which ensures successful delivery of IT projects and development of related IT solutions.

### 2.4.2 Systems (Software) Development Lifecycles Defined

The systems (or software) development life cycle (SDLC) is a conceptual model used in project management and information systems literature that describes the stages involved in an information system development: from an initial feasibility study through maintenance of the completed application (Yeates and Cadle 1996).

Various SDLC methodologies have been developed to guide the processes involved, including:

- Waterfall model (which was the original SDLC method)
- Rapid application development (RAD)
- Joint application development (JAD)
- The fountain model
- The spiral model
- Build and fix
- Synchronise-and-stabilise.
There are also various hybrid models that combine characteristics of the above, but the two SDLC models that are most relevant to this study are waterfall and spiral models.

The waterfall model is considered the classic approach to the systems development life cycle, developed by W. Royce in 1970. With this model, the development is broken down into a number of sequential sections or stages, with each stage beginning after the completion of the previous one (Yeates and Cadle 1996).

The advantage of waterfall development is that it allows strong managerial control. The process moves from concept, through design, implementation, testing, installation, troubleshooting, and finishes with operation and maintenance. Each phase of development proceeds in order, without any overlapping or iterative steps. The disadvantage of waterfall development is that it does not allow for much reflection or revision. Once an application is in the final stages of the model, it is very difficult to go back and change something that was not well addressed in the earlier stages. (Royce 1998)
The spiral SDLC concept was first described by Barry Boehm as an iterative waterfall in which each iteration provides increasing software capability. It consists of a spiral divided into four quadrants that represent a management process: Identify; Design; Construct; and Evaluate. The system goes through four cycles of these four processes (Yeates and Cadle 1996):

1. **Proof-of-concept cycle** — define the business goals, capture the requirements, develop a conceptual design, construct a "proof-of-concept"\(^3\), establish test plans, conduct a risk analysis. Share results with the user.
2. **First-build cycle** — derive system requirements, develop logic design, construct first build, evaluate results. Share results with the user.
3. **Second-build cycle** — derive subsystem requirements, produce physical design, construct second build, evaluate results. Share results with the user.
4. **Final-build cycle** — derive unit requirements, produce final design, construct final build, test all levels. Seek user acceptance.

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\(^3\) a partial demonstration of a proposed solution for verification purposes
The advantages of the spiral model application are in the ability to iteratively repeat the steps together with the user and redefine requirements and implement the changes until desired result is achieved (Yeates and Cadle 1996). It also introduces important concepts of objectives setting, risk management and planning into the cycle. However, the disadvantage is in authority and responsibility being divided, making executive control difficult. (Bonnal, Goure et al. 2002).

Both described SDLC models are relevant to the Company and the researched project.

**2.4.3 Quality Management Defined**

The concept of quality management is closely linked with the degree of project success, as well as with the long-term impacts that successful projects introduce into the existing organisational environment.

ISO definition of quality managements states the following: “Quality management includes all the activities that organisations use to direct, control, and coordinate quality. These activities include formulating a quality policy and setting quality objectives. They also include quality planning, quality control, quality assurance, and quality improvement.” (www.iso.org)

Peskin and Hart (1996) define quality management as the management of the entire organisational effort to provide the customer with a high quality product or service. The authors recognise two sets of criteria for quality measurement: customer-driven criteria and systems development (technical) driven criteria. From a customer perspective, the authors specify the eight basic principles for dimensions of quality: performance, features, reliability, conformance, durability, serviceability, aesthetics and perception. These principles are closely linked with what customers perceive as quality. However, the common practice is that customers often change their mind about what they perceive as quality. Customers might be driven by short-term goals and are concentrating on isolated objectives that do not cover the overall quality of the system.
From the systems development perspective, the main criteria for quality measurement is usually defined around various technical characteristics such as: complexity, correctness, efficiency, flexibility, integrity, interoperability, maintainability, portability, reliability, reusability, structure, testability and usability.

Barad and Raz (2000) conducted a survey questionnaire with more than 400 project managers in 1998, in an attempt to discover the most common practices and techniques used in project management. The 84 completed surveys were used for the analysis of various aspects of project management, mainly covering risk management and quality management. The survey results showed that quality management is closely linked with effective project management and that customer satisfaction remains one of the main drivers for quality measurement where projects are concerned.

Bryde (2003) recognises that quality and project management are usually analysed from separate perspectives. Projects are usually driven as short term objectives, directed at achieving a specific goal, and quality management usually relates to customer satisfaction and success with deliverables. However, the overall organisational quality should be part of every management decision, especially project management, which is involved in introduction of new elements to the organisation and the overall infrastructure. Bryde (2003) recognises that quality is to be built into both products and practices, to ensure total quality management on the organisational level.

Orwig and Brennan (2000) promote the integrated view of quality management within the organisation: integration between operations management that uses quality management to support and improve repetitive processes, and project management, which is used to create new, unique products and services. Both processes should be driven by the same principles supporting customer focus, teamwork and continuous improvement.

Even earlier works such as (Gunasekaram, Goyal et al. 1998) support the same view and define total quality management (TQM) as a management philosophy and a set of
techniques and procedures, involving a total system approach to quality. The authors refer to previous studies that showed that 85% of overall quality-related problems arise from the system-related issues, while the remaining 15% are related to individual incidents (human error). While these numbers are primarily drawn from within the manufacturing, the topic is applicable to IT projects as well.

Orwig and Brennan (2000) highlight the importance of the integrated view of project and quality management, especially necessary for project-based organisations. The integrated view they are supporting is based on the combination of techniques evolving around customer focus, teamwork and continuous improvement, as the areas of common interest for projects and operational processes. According to their study, for project-driven organisations there should be no difference between project management and quality management: it should be all managed as part of the overall project management. This should be applicable to all companies with high project activity, not just project-driven companies, as the constant quality management should be part of every activity, and should be combined with the integration responsibility for IS, as successful integration is proof of TQM.

While changes to systems during and after implementation of projects are accepted as a necessary part of the IT systems reality, the ability to influence the extent of the change as part of project management had not been given the same attention. Change management before, during and after projects is a very big challenge for IT managers, emphasizing the importance of proper and detailed post-implementation planning as part of the project management (Kuruppuarachchi, Mandal et al. 2002)

The concept of “quality” within project management can be looked at from various perspectives. The majority of project managers and development managers usually apply quality assurance and post-implementation review techniques to measure and confirm quality of projects. But, such techniques alone are not enough to ensure quality of systems. Project management and systems development authors today emphasise a concept of total quality management (TQM) as a way to achieve and control project
quality. For example, Peskin and Hart (1996) see TQM as a multi-departmental and multifunctional initiative, covering activities and processes that bring all concerned areas together (user, applications systems development, technical areas, project teams, support groups, etc). They see the development of quality systems as a team effort formed by all of those areas. It should be noted that the concept of quality management in this study is mainly related to quality and the effectiveness of applied project management processes. It should also be acknowledged that the quality of products delivered by projects might be included in the assessment of process quality, although separate processes (inspection, etc) might be used to assess the quality of specific products as part of project deliverables.

Other studies (Gunasekaram, Goyal et al. 1998) go a step further, presenting TQM as a strategic initiative, where TQM is essentially merged with the overall business strategy within the organisation.

Orwig and Brennan (Orwig and Brennan 2000) see TQM as a good way of merging quality processes between projects and operations, the areas that traditionally have different quality processes and techniques, into the common quality goals such as customer focus, teamwork and continuous improvement.

Continuous improvement should always be at the back of the mind of project managers or project teams. Many authors (Barad and Raz 2000; Bryde 2003) now concentrate on development and review of various techniques that should help improve the overall quality for the organisations. Such techniques often assume management commitment and the alignment of the business and technology strategy. But, the reality is that, even though TQM is becoming more and more accepted by the organisations, still the practical implementation shows that this is only a start, as the concept of TQM is organisation-wide commitment, culture change and initiative that takes years of patient shifting towards different thinking, operating and communicating. Some authors support this concept (Hides, Irani et al. 2000), but insist on micro-management of this process via small cross-functional teams, making small steps before recognizing that the whole culture changed and shifted towards the TQM approach. By applying TQM principles to
project management, IT projects’ design stage can be managed better or become more useful or effective, as it highlights the real impact project decisions can bring to the whole organisation, not just to the project deliverables.

Various authors (Abdallah 1996; Lynn and Murray 1996; Hides, Irani et al. 2000) explore different approaches and techniques for quality project management within information systems development. But, they all agree that for effective quality control it is important to create and apply different techniques for different stages of the SDLC and IT projects, where each step would be evaluated and controlled separately with the most appropriate tools and techniques. The strong emphasis is always put on the design stage of the project, as a crucial time where the first and the most sensitive decisions are made and the quality expectations are set.

2.4.4 Project Outsourcing in Literature

The outsourcing trend has attracted strong focus within the project management and systems development literature over the past decade. With the growth of the outsourcing trend in IT Industry, companies often choose to partially or fully outsource their IT project development process. Motivations for such decisions are various: cost effectiveness, technology challenge, time value. A crucial element of any outsourcing is integration. Sommer (2003) highlights the importance of the integration of outsourced solutions with the “back-office” systems and services, as the business process flexibility as a driver for outsourcing can only be effective if the integration is successful.

Outsourced solutions often seem quicker and more affordable, especially if technical solutions require advanced technical skills not immediately available within the company. However, the outsourcing partners might not be as reliable as they seem at first, or they might not necessarily have the same objectives and motivations as their customers. Also, proposed solutions might be good for the outsourcing company and in line with their business plans, but not necessarily the best long-term solution for the customer company.

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4 internal operations within an organisation, generally not visible to clients and public
The existence of overall business process reengineering (BPR) and enterprise resource planning (ERP) are crucial (Koch 2001): business has to provide the platform for future development of both business and technology and assess where existing resources (both people and assets) are sufficient to achieve the business strategy. Outsourcing decisions should be resulting from careful consideration, rather than being ad-hoc decisions that could bring more long-term negative implications than competitive advantage.

E-commerce projects that have emerged with the strong development of IT over recent years have influenced many companies to seek solutions in outsourcing. Costa (2001) identifies the three main drivers for outsourcing within Australian industry: cost reductions, technical considerations and the need to focus on core activities. Her study highlights major technology setbacks and increased costs as the strongest negative outcomes resulting from the “outsourcing-gone-wrong” experiences.

Lee (1996) emphasises the importance of management and legal control with outsourcing agreements and notes the main issues such as increased cost due to technology gap associated with support costs and loss of control over quality levels of the outsourced elements. Added to this, should be also the overall impact on the quality of the full technology integration of outsourced solution and the existing IS, not just the outsourced part.

Outsourcing the portion of IS further increases complexity of the overall IT operations environment, sets the scene for increased complexity and costs associated with any future integration.

Security of the information systems is also under threat with the implementation of any new innovations, especially if those innovations are outsourced. Fink (1994) explores ways to mitigate the security risk by building a broader outsourcing vendor relationship, building more mature cooperation and trust between the outsourcing parties. This highlights the challenges within the areas such as data management, performance management, applications development, organisation and management.
It is necessary that both the vendor and the organisation have high quality processes built around each of these areas, which also means the alignment of project management methodologies and technology management practices. Costs associated with the ongoing relationship between the outsourcing parties covering these areas are often not planned for as part of the original assessment that selected outsourcing as a solution. Full technology impact would need to be assessed and this research aims to link project management with the responsibilities for ongoing technology management, as it is clearly evident that projects actively alter the IT picture of the organisation and the overall technology impact would have to be a more important part of the project management responsibility than it currently is. (Claver 2002)

There are always issues about ongoing maintenance and system integration when projects are fully or partially outsourced - these issues are almost never appropriately and accurately analysed and planned for prior to commencement of projects. That is especially the case with costs associated with the ongoing post-implementation systems maintenance and support.

Heng (1996) emphasises the need for development of suitable business continuity planning (BCP) methodology for every organisation. Definitions of disaster can be various: most companies relate their BCP to loss of building or critical people and develop plans on how to recover their business from an alternative site or with a reduced number of people. For projects that deal with crucial elements of the business, it is essential to have sufficient coverage of the BCP. But, not many companies have a backup plan for disasters related to loss of income due to failed projects or unsuccessfully integrated business or technology solutions. Perhaps project management and business strategy planning should involve such steps (as with BCP) for failed integration or even unsuccessful and unreliable outsourcing.
2.4.5 Systems integration and IT projects

A very important part of information systems development process is systems integration. Most of the information systems literature looks at this from a strictly technical perspective. Systems integration is closely tied to technical issues, requirements and outcomes.

Myerson (2001) analyses different technologies and their compatibilities and presents a concept of enterprise systems integration. She points out clearly that all elements that make an enterprise system, taking into consideration business as part of this enterprise, as well as people, databases, hardware, software and processes. Myerson investigates different approaches companies take in order to achieve enterprise resource planning (ERP), driven by desire and the need for integration of the existing and the incoming systems into one corporate resource for corporate information. She points out the benefits of such a system: cost savings, efficiency and effectiveness. Myerson clearly sees ERP as a project in its own right, rather than an ongoing activity within the organisation, looking at the solution from a technical perspective, compatibility of the elements that should be integrated, the impact of integration on separate parts and functionality, as well as the savings resulting from those activities.

The same study then identifies systems integration methodology that covers the following phases:

- Establishment of the integration environment
- Assessment of integration requirements and application design
- Assessment of data requirements and design integrated data warehouse
- Development and prototyping of integration systems
- Implementation of integrated systems

As it can be seen, these steps are all technical steps, without much interaction with projects around the process, or business drivers, or strategy. Therefore, ERP can be seen as an improvement project, rather than an ongoing activity that should be part of any technical project within the organisation.
The availability of many different possibilities for IT solutions has created a complicated IT picture in many organisations. IT solutions are usually applied piece by piece, concentrating on particular requirements and fulfilling the immediate needs of business. Systems integration is becoming more and more important, as the costs of non-integrated solutions are becoming higher with every new IT project. Studies have shown (Karababas and Cather 1994) that senior management commitment and senior management involvement in IT strategy are the main success factors for IT integration for every organisation. Young (1997) presents IS development as a highly political activity, where IT strategies are heavily influenced by the business and personal objectives set by senior management. Those political influences often heavily impact long-term benefits and the degree of success when IT integration is concerned, as they continue to have strong control over financial aspect of IT management and user involvement. IT systems deeply penetrate social and cultural aspects of the organisation and often the readiness for change is not one of the main values of senior management, especially when every integration requires financial and time commitment. Senior management commitment is crucial at both planning and execution stages of IT integration activities (Allert and Kleiner 1997). Also, full commitment from all staff, specialists and customers is required in order for IT integration activities to be successful. Allert and Kleiner (1997) emphasise the importance of the top bottom approach being taken with any type of IT integration activities, as it ensures commitment and successful communication channels, priorities setting and effective execution.

Social, cultural, political and legal barriers strongly influence IT development and integration, especially when the quality of IT solutions is concerned. Crede (1997) looks at motivations for information sharing, especially when conflict of interest is possible. Many companies choose not to share their experiences for fear that they will be exposed to their competitors and therefore be disadvantaged in any further attempts to achieve and sustain competitive advantage. With wider information sharing, the overall cost of IT integration would be effectively reduced, as organisations would have more data about different experiences presented to them before making the decision that could affect the
success of integration and the overall development in IT.

Brown and Ross (1996) emphasise the importance of balancing mechanisms between different priorities and groups, by enforcing the common interest: benefit for the organisation. Balancing mechanisms such as structural overlay in the form of individual or group roles and process enhancements, provide opportunities to change organisational contexts regularly in order to refocus management attention and recalibrate individual understanding of the overall business and organisational needs. The areas of success are mainly in operations support, systems delivery and IT and business unit education. Those balancing mechanisms are much easier to adjust and change than the formal organisational structures, therefore providing a flexible tool for management to control different short-term activities, in order to support the overall long-term benefits of the IT integration.

Bonnal, Gourc et al. (2002) investigate the life-cycle of IT projects and suggest five main life-cycle approaches: straightforward, control-oriented, quality-oriented, risk-oriented and a fractal project life-cycle approach. Each project should have a clear life-cycle approach, to enable those involved to share a common view of their projects and how projects progress. Project life-cycle models help determine and illustrate the progress philosophy of the projects, better understanding and communication.

Cassidy (1998) outlines the following steps in planning process as crucial, before any decision or recommendation for future direction is made:

- Understanding business direction
- Understanding and communicating the current information systems situation
- Determining the high-level direction of information systems
- Determining the gap between the current situation and desired future direction
- Determining how to get where information systems want to be
- Presenting the recommendation to business and stakeholders

Cassidy (1998) also recognises that often organisations too quickly determine where they
want to be in the future, without a proper assessment of the current situation and the gap between the current and desired position of information systems, which can cause wrong decisions and therefore loss of money. Without proper analysis of the current situation and the gap between now and the future, there is a danger that not all options for methods to achieve set goals would be identified and presented, therefore limiting the effectiveness and efficiency of possible solutions.

After adopting the new and advanced techniques for project management and quality control, it is essential to promote the benefits of those techniques to the whole organisation. As authors such as (Cornford 1993, 1998; Hallows 1997; Gibson 1999; Grembergen 2002) claim, it is not enough to use the new technology advancements or new methods for improved systems development or product development: it is important to integrate those new initiatives and solutions into the culture of every part of the organisation, not just the development areas.

A study by Harris (2002) researching developments in the UK banking sector has been conducted into five different case studies, with interview of over 40 industry professionals to show just how much projects and organisations learn from past mistakes and use experiences and knowledge obtained in previous projects and initiatives. The study showed that building on past experiences, whether successful or unsuccessful, is more an exception rather than a rule. Harris’ observations of the financial industry (mainly UK banks) show that most organisations lack the culture that would enable better use of past experiences where projects, especially technology projects, are concerned. The results of this study showed that surprisingly often organisations make the same mistakes many times, rather than learning and using experiences from the first time it happens. The banks still have strong power within communities and industry, so these mistakes are (still) very much tolerated and organisations tend to avoid the needs for cultural changes as long as they can. But, customers expectations and technology drivers will be less and less forgiving and banks around the world will have to change their traditional approaches towards technology, strategy, general and project management. As a result of their resistance, such organisations will be unable to take full advantage of
Business continuity planning (BCP) is becoming one of the strong areas of interest for all organisations, especially large and medium corporations. With strong technology development, organisations started to realise importance of the capability to continue their business beyond disastrous situations. The first step towards full BCP is usually “recovery strategy”, where organisations create strategies for their ability to operate under crisis situations, regardless of their causes. But, more and more it is becoming the imperative to go beyond the “recovery strategy” approach, and rather to go towards “continuity”, long-term situations, where business functions will continue to operate under changed conditions (Heng 1996). To have a successful BCP strategy within the organisation, it is necessary to ensure that projects that introduce new functionalities and the overall business and technology strategies are in line, so that long-term BCP direction is constantly updated, maintained and comprehensive. To achieve that, project management processes have to have a standardised approach towards BCP and full alignment with the overall BCP strategy. For the project analysed in this study, a reliable BCP solution was one of the essential elements of the overall project solution.

A study conducted by Colgate (1998) used data from more than 50 questionaries used in different countries (UK, Ireland, US, Australia) to show that financial companies are quite innovative and able to achieve a competitive advantage using IT, but also recognised the need to go beyond achieving competitive advantage, by creating what he calls “sustainable competitive advantage”, where IT solutions give long-term benefits and advantage in our competitive world. Colgate’s study highlights the need for marketing information strategy, within the company and within the industry, to constantly maintain the benefits created with IT innovation.

The message of this study can be added to two other studies that emphasised the importance of the organisational learning as an essential part of project development:

Kotnour (2000) used results from survey conducted with 43 project managers to show a
direct link between the success rate of projects and the level of promotion and learning within the organisation. As part of the study, project managers were asked to give some background to their PM experience and then to describe and assess their techniques and practices for continuous learning, creation and application of “lessons learned”. The author’s message is clear: increased knowledge within the organisation is directly associated with increased project performance. This organisational learning must be a continuous process, covering projects and the times between the projects. The findings of this study proved that project managers conduct learning activities, but at the same time it has shown that the quality of that learning varies from case to case, especially when measuring the use of lessons and past experiences which depend on many factors, such as time, type of learning, methods and individuals. Sharing knowledge should be one of the main responsibilities of every project manager, as project are the innovative element in each organisation. Project management are responsible for constant introduction of changes to the organisation, therefore it is natural that knowledge sharing and effective communication should be main responsibilities.

Currie (1995) goes further, explaining the need for the definition of organisational learning as part of the overall IT development strategy. Case studies with UK banks also highlighted two different IT project management styles (“ad-hoc” and “by the book”) and the importance of the financial side when managers choose which style to use. This shows clearly that organisational learning and financial objectives are competing goals and therefore the overall IT strategy approach should be focused on long-term values and the overall quality and solutions integration for all organisation, rather than solely on short-term financial wins that are often perceived as main benefits brought by IT projects.

To ensure appropriate solutions are applied and real business benefit reached, constant evaluation is required, especially with major IT projects. Remenyi and Sherwood-Smith (1999) point out that such constant evaluation should result in either confirmation of project scope, methods and schedule, or influence modifications within projects, or even initiate termination, if the benefits of proposed/accepted solutions cannot be seen and the impact cannot be justified in business benefit terms.
2.5 Projects and Business Strategy in Literature

Projects are largely initiated as a result of business strategy decisions. While success of a project is evaluated against project objectives, it is often the case that long-term strategic objectives, as well as interdependencies between various initiatives are not included directly into the project deliverables. This is highly relevant to this research, since project governance should be aligned with the strategic interests of the organisation and contribute to the discovery and management of the unforeseen long-term impacts introduced by projects.

2.5.1 Strategy Defined

As this study is focused on the effects of strategy on information systems and information systems project, the literature review in this section is limited to how strategy is related to IS development.

Yeates and Cadle (1996) see strategy as the pattern or plan that integrates an organisation’s major goals, policies and actions into a cohesive whole, pulling together and giving meaning to everything an organisation does. They emphasise that a formulated strategy helps to organise resources into a unique and viable force based on the competencies and shortcomings of the organisation, on anticipated changes in the environment and activities by competitors.

Mintzberg, Quinn et al. (1998) and Mintzberg (2003) see the strategy as a dynamic activity, where new elements can emerge at any time, changing the existing concept of strategy. This is highly relevant to this research, as projects can be created as result of those additional and emerging strategy elements that may not necessarily be in full alignment with other strategy factors and measures. The authors see the strategy as plan, pattern, position and a perspective about the current and future organisation.

Yeates and Cadle (1996) recognise the phenomenon of post-event rationalisation of what looks like intuitive action, causing constant strategic changes, especially with regards to
information systems and related projects. This highlights an ever moving strategy where projects are cancelled or redefined, providing environment for even more unforeseen impacts on long-term objectives and the information systems infrastructure. The same authors differentiate between a good and a bad strategy. According to them, a good strategy is clear, keeps the initiative, is concentrated, flexible, well led and full of surprises. This last element is the main catalyst for long-term impacts that are the subject of this study.

Bonaccorsi, Pammolli et al. (1999) recognise two general types of companies where IS strategy is concerned: companies that focus on the most important sub-systems within their infrastructure and companies that are more oriented towards integration of all systems components. This differentiation is based on the research of various engineering companies, but a similar view could be applied to all IT organisations, as many of them (especially those with specialised products or services) do tend to focus only on critical (or trendy) parts of their IT infrastructure while neglecting the rest, especially during major high-profile innovative (e-Commerce) projects that could possibly have impact on the competitive position within the industry. Companies that have a wider range of generalised products and services and are not in a highly-competitive space have more opportunity and resources to concentrate on the overall integration of all of their systems.

Johnson, Scholes et al. (2005) introduce a number of keywords that define strategy and help answer strategy-related questions:

- Direction - Where is business trying to get in the long-term?
- Markets and scope - Which markets should a business compete in and what kind of activities are involved in such markets?
- Advantage - How can the business perform better than the competition in those markets?
- Resources - What resources (skills, assets, finance, relationships, technical competence, facilities) are required in order to be able to compete?
- Environment - What external, environmental factors affect the businesses' ability to compete?
• Stakeholders - What are the values and expectations of those who have power in and around the business?

The same authors highlight three types of strategy in terms of business levels: corporate strategy, business unit strategy and operational strategy.

• Corporate Strategy - the overall purpose and scope of the organisation to meet stakeholder expectations, heavily influenced by investors in the business and acting to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".

• Business Unit Strategy - how a business competes successfully in a particular market, strategic decisions about choice of products, meeting needs of customers, gaining advantage over competitors, exploiting or creating new opportunities etc.

• Operational Strategy - how each part of the business is organised to deliver the corporate and business-unit level strategic direction, focusing on issues of resources, processes, people etc.

While the elements of strategy discussed so far are from an organisational perspective, organisations may not use strict rules or guidelines to develop operational or project strategies.

Often separate business units have their own strategy direction, which may or may not be aligned with the overall organisational strategy. Similarly, the project office within an organisation would have their internally developed strategy, covering procedural elements such as applied methodology and the ways to improve it, as well as strategies related to various project programmes or portfolios.

While it is the intention of every organisation to have one overarching strategy direction which directs all other low-level business unit strategies, it is often difficult to realise it in

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5 a statement describing the purpose, goals and objective of an organisation
practice.

Unless the type of strategy is specifically stated (PM strategy, IT strategy, business unit strategy), the term “strategy” in this study refers to top level organisational strategy, which can be projected through various low-level individual strategies.

### 2.5.2 Projects Alignment with Strategy

Project alignment with the organisational strategy is important to this study. How projects perform in line with strategic objectives and the long-term benefits for the organisation is the additional evaluation of their success, which really can occur only well after the projects are implemented.

The literature deals with the following areas of research with regards to project alignment with strategy:

- Evaluation of function and performance of information systems
- Ongoing management of systems and people
- Cost effectiveness
- Value of effective communication
- Alignment between project and strategy goals

The existing literature is useful in terms of evaluation of the effectiveness of information systems and their flexibility and ability to perform long-term. For example, the following figure shows the IS Function Performance Evaluation Model (Saunders 1992), which provides additional knowledge to the developing theory for the assessment of the effectiveness and alignment of information systems. Their model shows important success dimensions for information systems and the need to balance measures across dimensions, while considering the maturity level of information systems function in the assessment model.
An important element of the alignment and the effectiveness of the information systems is cost. Some authors concentrate on technical costs, while others see people as a major element of cost variability and the key to the increase of the alignment factors. Costs are related to maintenance and reorganisation of information systems, as well as skills maintenance. A strategic approach towards systems maintenance implies links with pre-maintenance activities, namely projects. However, once a system is in maintenance mode, it is usually too late to work on alignment with strategy. The strategy is then mainly concentrated around maintainability and reliability, with a strong emphasis on associated costs.

In his 30 years old information systems handbook Nolan (1975) places the emphasis on the evaluation of the existing systems and IT infrastructure. The only difference between this book and more recent handbooks on information systems development is the technology gap. But, the approach is the same: logical view of the current situation is essential for any recommendation of development for the future. It is important to take into consideration information systems as a whole, not just hardware and software. Project managers sometimes forget about non-technical parts of information systems: people. When analysing information systems, people and their formal and informal communication paths, reporting matrixes and interdependencies are equally important part of information systems, as hardware and software are.
Cassidy (1998) promotes the same strategic planning approach when developing and maintaining information systems. She looks at the importance of a planning process and defines the following purposes of a plan when developing information systems with a strategic approach:

- Effective management of an expensive and critical asset of the organisation
- Improving communication between the business and information systems organisation
- Linking the information systems direction to the business direction
- Planning the flow of information and processes
- Efficiently and effectively allocating information systems resources
- Reducing the time and expense of the information systems life cycle

The idea of this approach is to help organisations understand information systems as their asset and a tool that performs a critical business function in helping deliver their business and services, rather than seeing it as a necessary burden on finances. To achieve that, effective communication between business and information systems is absolutely crucial, as well as the alignment between business strategy and information systems strategy. By effective communication and cooperation between business and information systems, the overall costs of running a business, regardless of whether those costs are IT-related or business related, can be significantly reduced, if that alignment between IT and business strategy exists.

This communication is vital in terms of project alignment as well and provides a strong argument for the alignment efforts during projects and maintenance.

Hurley (2001) highlights the importance of people as organisational key assets and explores ways of holding on to good resources and avoiding the loss of crucial staff. The author recognises that loyalty with most of IT professionals starts within their teams, not the organisation. Understanding the motivations of each individual is the first step in managing attrition effectively and being able to intervene early against employee and
skills loss. Young (1997) discusses how the power battles within top management can strongly influence morale among people and therefore impact overall company performance.

Some project management journals reviewed during the final stages of this research (Robertson and Williams 2006; Morris and Pinto 2007; Peterson 2007; Ali, Anbari et al. 2008; Bevilacqua, Ciarapica et al. 2008; Sanchez, Robert et al. 2008) indicate increased interest in the alignment between strategy and projects among project management authors.

For example, Srivannaboon (2006) recognises that the idea for alignment was explored through other areas of management, such as risk and cost management, policies, research and development (R&D), human resources or project selection. The author recognises the influence of business strategy on project management via the competitive attributes of the business strategy (time-to-market, quality, and cost) and offers a framework that would assist with the definition and management of the these attributes used to ensure alignment between the goals outlined within the business strategy and project goals. While this paper examines the alignment between strategy and project goals and outlines methods for alignment evaluation, it still concentrates only on one aspect of the alignment goals: successful project outcome. There is no reference to post-project impacts as part of the alignment factors and evaluation.

Srivannaboon and Milosevic (2006) explore two aspects of alignment: a two-way influence between projects and business strategy; and a process used to align the two. Their process takes into consideration different types of projects and strategies which are used to evaluate the drivers for the alignment, as well as factors for evaluation. The process relies on the common elements between projects and strategy: tools, processes, metrics and culture, as well as the nature of impacts that influence the level of alignment.

Bevilacqua, Ciarapica et al. (2008), Scott-Young and Samson (2008), Sanchez (2008), Morris (2007), Andersson (2007), (Eduardo Miranda (2008) and Miranda and Alain
(2008) concentrate on the risk aspect of projects, looking at ways to better estimate and control the efforts and costs associated with projects. These efforts are an indication of interest towards long-term cost control, that can go beyond project completion, to include post-project impacts and cost management.

The case studies conducted by Jamieson and Morris (2007) show that processes, practices, and people issues involved in moving from corporate strategy to programs and projects are done in a much more systematic way than is generally recognised.

Similarly, Artto and Diettrich (2007) conducted their case studies into different project types in terms of strategic importance. Their approach to management and alignment between strategy and project is through program management. They suggest a framework for strategic business management, which ensures constant alignment between strategy and project priorities and deliverables.

While the focus of program management is on ensuring management of multiple projects and alignment with strategy in terms of priorities and common objectives, it does not ensure control of decisions on the individual project level that cause long-term and unplanned impacts on organisations. Program management focuses on “up->down” alignment between strategy and individual projects. But, is program management an equally effective tool to control “down->up” unforeseen impacts and associated decisions that are not measurable or visible at the program level?

While project management literature suggests that projects and have to be aligned with organizational strategy it mainly focuses on how high-level strategies can be implemented using program and projects (Turner 1993).

It is evident that there is a gap in the literature around linking project methodology, processes and lessons-learnt (especially the impacts created by project decisions) on long-term strategy, and in particular IT proejcts. An area of interest for this research is to look at ways to incorporate additional measures and procedures into the overall project
methodology, to assist a higher degree of alignment with the long-term strategy, with a view to reducing overall IT costs, especially in the financial industry.
2.6 **IT Projects and Their Influence on Financial Sector**

Much has changed in the structure and operations of Australian financial organisations over the last couple of decades. Besides the deregulation process and other industry factors, IT in its own right has had a lot of influence on the development of the banking, fund management, insurance sector and all other areas of financial services.

E-commerce development is a very good example: it is impossible to conduct banking or insurance business today, without some sort of web presentation. IT is now recognised as an integral part of all financial operations and researchers look at further expanding IT integration into other parts of the organisation, not just operational. Many authors, such as: Kerzner (2006), Dinsmore (2006), Cleland (2006), Zwerman (2004), Karababas and Cather (1994), Easingwood and Storey (1995), Colgate (1998), Gibson (1999) and Kuruppuarachchi, Mandal et al. (2002) recognise that it is not enough to simply achieve competitive advantage in the industry by using innovative IT solutions today. The real challenge is to achieve a sustainable competitive advantage, by integrating IT into all spheres of organisational activity, such as marketing and information exchange between the units that are not yet integrated in the overall operation and product development initiatives.

Several authors who research project activity within the financial industry (Jaafari and Manivong 2000) outline successful strategies in merging project management practices with product development process, emphasising the importance of effective communication. This is in line with the observation that contemporary project management authors are more and more concentrating on organisational-wide integrations and communication as the future of project management approaches for both project and product management.

Many organisations, especially financial organisations, now concentrate on the importance of the change of the traditional business continuity planning (BCP), pushing towards more advanced, project planned BCP, to ensure the continuation of services in
Business and the finance sector are more and more aware of the need for some sort of organisational learning process that will provide a basis for the full utilisation of benefits brought by IT projects (Harris 2002). However, those efforts seem to be concentrated on learning from past mistakes and helping utilise past experiences in order to have more success with future projects, especially where technology choices are concerned. At least this is a real step towards a long-term view of project impacts and influences, even though it still has as its primary objective the improvement of the success rate of IT projects within the organisations, rather than what happens after projects are successfully implemented.

Recent journals on financial industry and the links between new product development and project management process have shown that the authors concentrating on that area have widened their approaches towards technology as the partner in delivering financial solutions to customers. Financial institutions are starting to take a more strategic approach in the introduction of technology innovation and new products (Drew 1995), recognising global drivers such as blurring of industry boundaries, deregulation, globalisation, competition, increased customer sophistication as the main reasons behind this rapid change.

Some authors go further by identifying the determinants of success and failure for the new development of products and services within the industry. According to Edgett and Parkinson (1994), the approach towards new developments needs to take much wider view than in the past, to enable better coverage of different aspects and influences each individual product and combination of products could have on the market.

According to Easingwood and Storey (Easingwood and Storey 1995), the development of the new products and the success of financial services are directly related, as today’s level of competition within the financial world does not tolerate failure with the new developments. The key to successful product development is the alignment and effective
information exchange between the technology, business, customers, marketing and organisational practices. One of those elements might be an initiator for change, however, success will only be achieved by the effective cooperation between all of those areas. The effectiveness and success of the new product is also related to costs (which can very much be influenced by the IT solutions selected by the project team) therefore introduces a new responsibility and the value area for project management itself within the whole process of new product development within the financial industry.

Thiry (1997) gives strong attention to the concept of value and related management, recognising it as “…a very subjective concept that has different meanings to different people”. (p. 7) For example, customers will see value in what they can best acquire for their money, while suppliers will see more value in lower cost and higher return for investment. Value mangers generally see value as a ratio of quality and cost, with both variables depending heavily on the point of view.

Ward and Daniel (2006) see the value in evaluation of the return on investment for projects and alignment of IT investments with the organisational strategy. They highlight the value of business cases that enable planning and realisation of benefits through techniques and processes that overcome the organisational barriers, and look at the strengths and limitations of existing methods.

Organisations are concerned with both quality and cost, as well as the return on the investment. Project are the tools to deliver value to organisations through new products and services and therefore the value becomes an important measurement for project success, ultimately defining its value to stakeholders and the organisation. This concept of value is also a measure for project effectiveness, which is one of the favourite project management topics in the literature (Hides et al 2000; Cicmil 1997).

In order to achieve high effectiveness and increased value created by projects, many authors put their efforts into formalising project management process within financial institutions. For example, Tarnow (2002) looks at a general project management approach within a short-cycle driven financial environment, outlining 13-steps project
management implementation, that should raise the effectiveness of the financial projects. The author looks at “quick” project management process, consciously eliminating a best practices approach in project management, as those would slow down the implementation and might seem too tiring to a fast-moving industry. However, this approach introduces long-term effects, especially in IT project management, where possibly inappropriate solutions might have a negative impact on the quick wins achieved by a shortened and streamlined project management model.

Recent promotion of the new development methods summarised under the term “Agile Development Methodology” has caused a lot of interest among business and technology people. Agile Development concept has been presented by some authors/promoters (Konieczka 2003) as being about removing redundancy and complexity from all aspects of development: from designs, from requests and requirements, and even from and processes and tools. This concept quickly attracts business attention as it promotes an “ultra-focused” approach on being simple, and "lean" - doing only that which adds value and removing that which does not. Especially the top two of the overall twelve Agile principles are in particular attractive to business drivers (Clockburn 2002):

- highest priority early customer satisfaction through early and continues delivery of valuable software
- welcoming changing requirements, even late in development, process harnessing change for customer’s competitive advantage

Such a concept promises quick delivery and adaptation to changing business needs. However, this concept cannot be applied everywhere. In particular, the projects and software development that is performed on already established infrastructure cannot effectively adopt Agile methodology, as the concept of frequent “small-scale” quick deliverables in an already established environment will either require extensive testing (which delays the implementation of each of numerous phases) or it compromises the stability of the existing system (if integration testing is rushed/compromised). Also, large projects with a complex set of deliverables could fall into a trap of too many iterations of
change and implementation, which makes it much harder to manage the overall “unpredictable” process and outcome (Fowler 2003).

The main criteria for selection of development methodology should not be only the customer’s ability to constantly change requirements, or the quick delivery of small-scale sets of requirements. It is important that long-term impacts should also be considered, as “quick and easy” delivery might not always be good choice for long term solution.

One general notion within financial industry is that industrial competition demands quick and efficient solutions, therefore IT project management needs to be streamlined in order to quicker respond to business demands.

Agile development definitely has its application space, especially with brand new stand-alone developments, where small, flexible teams are appropriate and where iterations of 1-2 weeks from conception to implementation can be implemented, without compromising the overall structure or concept of the final result. It is crucial that, with Agile development, the adaptability is not more important than predictability, as without being able to predict the final structure of the end product, there is no long-term consistency. (Fowler 2003)

This raises importance of the IT strategy being formulated as part of the overall business strategy, as well as the importance of the effective communication between senior management and IT, where IT strategy influence will be strong enough to contribute to the overall priorities setting within organisations. Otherwise, without achieving this high-level influence, industrial drivers will be the strongest motivation and indicator for strategy formulation within organisations, which could be very costly in the long term, and depending on the IT project activity and integration success, could even be disastrous.
2.7 Conclusion: Literature Review Summary and Research Questions

This chapter is concentrated around the relevant literature, exploring primarily project management and information systems development areas. The following are the main conclusions drawn from the literature review:

1. Theoretical project management literature mainly concentrates on project deliverables, budget and timeline, researching the best ways to achieve project objectives with the available resources. The majority of project management literature (Davidson 1994; Meredith 1995; Kerzner 2000; PMI 2000; Schwalbe 2000; Kerzner 2001; Tarnow 2002) concentrates on creation and improvement of project management processes, methods and tools. The main objectives of all project management-related literature and research are directed towards a successful delivery of projects.

2. Contemporary journal articles, such as Gale and Brown (2003), Joseph and Stone (2003), Khalfan (2003), Lang and Colgate (2003), Loo (2003), McCrohan (2003), Schniederjans and Hamaker (2003), Smith, Oczkowski et al. (2003), Soergel (2003), Sommer (2003), Vanhoucke and Demeulemeester (2003), Zeng, Chiang et al. (2003), Darch and Caltabiano (2004) and Kearns and Sabherwal (2006), represent the results of the practical application of project management discipline. They concentrate mainly on the issues with successful delivery or projects. The majority of such researchers tend to concentrate on the planning stage of a project, especially with communication and risk management planning.

3. It is noticeable that more and more authors are actively looking at maximizing the value project management can bring to the organisation, by different approaches towards organisational learning, management cross-skilling and quality management. This is especially present in the area of financial management, BCP and “total quality management”, popular topics in most of financial companies around the world.
4. Articles focused on the financial industry concentrate mainly on product development and the ways of achieving sustainable competitive advantage within the industry. These authors’ main preoccupation is with the relationship between IT project management and product development and organisational acceptance and learning. This is especially obvious within the banking sector, where organisations have so far enjoyed strong comfort and a monopoly, which is not expected to last forever, with other players entering the market.

5. IT project management influence and contributions have been widely recognised and contemporary researchers are working towards even better recognition with an aim to maximise values IT can bring to the organisations.

6. While there is a significant presence of literature with regards to organisational strategy, there is still somewhat limited attention given to the investigation of successful project alignment to strategy. The alignment attempts are mainly represented with the evaluation of the information systems solutions delivered through projects and associated responsibilities, but those are more reactive, after the fact (or more specifically: after the project) activities. Alignment of projects with the strategy as part of project management would help better predict and control long-term impacts on information systems, business and strategy, helping control and reduce the overall IT related costs.

The earlier defined research statements have been re-examined in the light of the conducted literature review. All five research statements are still relevant for this study and are supported by the findings in the conducted literature review:

1. **(RS#1) Problem confirmation.** There are unforeseen and unplanned impacts created by projects that are highly relevant to organisations and successful project management.
2. **(RS#2) Willingness to address the issue.** Organisations are willing to address this problem.

3. **(RS#3) Impact factors.** There are number of discoverable and manageable factors that influence the existence and degree of unplanned and unforeseen impacts created by a project. By clearly identifying these factors, the research can come closer to effectively managing them, therefore reducing the overall impact created by projects.

4. **(RS#4) Cross-Industry Relevance.** This problem is not only relevant to the observed financial industry. The patterns and impacts are applicable to other industries where IT projects are conducted.

5. **(RH#5) Actions.** By improving project and strategy processes within organisations, the overall project, post-project and maintenance costs can be reduced and more effective use of the available resources could be made, maximising project benefits for organisations.

The literature review confirmed the existence and relevance of the outlined problem related to the alignment between projects and the overall organisational strategy, goals and objectives. The reviewed literature showed that many authors, especially those associated with the practical application of project management, recognise this issue as important to organisations. According to the reviewed literature, organisations constantly seek ways to improve the effectiveness of their project management, as well as to address their associated long-term project costs.

The next chapter will concentrate on the research methodology applied to this study.
3 Chapter 3 – Research Methodology

Figure 20 - Chapter 3 - Research Methodology
3.1 Introduction

This chapter covers the research methodology used for this study. It describes the following elements:

- research context description
- justification of the research methodology selection
- sample selection description
- types of data used
- methods used for data collection and analysis.

The research is based on an interpretivist paradigm and uses an explanatory in-depth case study covering a major IT project conducted within the Company, supplemented by a survey to extend the findings from the case study.

This research is historical in nature and predominantly relies on qualitative research methods, supported by quantitative methods, observation and use of the related literature to support the findings.

Every project is a journey that constantly evolves from the beginning until completion. This research is aimed at contributing to the project management discipline by improving the overall way the project journey is managed. The findings of the case study analysis are combined with the data collected by observation. Wherever possible, the information is presented in chronological order - to give a more accurate picture of the project journey and associated elements that impact the outcome of projects, as well as their influence on the existing IT environment.

It is the intention that the findings of this study will become a starting point for future research efforts into further improvements and contributions to the project management discipline.
3.2 Structure of Research

The structure of research process followed in this study is outlined in the following set of steps:

- Problem formulation and research question definition
- Review of relevant literature
- Creation of research strategy
- Selection of research environment, methodology research data, collection and analysis methods
- Case study
- Survey
- Data analysis
- Recording of findings, suggestions and conclusions

Figure 21 - Research Framework
3.2.1 Problem formulation and research question definition

The first step in the research process covers detailed formulation of the problem that was chosen for this study, various elements that contribute to the problem, as well as the definition of the research question and statements.

The problem is described in detail in Chapter 1 (Introduction) of this document. The problem formulation and associated research questions form the basis of this research.

It should be noted that an informal form of observation of relevant behavioural patterns occurred prior to problem formulation, as part of researcher’s experience. These observations initiated initial investigation into the problem that became the subject of this research.

Like many other research topics, this research problem was observed through practical project management and IT application, thus providing appropriate research environment for this study.

3.2.2 Literature Review

After the formal problem articulation, the research process continued with the literature review, where various publications relevant to the research topic were explored and reviewed. The literature utilised in this research covers peer reviewed research articles, key books, and electronic resources.

This step in the process helps shape the research question and review the progress made so far in the literature on related topics.

Through the literature review, a gap between the current literature and the objectives of this study was established, helping identify the area of contribution for this research.

The literature review forms a vital part of this research, outlining the relevant references that are utilised to confirm the research problem, identify related publications and assist with the research process.

The literature review concentrated on the following areas of publications:
• Project management related literature, touching on theory, historical and contemporary developments in the project management discipline
• The literature covering various information technology (IT) project management and information systems (IS) development
• References touching on the environment of this study: the financial industry in Australia - especially links with IT project management

A detailed review of relevant literature is covered in Chapter 2 of this document.

After the review of the available literature and the establishment of the research contribution area, the study proceeds towards the creation of the research strategy.

While this research is not theoretical (it is largely based around a professional, practical commercial environment) the literature review provides a strong theoretical component of the validity of this research, namely with:

• Valid research methodology direction
• Reference to past research on the same or similar topic
• Cross-referencing different perspectives on the research problem (for example project management perspective versus IT or strategic perspective)

### 3.2.3 Research Paradigm

Before a detailed research approach was to be developed, a decision needed to be made about the appropriate research paradigm, under which this research was to be conducted.

It is often a difficult task to choose the most appropriate approach for a research task. This study concentrates on IT projects and how they impact on organisations their long-term costs and benefits, so appropriate research methods needed to be aligned with a chosen research paradigm.

Blaxter, Hughes and Tight (2001) state that a research methodology is composed of the underling paradigm and approach used, as compared to research methods which apply to the specific techniques of data collection and analysis.
Paradigm can be defined as: “…a set of basic beliefs … that deal with ultimates or first principles. It represents a worldview that defines for its holder, the nature of the “world”, the individual’s place in it, and the range of possible relationships to that world and its parts….“ (Guba and Lincoln, 1994 p. 107-108)

The three major research paradigms are (Guba and Lincoln, 1994; Gephart, 1999):

- Positivism
- Interpretivism (sometimes called Anti-Positivism)
- Critical Theory

Positivism is based on the objective perspective of the world and is directed at searching for facts based on specific correlations and associations between variables. (Gephart, 1999). Positivism is based on sense experience and positive verification of sensed information. The research methods often used with this paradigm are quantitative and experimental methods, used as tools to assist with verification of hypotheses. (Miles and Huberman, 2002). The positivistic paradigm was highly influential paradigm for a very long time, especially in educational research. However, it was widely criticised in recent years, mainly for its lack of regard for the subjective states of individuals. Positivism gives strong emphasis to the factors of the external environment and little to the human element and individualism. (Dash 2005)

Interpretivism is based on the belief that reality is multi-layered and complex, providing the ground for multiple interpretations of a single phenomenon (Cohen et al, 2000). Interpretive research concentrates on meaning and understanding of the human definition of a situation, which is in contrast to positivism which is concerned with objective reality and meanings independent of people. Interpretivism is based on belief that any knowledge is based on interpretation – therefore objective knowledge does not exist independently of human thinking and reasoning. (Gephart 1999)

Critical Theory is based on the critique of society and culture and interpretation of human knowledge through their view of social freedom. Critical Theory originated from the criticism of Marxist theory through the works of “Frankfurt School”, namely philosophers such as Herbert Marcuse, Theodor Adorno and Max Horkheimer, who attempted to analyse historical forces that restrict human freedom and expose the ideological justification behind such forces. (Dash 2005) The philosophers behind Critical Theory discounted the other two paradigms on the basis that they accept the
situation as a “status-quo” and do not have any element to assist with change or a critical approach to human knowledge. (Gephart 1999)

Positivism and interpretivism are concerned with social reality, research of associated phenomena and impact on society. Positivism is closely related with objectivity, predictability, measurability and control, based on certain rules of human behaviour and their surroundings. Interpretivism highlights the human element and interpretation of the social environment and behaviour, attempting to find the meaning behind researched phenomena. The third paradigm (Critical Theory) criticises the “status-quo” and is based on the belief that human knowledge is real power and that the social environment should be critiqued and changed.

According to Guba and Lincoln (1994), in order to define a particular research paradigm, the following questions need to be answered:

- What is the form and nature of reality? (the ontological question)
- What is the basic belief about knowledge - what can be known? (the epistemological question)
- How can the researcher go about finding out whatever they believe can be known? (the methodological question).

Based on the description of the three presented paradigms, the following table shows a basic comparison of the focus of each paradigm and associated goals, focus and research methods:
<table>
<thead>
<tr>
<th>Question</th>
<th>Research Paradigms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontological question</strong></td>
<td></td>
</tr>
<tr>
<td>What is the form and nature of reality?</td>
<td></td>
</tr>
<tr>
<td>Positivism</td>
<td>Interpretivism</td>
</tr>
<tr>
<td>An objective, true reality exists which is governed by unchangeable natural cause-effect laws, that science can mirror with knowledge</td>
<td>The world is complex and dynamic, based on social construction of reality. Subjective reality is important, as each individual can have different view of the world.</td>
</tr>
<tr>
<td><strong>Epistemological question</strong></td>
<td></td>
</tr>
<tr>
<td>What is the basic belief about knowledge - what can be known</td>
<td>Knowledge consists of verified hypotheses that can be treated as facts or laws. Knowledge is accurate and can be described in systematic way.</td>
</tr>
<tr>
<td><strong>Methodological question</strong></td>
<td></td>
</tr>
<tr>
<td>How can the researcher go about finding out whatever they believe can be known?</td>
<td>Surveys</td>
</tr>
<tr>
<td>Experiments</td>
<td>Interviews</td>
</tr>
<tr>
<td>Verification of hypotheses</td>
<td>Grounded theory development</td>
</tr>
<tr>
<td>Statistical analysis</td>
<td>Case studies</td>
</tr>
<tr>
<td>Quantitative descriptive studies</td>
<td>Conversational analysis and textual analysis</td>
</tr>
<tr>
<td></td>
<td>Expansion analysis</td>
</tr>
<tr>
<td></td>
<td>Field research</td>
</tr>
<tr>
<td></td>
<td>Historical analysis Dialectical analysis</td>
</tr>
<tr>
<td></td>
<td>Deconstruction</td>
</tr>
<tr>
<td></td>
<td>Textual analysis</td>
</tr>
</tbody>
</table>

Table 3 - Research Paradigms Summary
The objectives of this study are to analyse and interpret an example of a large, strategic project, to help answer the outlined research questions. Based on the above comparison and description of the major paradigms, it was decided that the chosen paradigm for this research will be interpretivism. The following table shows a brief justification of this decision, comparing the main characteristics of the chosen paradigm and associated elements of this study:

<table>
<thead>
<tr>
<th>Interpretivist Paradigm</th>
<th>This Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective reality is important, as each individual can have a different view of the world.</td>
<td>The reality of each project participant’s experience is their own and together they can help reconstruct the elements related to decision making on the analysed project</td>
</tr>
<tr>
<td>This paradigm focuses on observation and analysis of participants experiences</td>
<td>The researcher’s own observations of the project and participants responses during interviews</td>
</tr>
<tr>
<td>Focus on human understanding of reality, their actions and surroundings</td>
<td>The focus of this study is on participant’s impression of the analysed project and other projects conducted within their organisational surroundings</td>
</tr>
<tr>
<td>This paradigm seeks to understand the world and evaluate elements that create reality</td>
<td>This study aims to understand the dynamics of projects and associated decision makings with projects that create long-term impacts on organisations.</td>
</tr>
</tbody>
</table>

Table 4 –Interpretivist Paradigm Framework and The Study

3.2.4 Creation of Research Strategy

With the initial literature review completed, and the appropriate research paradigm chosen, it was time to create an appropriate research strategy, which would outline the entire research process and associated steps.

As a first task, a high-level research strategy was developed, outlining the approach towards the research process, methods for data collection, analysis and presentation.

There are many ways to go about creating a research strategy. According to Yin (2002), the following conditions are required in order to choose the appropriate research strategy:

- The type of research question
- The control an investigator has over the actinal behavioural events
The focus on contemporary, as proposed to historical events

This study heavily depends on the qualitative data, based on the participants’ view of projects and associated elements within their organisations. The researcher has very little control over the responses given by the participants and each participant can give their own impression of the situation and associated factors that create their reality. The focus is on contemporary issues (projects and their influence on organisations), with the reflection on past actions.

Qualitative research methods such as the case study are based on real-world settings, without the influence of the researcher and deal with in-depth investigation of an event or phenomena. (Tellis 1997) The case study method is in line with the goals and approach of this study. So, it was decided that the main body of this research would be based on a case study of a major project – aiming at analysing the elements that influence project management decisions that might have influence on long-term impacts on organisations.

The case study will concentrate on covering a major project within the Australian financial industry, with an aim to demonstrate a real-life example of a typical situation where a research problem is evident.

As part of this step in the research process, a high-level structure of the thesis document is also developed, outlining the elements that will be presented as part of this research.

While the case study was to remain the main focus of the research, it was also decided to extend the findings using a survey, where some of the main findings from the case study would be explored with a sample outside the organisation covered by the case study. This survey was also conducted to look at future research opportunities, namely the application of findings outside the environment of the case study.

This research strategy creation step also covers compliance with the ethical and procedural elements outlined for doctoral studies at UTS, approved by HREC\(^6\). It includes identification and processing of required approvals and consents that will ensure ethical validity of the research. HREC requirements were followed: anonymity of each

\(^6\) HREC – Human Research Ethics Committee
respondent was kept and prior consent was obtain before interviews. Each participant had an option to opt out at any time and discontinue participating in the research.

During the research, a regular ethics progress report was submitted, in line with the conditions of HREC approval for this study.

### 3.2.5 Selection of research environment, research data, collection and analysis methods

This step further expands on the earlier developed high-level research strategy, specifying the research environment, research data, as well as the data collection and analysis methods.

Decisions are made around the case study topic, survey approach and required research participants. Based on consent and communication with the participants, a timeframe is established for data collection and analysis.

It was decided that the main research environment would revolve around the organisation where the case study was conducted. This was mainly motivated by the researcher’s own experience, ease to access data and a desire to improve the projects process within the chosen organisation.

Once the research environment and the case study topic were decided, the next step in the process was to establish the data expected to be collected, as well as the collection and analysis methods.

The selected research data covered mainly qualitative and some quantitative data, directly related to the case study, as well as the organisational environment, related project and IT processes. The quantitative data was provided through the survey, as well as through the documentation and interviewee responses.

In line with the chosen research paradigm and case study method, it was decided that the main collection methods would be interviews, observation and documentation examination, supported by a literature review and a mini-questionnaire survey.

It was decided that the main analysis method for the collected data would be qualitative
analysis, supported by quantitative elements (related mainly to project figures and survey analysis).

### 3.2.6 Research sample formulation

This research step covers the development of a criteria that will help select an appropriate project for the case study.

Based on the research problem and the selected research environment (the Australian financial industry), the derived criteria for the selection of a case study project has been determined as:

- A project that was classified as successful by the organisation where the project was executed and has strategic importance for the organisation.
- A long-term project, involving multi-team activity, preferably including external assistance such as outsourcing or consulting
- Project with clear application of the existing project methodology within the Company
- Project involving a business-critical function that required changes to business processes as part of project scope

Based on the above selection criteria, various projects were examined and one was selected to be the main focus of the case study for this research.

In addition to the case study selection, the decision was also made about the targeted participants for the survey. The survey was to extend the case study findings into a wider sample of individuals (>100) not associated with the case study. The survey sample targeted IT professionals with project experience, who would be asked to comment on some of the case study findings. One of the appropriate methods to access such a research sample was to utilise one of the Australian professional project management association members, and the researcher’s own professional network as vehicles for survey distribution and data collection.
3.2.7 Case study

This step in the research process covers planning, preparation and execution of the actions required for the case study. These include development of interview questions, organisation of interviews, data collection and analysis.

The case study is the major element of this research. Through the analysis of collected data, relevant links are established between the case study results, research question and statements. The design of the case study is addressed in more detail later in this document.

The entire case study is explained and discussed in Chapter 4.

3.2.8 Survey

This step covers planning, preparation, data collection and analysis of the survey.

The questions covered in the survey are largely related to the key elements of the case study, further extending the findings from the case study. The survey utilised in this research does not represent the mandatory element for validation of the research question and findings. It was merely an additional tool to help briefly take the findings of the case study outside the main research environment and to seek additional comments from a small sample of respondents who did not participate in the case study.

The secondary goal of the use of this mini-survey was to open the door for the future research on the same topic, where the main findings would be further extended into a large research sample – namely other financial institutions and even further – organisations within industries other than finance – wherever IT projects are managed and similar problems are encountered.

The results from the survey are discussed in Chapter 5.

3.2.9 Data analysis

This steps concentrates on the overall analysis of the data collected through the case study and survey.

Data analysis is performed in line with the research strategy and validated against the
research question and statements.

Data analysis is covered in more detail later in this chapter.

### 3.2.10 Recording of findings, suggestions and conclusions

The final step in the research process is the recoding of the data analysis findings and suggestions, which are presented through the thesis document.

The findings, suggestions and conclusions are included throughout this document, with the main summary in the final chapter (#6).

The research process is now described in more detail:
3.3 Research Environment

This research was designed to be conducted within the Australian financial industry, covering companies that match the following criteria:

- Well-established financial institution, with diversity of products and services
- Internal project and IT development activity with established processes
- Internal IT infrastructure of a significant size, constantly changing
- Important industry players
- Core services clearly identifiable

This criteria can easily be fulfilled by large banks, insurance companies, brokers and financial market providers in Australia.

The research occasionally refers to the global financial industry and international experiences, but the actual research and data collection and analysis is concentrated solely on the Australian financial industry.

Even though this research concentrates on the Australian financial environment, the findings could be useful for to other industries and environments where IT projects could create impacts on the existing IT infrastructure. While the application of findings outside the financial industry is not the subject of this research, it is felt that further research could be carried out in other industries.
3.4 Research Data Identification

Based on the initial review of the research topic and associated patterns with IT projects, the following key data was identified as useful to the study:

- Project details, such as costs, technical solutions, impact on IT infrastructure, success factors
- Existing project management methodology and related processes
- Ongoing maintenance costs and impact on people associated with the existing infrastructure
- Changes in IT team structure resulting from projects
- Changes in the ongoing maintenance costs for the existing systems
- Strategic plans and their link with project management process
- Changes to strategic planning and project management practices over years, as a result of industrial trends
- Any significant changes in processes, practices, people’s behaviour, business and IT infrastructure
- Data about project activity in recent years and plans for the future

The data elements expected to be collected throughout the research are not limited by the above description, however they form the basis for research planning and design.

The research data is collected using various techniques covering both quantitative and qualitative research approaches. The specific data collection methods used were observation, interviews, document examination and survey.

It is important to note that, while the data collection is mainly related to the case study and survey questions, the reviewed literature was also used in the data analysis.
3.5 Research Data Sources

The following three main sources of data have been identified for this research:

- The main data collected for the case study - originating from the organisation where the selected project was executed
- Supporting data collected via a mini-survey – covering a diverse number of respondents from the Australian IT and project management community
- Relevant references from the literature

The following table outlines in more detail the data, source and purpose:

<table>
<thead>
<tr>
<th>Data Description</th>
<th>Data Source</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business plans and business strategy</td>
<td>Strategic office of the Company</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Project data (plans, analysis details, test results, design, implementation)</td>
<td>Project managers</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Project data (costs, budget, etc)</td>
<td>Project managers</td>
<td>Input for quantitative analysis</td>
</tr>
<tr>
<td>IT strategy documents</td>
<td>IT managers</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Change management data (costs and implementation stats)</td>
<td>Development managers</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Feedback on projects</td>
<td>Project staff</td>
<td>Input for qualitative analysis</td>
</tr>
<tr>
<td>Feedback on SDLC</td>
<td>Development/support staff</td>
<td>Input for qualitative analysis</td>
</tr>
<tr>
<td>Feedback on project effectiveness and costs</td>
<td>Financial services office</td>
<td>Input for quantitative analysis</td>
</tr>
<tr>
<td>Feedback on IT strategy</td>
<td>IT staff and managers Business units</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Feedback on business strategy</td>
<td>IT staff and managers Business units</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Feedback on IT environment, management style, IT SDLC and adopted project methodology.</td>
<td>IT staff and managers Business units</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Ideas for improvement</td>
<td>IT staff and managers Business units</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Industrial facts and sector-related information</td>
<td>Various publications</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Latest developments and trends in IT</td>
<td>Various publications</td>
<td>Input for qualitative and quantitative analysis</td>
</tr>
<tr>
<td>Survey analysis results</td>
<td>Survey (IT and business professionals outside the organisation)</td>
<td>Quantitative data</td>
</tr>
</tbody>
</table>

Table 5 - Detailed Summary Of Data And Data Sources
3.6 Case Study Approach

The case study concentrates on a major project within the chosen organisation that was used to study the research problem.

As stated by Yin (2002), the case study research method is appropriate for examining contemporary events where relevant behaviours cannot be manipulated and where it is possible to conduct interviews with participants and to perform a certain level of observation.

To help organise collected data into elements that can be easily analysed, the case study was conducted in line with the software development lifecycle (SDLC), evolving through the following stages:

- Initiation
- Planning
- Business Analysis
- System Analysis & Design
- Build
- Integration
- Acceptance
- Deployment
- Closure

Since this research concentrates on patterns that are applicable to projects, it is appropriate to utilise the case study method to examine one such project in detail and to analyse factors relevant to the research question.

While reservations might exist with any case study such as limitations for scientific generalisation and the amount of data resulting from a large case study analysis (Yin 2002), the goal of this research is best reached by an in-depth analysis of a project that represents a pattern of applied project management within the observed organisation and industry (in this case an Australian financial organisation).
The case study in this research works on the assumption that the analysed project represents the methods and practices applied to other projects within the observed organisation and industry, therefore addressing the issue of scientific generalisation. This assumption is tested and confirmed through the case study interviews.

Case study findings are also additionally extended through survey questions to further validate it with IT professionals from other organisations (the respondents in the survey sample were predominantly with a banking and finance background). Although the survey sample does not provide nearly enough diversity required to fully generalise the research findings on a wider environment – it still gives a hint of the applicability of some research findings outside the primary research environment. Further generalisation and applicability to other industries and environments would need to be tested on a larger, more diverse sample of participants.

In terms of the concerns related to the large amount of data resulting from a case study (especially traditionally lengthy narratives), this is be addressed by presenting only relevant, summarised data resulting from the interviews and observations, linking them to research questions and statements.
3.7 Data Collection Methods

The research mainly makes use of non-numerical, qualitative data for research analysis. Also, where applicable, numerical data is used to support and complement findings resulting from qualitative data analysis.

(Yin 2002) recommends the following sources of evidence when collecting data for case study:

- Documents
- Archival records
- Interviews
- Direct observation
- Participant-observation
- Physical artefacts

While there is value in all recommended sources of evidence, physical artefacts and participant-observation, these are secondary to the interview data collected in the case study.

Documents include project documents, such as meeting minutes, budget details, team correspondence, issues list, project plans and schedules.

Archival records cover project documentation, as well as information on past and current processes and procedures relevant to the case study.

Interviews are the main source of information, focused on specific questions and respondents’ observations and experience.

The researcher’s own observations (although often subjective) are a valuable tool in data collection, as the researcher is responsible for keeping the focus around the research question and establishing patterns relevant to the study objectives.
The main methods used for data collection (both quantitative and qualitative) in this study are:

- Interviews
- Observation
- Documentation examination

The following supporting methods are used to help with preparation for the use of main methods in this study:

- Literature review
- Survey

Each of the methods used is further described in more detail.

### 3.7.1 Interviews

Interviews were conducted with individuals who have in-depth knowledge and can provide valuable data about the project. Subjects that are invited for interviews are the main participants involved in project and IT management and execution process, such as: project managers, IT development managers, system developers, business analysis and strategists. A diverse sample was selected to represent multiple perspectives.

The interviews provide the most valuable set of data for case study - each interviewee can present an unique perspective about the project and highlight important elements that might not have been initially thought of.

Follow-up interviews are also a valuable tool for data collection, as due to a limited first set of information available to the interviewer at the time, some subjects might not be prompted at the first interviews to discuss important matters that they can strongly contribute to. So, it is useful practice to organise additional, follow-up or clarification interviews with some subjects. In this research, only one follow-up interview was conducted (with the Deputy Project Manager), to further clarify some of the answers related to financial elements of the project.
Before each interview, a set of main questions was prepared and made available to interviewees, to assist with preparation. Prior to questions being sent, a separate consent was sought from each participant, covering elements related to confidentiality, description and the goals of the research. The interviews were organised in line with the prepared questions for the role of each interviewee. The interviews were flexible with regards to dynamics, order of questions and the length of answers in order to collect high-quality data and enable the respondents to express their views in the way they were most comfortable and cooperative. Still, a strong focus was maintained between the questions to ensure all planned questions were answered and recorded.

A combination of closed and open questions was used, depending on the aspect of interview and the type of data expected to be collected. This was to encourage discussions around other relevant areas that might not be fully covered with the prepared questions.

Interview notes are much more valuable if audio recording is also available. But, some subjects do not like their interview to be audio-recorded, therefore their consent was required, as well as an accepted level of comfort with this method of recording. Out of 23 interviewees, only five agreed to have their conversations audio recorded. Some of the notes taken during those interviews without audio recordings were verified with the interviewees in the follow-up interviews.

Although, each interview evolve around the main questions prepared in advance, the interview dynamics can sometimes go in a totally different direction, depending on responses and sub-questions initiated by previous answers. This also means that some of the questions might have been answered together in one response. At the same time, some questions can become irrelevant throughout the discussion and therefore not asked so as not to waste the time of the participant.

It is important to keep up good dynamics of interview flow, to ensure full alertness of the
interviewed subjects and quality data collection, so good preparation by both the interviewer and the interviewee is essential, as well as the readiness for any follow-up and clarification interview. That is, the advance notice of the interview time, together with the list of questions helps prepare a more effective interview.

While the case study revolves around the SDLC stages, the interview questions were grouped around each of project management areas and topics related to project success and alignment with strategy. This is to assist with data analysis and grouping of responses in line with the coding outline for the case study analysis.

The following are the groupings of interview questions:

- Organisational Planning
- Performance Reporting
- Procurement, Solicitation, Source Selection, Contract Administration
- Project Initiation
- Project Plan Development
- Project Plan Execution
- Project Success
- Quality Planning, Assurance, Control
- Resource Planning
- Risk Identification, Qualification, Mitigation, Control
- Scope Planning, Definition, Verification, Change Control
- Staff Acquisition
- Team Development

The interviews were conducted in the following manner:

- Short interviews – interviewees with participants of limited project responsibility, covering basic interview questions (for example: lawyer, senior business manager, tester)
- In-depth interviews – interviewees with participants with major project responsibility, covering a wider range of question areas (example: project
manager, IT manager, team member)

- Follow-up interviews – interviewees able to assist with additional questions and those requiring clarification.

There were 107 questions in total. Some questions were applicable to all interviewees, some were specific to the role the interviewees played in the Project. The details of the interviewees roles and the associated interview questions are presented in the Appendix 3.

In total, 23 people were interviewed for the case study. The following table shows the details about the project role (interviewee’s position within organisation) and number of interviewees for each role:

<table>
<thead>
<tr>
<th>Position on Project</th>
<th>Number of People Interviewed</th>
<th>Interviewee Code</th>
<th>Direct Participant/ Impacted Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA Manager</td>
<td>1</td>
<td>BAM</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Business Manager</td>
<td>1</td>
<td>BM</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Business users</td>
<td>3</td>
<td>BU</td>
<td>Direct participant (1) Impacted party (2)</td>
</tr>
<tr>
<td>Corporate Lawyer</td>
<td>1</td>
<td>CL</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Deputy Project Manager</td>
<td>1</td>
<td>DPM</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Developer/team members</td>
<td>4</td>
<td>TM</td>
<td>Direct participant (2) Impacted party (2)</td>
</tr>
<tr>
<td>Development Manager</td>
<td>1</td>
<td>DM</td>
<td>Direct participant</td>
</tr>
<tr>
<td>IT managers</td>
<td>2</td>
<td>ITM</td>
<td>Impacted party (2)</td>
</tr>
<tr>
<td>Project Manager</td>
<td>1</td>
<td>PM</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Senior Business Analyst</td>
<td>1</td>
<td>SBA</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Senior Business Managers</td>
<td>2</td>
<td>SBM</td>
<td>Direct participant (1) – the Project Sponsor Impacted party (1)</td>
</tr>
<tr>
<td>Senior IT managers</td>
<td>2</td>
<td>SITM</td>
<td>Direct participant (1) – the Project Owner Impacted party (1)</td>
</tr>
<tr>
<td>Test Manager</td>
<td>1</td>
<td>TMG</td>
<td>Direct participant</td>
</tr>
<tr>
<td>Test Analysts</td>
<td>2</td>
<td>TA</td>
<td>Direct participant</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>23</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 - Interview Details
Although the primary data for the case study was sourced from the interviews conducted with the direct project participants, some of the interviewees were impacted parties with the roles relevant to the overall organisational processes assessment and the impact caused by the case study project.

One of the interviewed Senior Business Managers also acted as the Project Sponsor, while one of the interviewed Senior IT Managers acted as the Project Owner. The views of the Project Owner and the Project Sponsor cover both their operational roles on the roles they played on the project.

The project did not have a Program Manager.

### 3.7.2 Questionnaire surveys

Ticehurst (1999) defines questionnaire surveys as gathering of information from individuals using a formally designed schedule of questions. According to this author, the form can be called a questionnaire or interview schedule.

The questionnaire survey used for this research is designed in such a way that it can extend the preliminary research results onto a wider group of participants, to gather opinions from a larger sample of the project management and industry population.

It is important to note that this survey is conducted only on a small sample of data, which is aimed at testing the application of the research findings outside the immediate research environment. The research paradigm remains within the framework of the interpretivism, while using the mixed research methods that include quantitative data collected via survey.

This particular survey was conducted through the Australian Institute of Project Management (AIPM) network and this researcher’s professional networks within the Australian finance and IT industry. The AIPM has worked towards progressing the profession of project management in Australia since 1976 and has over 8,500 members, covering IT and project management professionals across various industries, many of whom are certified project management professionals.
The mini-survey for this research was published on the AIPM website (www.aipm.com.au) and made available to all members. The link to the survey was also sent (via e-mail) to the researcher’s colleagues with project management and IT experience.

Survey questions are uniform across all participants, so it is important to structure them in such a way that offered answers can satisfy the most of possible responses, while successfully identifying the background of the participant and other details relevant to data analysis. The survey attracted 123 valid responses, which covered a range of IT professionals across various organisations. While most of the respondents have financial industry background, some were also representing other industries, working in various roles within their organisations.

The survey consisted of 46 questions, grouped under the following logical parts:

- Questions about the respondents
- Questions about respondents’ organisations
- Questions about projects

The aim of this survey was to further extend the findings from the case study and briefly “test the water” outside the primary research environment (the case study organisation) and to gain some insight into the possible applicability of the research findings on a wider industry environment. The use of survey does not introduce the positivism research approach into this study – the survey is used as a supportive research method under the interpretive research paradigm (Yin 2000).

While the findings of this mini-survey are at best limited, it could help start the process of further research into the applicability of findings to other environments.

The survey questions were designed around the research goals, assumptions and case study findings.
The survey design process covered the following steps as outlined by (Bradburn, Norman 2004):

- Decision about the required information
- Definition of the target respondents
- Definition of the method for reaching the respondents
- Decision on the content of questions
- Development of questions
- Meaningful ordering and ordering of questions
- Checking and adjusting the size of the questionnaire
- Pre-testing the questionnaire
- Development of the final survey form
- Survey distribution
- Data collection
- Data analysis

3.7.2.1 Decision about the required information

The first step in questionnaire design was to decide on the elements required to be collected from respondents, the areas of questions that needed to be answered. The information for this step came from the research question and the case study interviews and findings.

3.7.2.2 Definition of the target respondents

Once the main goals of the questionnaire and the main question groupings were decided, it was time to decide on target respondents. Various options were considered:

1. Specific respondents within targeted organisations or industry
2. Industry-wide survey
3. Available respondents within one organisation
4. Non-associated online open survey
5. Researcher’s network survey, consisting of project managers and IT professionals
6. Association network of IT/project manager professionals

Option #1 was considered to be time-consuming, as respondents would need to be contacted directly and evaluated individually in order to qualify for participation. Since this survey was to be a mini-exercise that would complement the main focus of this research – the case study, it was decided that the option #1 would be excessive use of efforts and preparation for the purpose of this survey.

Similarly, option #2 was characterised as potentially valuable, but equally excessive as the option #1, so it was discounted.

Option #3 was not seriously considered, since it would not achieve the goal to provide insight into application and generalisation of the case study findings – to reach beyond one organisation.

Option #4 could potentially attract too many respondents, especially those unqualified to provide answers. Open surveys carry a risk of invalidated results due to unreliable respondents, or an inability to establish the real truthfulness behind the responses.

The chosen method was a combination of the options #5 and #6. The primary reason for this decision was based on the reasonable certainty that the researcher’s network and a formal professional association would reach qualified respondents with positive motivation to provide truthful answers and effectively participate in the survey. Another reason for this choice was the relatively minimal effort required to locate and reach potential respondents.

3.7.2.3 Definition of the method for reaching the respondents

Once the target research sample was defined, the next step was to decide on the most effective way to reach the respondents.

It was decided to use one of the available tools for survey creation and distribution. The link to the online survey was sent via e-mail and respondents were able to access the survey at their convenience, as well as to navigate through the survey with ease. Online surveys were expected to be more inviting than a paper-based questionnaire.
A software tool for survey creation was highly helpful, as it provided an automated facility for convenient creation and distribution of the survey, as well as for the collection of responses.

### 3.7.2.4 Decision on the content of questions

The identified information expected to be collected via survey was grouped into separate larger groups, then divided into smaller, based on high-level topics, subtopics and low-level responses.

The question creation evolved around case study interview question groupings, as well as the main research question formulation. This helped with the logical grouping, as well as the development of low-level questions.

### 3.7.2.5 Development of questions

Before low-level questions were developed, the type of questions/answers needed to be chosen.

It was decided that closed questions were the most appropriate, since the survey was to be used for verification of some case study findings and research questions. However an option for open-ended contribution was also given for some questions, as well as an opportunity to give further information or comments at the end of the survey.

The following are basic types of closed-ended questions: Multiple-choice, Categorical, Likert-scale, Numerical, and Ordinal. All but Ordinal type questions were used in this questionnaire.

### 3.7.2.6 Meaningful ordering and ordering of questions

Three elements were considered when ordering survey questions: the opening, flow and variety.

The opening is meant to be non-threatening, set around the respondents background, covering age, role, organisation and experience.
The question flow followed the logic of the case study and research questions, so that can be easily linked with the case study elements.

A variety of types of questions and topics was presented, to keep respondents motivated to finalise the survey.

3.7.2.7 Checking and adjusting the size of the questionnaire

Initially, there were many more questions than in the final questionnaire, which prompted the reduction of the size of the questionnaire. This was due to some questions overlapping or repeating, which made some questions unnecessary.

The automated survey tool made the questionnaire presentable and easy to use, which allowed for flexibility and easy modification of the layout and content.

3.7.2.8 Pre-testing the questionnaire

The survey was disseminated to five test respondents (the participants in the case study) and their feedback was incorporated in the final version of the questionnaire. The majority of feedback was related to relevance of some questions, specifically the role of respondents, since this was a strong element in their responses in the case study. This pilot feedback was highly valuable to the finalisation of the questionnaire.

3.7.2.9 Development of the final survey form

The final changes of the survey form were quite simple, since the entire process was automated. The questions were easily modified and the final questionnaire was ready for distribution.

3.7.2.10 Survey distribution

The link to the survey form was published through the AIPM website and was made available for the duration of four months. Also, the link to the survey was distributed to over 50 IT professionals that in researcher’s option could provide valuable contribution to the research.
3.7.2.11 Data collection

Data was collected and stored automatically and then transferred to CSV format for analysis.

3.7.2.12 Data analysis

The data analysis was performed using the SPSS tool, which provided convenient methods to evaluate and present the data collected via the questionnaire.

3.7.3 Observations

The researcher’s observations resulting from personal experiences with subject matter are a powerful tool for data collection. However, it requires a great deal of discipline and objectivity (Bouma, 2000).

Where practicable, the researcher becomes part of the research environment and able to observe various elements and happenings that could produce data valuable to research.

However, this sometimes can impact the objectivity of research, as participating in the research environment can influence a researcher’s point of view and impact collection of data and value of research.

It is important to ensure that observation does not become participation. The researcher’s personal observation can be highly valuable to preparation of interview questions and selection of interviewees, as well as with the conduction of interviews and selection of documentation data. One of the methods to stay objective is to use recording devices and take notes, rather than offer opinion to interview questions or get involved in discussions with the interviewees.

The researcher’s own experience is often one of the main drivers for research in the first place. So, if the data resulting from that observation is planned to be collected, a high degree of objectivity is required to ensure that data is not influenced by personal views,
feelings and possible bias towards the subject matter and related elements within the research environment.

Personal preferences will sometimes influence choices of what to view, what to record, what to collect, so it is important to stay objective and focused (Yin 2002).

In this study, researcher’s observation, together with the survey and documentation examination is used as a valuable supporting tool to the main method utilised for data collection – interviews.

### 3.7.4 Documentation examination

Documentation examination was used as a supporting tool for effective preparation of the main data collection methods.

While this tool can be highly informative and valuable in the research process, it can also cause biased selectivity relying on author’s views and limited available documentation (Yin 2002).

The documentation examination for this research was utilised for validation of data collected via interviews and observations, as well as verification of current processes and chronological flow of the project that is being analysed through the case study.

On of the important assumptions prior to the data collection taking place is that project and SDLC (systems development life cycle) documentation is available to the researcher as a valuable data source. When examining documentation, it is important that data sources used for collection are pre-sorted and classified, so that data resulting from documentation is accurate, clear and valuable for further analysis.

The data collected via document examination can be used for both qualitative and quantitative analysis.
Qualitative data was sourced from documents such as post implementation reviews (PIR), meeting minutes and actions, official and unofficial correspondence material. Quantitative data was drawn from project budget details, annual budgets and financial statements, as well as financial details from PIRs, Change Management figures for implementation and post-implementation periods and ongoing systems maintenance cost details.

Data collected via documentation examination was valuable in interviews when validating various facts related to costs, timing and issues. Having access to documentation, helped increase quality and validity of both quantitative and qualitative data collected in the process, as the documentation was used as evidence supporting various responses resulting from interviews.

The list of the organisational documents reviewed through this research are included in the references. Some of the documents are of a confidential nature and their original names and authors were not disclosed in this document.

### 3.7.5 Literature Review

The literature review, especially review of current publications related to industry trends that have impact on the subject of the research was one of the main sources of supporting data.

As the overall research process takes years, a regular literature review was also used as a sounding board for the testing of primary data and as a supporting tool for the new ideas that might result from the analysis of both primary and secondary data.

Various authors put strong emphasis on the literature review. Ticehurst (1999) emphasises various roles the literature review could have for different types of data collected.

Some of those roles apply strongly to this research, such as:
• Source of comparison, where findings from previous related studies are compared with those relevant to current study

• Integral and supportive part of research, complementing primary newly collected data and use of published industry details

In addition to the roles outlined by Ticehurst (1999), this research also utilises available literature to support the findings.
3.8 Data Analysis Methods

This research mainly concentrates on the analysis of qualitative data, but quantitative data represents an essential part of the analysis that supports and validates qualitative findings, suggestion and conclusions.

It is important to emphasise that data analysis process does not start after all data is collected. Instead, data analysis is a continuous iterative process that goes simultaneously with data collection, providing new requirements for further data gathering, rather than just happening at the end of the research process. In particular, with the analysis of qualitative data, it is recommended to perform it simultaneously with data collection, data interpretation and narrative reporting writing.

With the analysis of quantitative data it is easier to distinguish different stages for collection, analysis and results recording than it is with qualitative data analysis. However, quantitative data analysis usually requires further data collection, so this process is also iterative.

Before any analysis is conducted on collected data, it is necessary to organise data in an effective way, to maximise its use and validity. The analysis is performed on qualitative and quantitative types of data and results are combined to acquire an accurate picture of the research results, which are later compiled into findings and conclusions.

3.8.1 Qualitative Analysis

There are a many different approaches that can be used for qualitative data analysis. Some of them are (Yin 2002):

- Interpretational analysis – examination of data for patterns, schemes and constructs that can be used to describe and explain the researched topic.
- Structural analysis – this refers to the examination of structure only, with little or no emphasis on the meaning of each part of the structure.
- Reflective analysis – primary use of intuition and judgment to portray and explain
the research subject.

- Constant comparative method – continues comparison of new data and new findings with previously obtained data to examine patterns, changes and developments.

- Phenomenological analysis – concentrates more on the description and meanings of themes, patterns and events than on the structure.

- Coding method (open, axial, selective coding) – open coding is the process of conceptualising, comparing and categorizing of data: axial coding puts data back together in new ways after open coding by making links between the categories, while selective coding identifies key categories and then links them with others by defining relationships and dependencies between the data.

The above approaches, although seeming quite different in style, still overlap each other.

The case study covered in this research largely relies on interpretational analysis techniques, namely pattern matching and explanation building.

As qualitative data usually has huge volume, it is necessary to first reduce the amount of data by sorting it to patterns, categories and themes. Since this case study follows a project through its lifecycle, the main categorisation applied to the analysis of the case study data is presented around project lifecycle stages.

In addition to the lifecycle classification, an additional coding element is added to the collected data. All interview questions are organised around main areas of research and grouped for the role of each interviewee. The mapping of interview questions correlate to the main project management principles that are used as a basis for the case study analysis. This classification pre-work enables easier organisation of data after collection.

This way, a two-dimensional data referencing is achieved, allowing easier pattern recognition across the available data. The data is further generalised and simplified to ensure easier pattern matching and recognition of aligned responses.
The main dimension is the project lifecycle steps, which are used for the interpretation and presentation of the case study in the analysis section.

The second dimension (roles and responsibilities) provided information required to assess the possible reason behind the respondents’ views in terms of associated responsibilities for effective management of the unforeseen long-term impacts created by projects.

At the high-level, the case study data is mapped using the following elements:

- SDLC lifecycle to describe the project throughout the case study
- Interview questions grouping across project stages
- Respondents’ roles
- Supporting elements: documents, observations findings and related processes within the organisation

The analysis process is presented in the following figure:
Figure 22 – Case Study Analysis Process
The analysis starts by collecting and analysing the initial input information: interview responses and observation data. There is a large amount of data available at this stage, which requires grouping, cleansing and sorting.

After the data is categorised into predefined groups (as per interview question groupings), preliminary analysis is performed, where data is reviewed in more detail, by recognizing patterns and identifying the links between the research objectives and results provided by data. Patterns and results from the preliminary analysis are compared to the predictions and expected results outlined in the objectives of the study.

The interview data is organised into the following high level groups (with further lower-level classification):

- Project success
- Project goals alignment with organisational strategy
- Initiation
- Planning
- Development
- Staff management
- Executing
- Controlling and monitoring
- Closing

Within each interview data group, responses are analysed and divided in patterns. The data is then examined and simplified into a consolidated interview spreadsheet (example in the Appendix, P. 433). The purpose of this consolidation is to identify any matching answers that can be coded as similar. This enables the researcher to identify any patterns emerging in terms of agreements or disagreements among the interview group on any questions or questions groupings. The categorisation of collected qualitative data helps identify emerging patterns that are expected to help answer the research question and to indicate what additional material is required to further support it. The collected responses
to interview questions relate to the wider applications of experiences, which help establish patterns.

The basis for qualitative analysis is to generalise and classify data that can be aggregated across the group of participants or the entire population. Analysis of such an aggregated form of data is much easier and has more “weight” as it is a representation of a larger group of people, rather than that of an individual (Yin 2002).

Independent to the interview data preparation, supporting information is collected and analysed. This mainly relates to the case study environment (the organisation), covering relevant processes (project, strategy and IT development), project and other organisational documentation, as well as to any observations related to interviews, project processes or the environment.

Each question grouping is carefully examined for all 23 interviewees and relevant notes are made of any patterns emerging around specific questions or areas of concern.

Each question grouping is then further examined and detailed notes are made in relation to both the question groupings and the relevant SDLC steps:

- Initiation
- Planning
- Analysis (Business and Technical)
- System Analysis And Design
- Build (Technical Development)
- Integration
- Acceptance
- Deployment
- Closure

With all information examined and individually analysed, the analysis proceeds to the next step: project lifecycle analysis, which is the main body of the written description of
the case study in this document. For each SDLC step there is mapping from both the supporting data and the interview responses, which provides cross-referenced data for case study findings.

It is common that preliminary analysis prompts more data collection or for further categorization. If there are any inconsistencies between the data across different categories, it might be necessary to go back to the research and repeat the data collection until all issues are explained.

Any findings resulting from qualitative analysis are, where possible, combined with quantitative analysis of related numerical data, especially data from project documents.

### 3.8.2 Quantitative Analysis

One of the underlying goals of this research is to contribute to the overall cost reduction for organisations that have strong IT project activity, so quantitative analysis methods are very useful.

The quantitative data covered with this research is mainly related to the following areas:

- Data related to costs, expenditure and ongoing systems maintenance
- Data resulting from closed and rating questions in interviews, related to the level of satisfaction with various events, perception about the overall strategy and project process.
- Data related to the financial industry and IT trends
- Limited data collected through a mini-survey

#### 3.8.2.1 Survey analysis

For this study, SPSS tool was used to analyse and present survey results. Survey analysis can use various software tools (Ticehurst 1999), that can help record and evaluate survey results. Other tools that can be used are Microsoft Office products, such as Excel and
Word, as well as online survey tools that have become recently available to researchers. In this research only descriptive statistics are used with the survey.

Regardless of which software tool is used for analysis, the final results are combined with the results from the qualitative analysis.

Since the case study was conducted on one project, having the opportunity to validate findings and their application on a larger number of other projects through experience of the survey participants, provides additional value to the research process.

The survey questions were based on the main research questions and case study findings. They were designed to further examine some of the case study findings on a small sample of respondents who were not involved with the case study, hoping to extend the main research findings outside the main research environment.

The survey analysis was performed as an additional exercise to complement the case study findings and to provide additional quantitative dimension to the qualitative nature of the case study research.

There are clear limitations with the value provided from a small sample of survey respondents, however it opens the door for further research into the applicability of the same research findings on other projects, organisations and industries.

The survey data was first defined and classified as one or more of the following:

- nominal (distinguished by name)
- ordinal (assigned order of sequence)
- interval (measured in terms of difference in standard units)
- ratio data (defined as multiplication/portion of other data).

Once data was classified, it was then displayed in a suitable way, for example: bar graphs, histograms, tables, frequency polygons, cumulative frequency and cumulative percentage.
The survey analysis conducted for this research was performed at very basic level and its value to the research is limited by the sample size, industry coverage and the level of relevance of the survey questions (since they are based on the case study findings).

The purpose of the survey analysis in this study is to provide supporting elements for the overall qualitative analysis conducted through the case study. As previously stated, the main purpose of the quantitative analysis with this study is to support, test, prove or deny the statements and findings that resulted from the overall research process and were expressed primarily through qualitative analysis.
3.9 Research Methodology Justification Summary

The research question is related to projects and their influence on organisations, especially with associated costs, strategy alignment and overall effective management of the organisation. The described problem that is behind the research question is related to organisational behaviour, project management practices and the dynamics of effective project, strategic and people management.

According to Yin (2002), case studies can be single or multiple-case designs, where a multiple design must follow a replication rather than sampling logic. The generalization of results, from either single or multiple designs, is made to theory and not to populations. While multiple cases do strengthen the results by replicating the pattern-matching and increasing confidence in the robustness of the theory, a single case study can be just as effective, if it has enough substance to provide the required information to the research.

The research question requires in-depth analysis of an event that would highlight the elements expected to contribute to the investigated phenomenon. The most appropriate approach for research of the identified problem would be investigation of a project (or projects) that has occurred in the past, that possibly resembles the symptoms of the described problem and has a potential to provide some answers to the research questions. This is best achieved via a case study.

So, the logical primary method for the research was identified to be a case study, where one large project would be identified and analysed, searching for patterns related to the research question and supporting evidence for outlined research statements.

Yin (2002) recommends the use of a case-study protocol as part of a detailed designed research project that would include the following sections:

- Overview of the project, with objectives and case study issues
- Field procedures, how the case study is conducted
- Interview questions design
- Structure of the case study report, how data will be presented

The above recommendations were followed as part of this case study.
Since case study method involves a large amount of mainly qualitative data, as well as strong discipline around the selection during data analysis, additional supporting methods were selected, namely to help test some of the findings from the case study and give an additional, quantitative dimension to it. The decision was made to introduce a brief survey with the respondents outside the case study environment and to give an additional validation to the findings of the case study.

With the decision made about the main research body – the case study and the supportive method (survey), it was also discovered that observation research method needs to be recognised, since the researcher can be seen as an observer and will often use their own judgement to see patterns of behaviour and relevance to the research question.

The nature of this research does not make it appropriate to use other, more precise methods such as experiment, where cause and effect can be determined with highest levels of certainty and allow for replication.

The case study, supported by observation and a mini-survey is the most appropriate method for this research due to nature of collected data and evaluated phenomena, however the related limitations associated with the chosen methods need to be recognised and acknowledged.

Objectivity and neutrality discipline during the research would be a highly valuable tool in ensuring an accurate account of the events covered by the case study, as well as their analysis with regards to the research question.

In terms of the chosen approach to the analysis of the collected case study data, the most appropriate coding method was to group the data under the logical project management steps and to examine them in line with the project lifecycle. This approach allows for the participants of the study (interviewees) to concentrate on different parts of the project in their event recollection and to provide data related to specific steps in the project process, rather than to be guided by their own account of priority, which could be guided by emotions.

Since case study information is best collected through interviews with relevant
stakeholders, the interview questions were designed to provide consistency and objectivity (as much as possible) across various roles of the interviewees. This was achieved by predominantly closed questions that are aligned with specific project steps.

The approach behind the two-dimensional coding of the collected data is achieved through cross-referencing and grouping of data across respondents’ roles and project cycles. This cross-referencing allowed for easier recognition of patterns and links between the responses given by different project roles on various stages of the project. This helped establish a certain level of generalisation of responses to interview questions, to enable pattern recognition. The reason behind this approach was an attempt to link different responses to specific interview questions with project responsibilities among the respondents, especially when it came to accountability originating in strategy, line, business, project or IT management.

With the predominantly qualitative data collected with the case study, it was decided to add a quantitative element by presenting results from a mini-survey. It was expected that the survey would provide an insight into further applicability of the findings resulting from one single project, by briefly testing it on a small sample of respondents who did not participate in the case study or were associated with the project.

While findings from this survey have clear limitations, the results are seen as a refreshing qualitative addition to the main body of the research – the case study.

The goal of this research and the utilisation of the chosen research methods is directed towards establishment of the main elements responsible for long-term unforeseen impacts created by projects and raising awareness of the need to effectively manage those elements, as well as to ensure constant project alignment with strategy.

It is expected that further research will take place after this study, to further investigate those elements by expanding on the resulting suggestions and methods for better practical mitigation of the associated issues, with the hope of assisting with more effective management on all levels within organisation, starting with project management.
3.10 Research Methodology Limitations

As with any research process, there are certain limitations with regards to chosen methodology, associated research and analysis methods and practices.

For this research, the most important limitations can be associated with the following areas:

- Research problem formulation limitations
- Literature review limitations
- Case study limitations
- Survey limitations
- Research findings limitations

Each of the limitation areas are further described:

3.10.1 Research problem formulation limitations

The main limitation of the research problem formulation in this study is with a potentially subjective approach to the problem of articulation and importance, due to the researcher’s participation in the overall subject area.

Although the researcher’s persistence and observations are the important catalyst for the problem to be addressed and researched in this study, the researcher’s perception and interpretation of the problem can pose certain limitations in the areas of problem definition, comprehensive coverage of relevant factors, as well as perception of the problem and its elements.

It is crucial for the researcher to be aware of related limitations when defining the problem and articulating the research questions and to remain as objective as possible during the course of study.

As is the case with projects, research process too can suffer from scope creep. One way to address this limitation is to stay focused on the chosen topic and to resist the temptation to address all other problems encountered during the course of study.
3.10.2 Literature review limitations

There is a huge amount of information available on various topics related to the research area. While the great choice of literature material is highly valuable in the research process, it is not always possible to choose the most appropriate set of publications that are fully relevant to the research problem investigation. The overflow of information could prompt the researcher to spend years looking into the literature and not being able to gather all relevant information to move on to the hands-on research.

The way to address the overflow of irrelevant information is to plan the literature review in terms of the goals set for the research. For example, identifying the literature types and sources for each subject area, such as: project management, strategic management, research methods, journals and industrial environment.

While some studies are literature-based and largely theoretical, and therefore closely linked with the literature throughout all stages of the research process, that is not the case with this study. Here, the focus of the research is with practical application, not based solely on the theoretical body of knowledge. The literature review in this research is used to prepare the research question, identify gaps and provide a formal methodical approach to the research question.

Since the literature review is performed as an one-off exercise prior to hands-on research taking place, there is an element of risk that some valuable relevant information could be published in the meantime and affect the course of research. This limitation is addressed by periodical reviews of literature throughout the research process, and where required, inclusion of relevant references that could support the findings or create new questions.

3.10.3 Case study limitations

Case study is a descriptive method that addresses an event or situation that is used as a record and body of evidence for the research process. The strengths of the case study are also the limitations: descriptive in-depth details can often be based on individual perspective and omit important elements that might be relevant to the research or other participants of the case study. This is addressed by collecting information from various subjects, who participated in different roles and can provide different perspectives of the same event.
Another limitation is that the case study is a descriptive method. Observed behaviours and situations can be described, but not always explained. Much of the information collected is retrospective data, recollections of past events, and is therefore subject to the problems inherent to memory and the recollection of certain events and associated importance of those events. This is a known limitation of the case study and, wherever possible, documentation and other available records should be used to verify collected information, as well as to assist with interview questions formulation to help uncover any important omitted information.

This research covers only one case study. While an important large project such as the one chosen for this research study can help investigate the defined research problem and define certain patterns of behaviour within the case study environment (or wider), this is still only one project that is being investigated. The selection of the single case study design naturally brings clear limitations as far as the generalisation of the results of the study is concerned.

Although these limitations are somewhat mitigated by carefully chosen questions that can include generalisation elements and definitions of emerging patterns, such a generalisation dimension is based largely on the opinion of the individuals participating in the case study and therefore is highly subjective.

3.10.4 Survey limitations

The great strength of survey research is that a large amount of structured data can be collected relatively quickly and with minimal cost. Such data can provide a vital base of information across a valuable research sample. However, the survey covered in this research is not directed at providing the vital information for the findings of this research – it is rather an extension of the case study findings and an attempt at validation and generalisation outside the case study environment.

As with other surveys, the limitations of this particular survey are in two areas:

- The constraint of the information gathered - imposed by the questionnaire
- False responses
- The survey sample

While the survey respondents could provide free text response to some questions, or add
additional information at the end of the survey, the survey analysis is largely conducted on their responses to the outlined questions, which can lead to narrowing of responses and overall oversimplification of the problem. These questions are prepared by the researcher, based on their view of the problem, case study findings and overall perception of what should be asked in the survey. This might neglect some important elements of the problem, since the respondents are prompted to answer questions outlined in a specific manner and focused on researcher’s perception of the problem.

There is always a possibility that the respondents will not answer the questionnaire truthfully or accurately – which can be both intentional or accidental. A larger survey sample can provide more accurate information than a smaller one. The survey sample in this research is relatively small – 123 respondents.

In addition to the sample size, the diversity of the sample in this study is purely accidental. The respondents were not targeted with specific backgrounds and industry coverage in mind – they are merely part of a professional association network who were kind enough to respond and participate in an online survey and contribute to this research.

With these limitations in mind, the survey findings are not seen as a major contributor to the findings of this research. The survey results are a supporting tool in establishing an attempt to extend the case study application outside the original environment and test an outside sample of IT professionals. It is one of the goals of this study that the research findings are continued beyond this study and investigated in a much larger sample to further evaluate their application to other organisations and industries.

3.10.5 Research findings limitations

The findings of this research are mainly based on the following elements:

- Researcher’s observations and perspective with regards to the research problem, data interpretation and findings
- Researcher’s interpretation of reviewed literature
- Case study results and objectivity of the case study participants
- Survey indications and relevance to the main body of this research – the case study

It is important that all research findings are put into the context of the available data, environment, applied research methods and the limitations associated with this research.
3.11 Conclusion

This chapter covered the research methodology applied to this study, detailing the structure and logical flow of research activities.

In conclusion, the research methodology for this study relies on three main elements:

- Literature review as the pointer towards the areas that could be further improved in the areas of management of the long-term unforeseen impacts introduced by projects
- Case study of a major project within the chosen research environment (the Australian financial industry), providing a majority of qualitative data and findings for the study
- Survey across a wider group of project managers and IT professionals, that provides a limited insight at the acceptance of the research findings outside the primary research environment.

All research studies have limitations and finite scope. It is important to identify and be aware of as many limitations as possible, so that the findings of the research are clearly articulated and put into an accurate perspective. This will be further discussed in Chapter 6.

The next chapter starts with the central area of this research: the case study.
4 Chapter 4 – The Case Study

Figure 23 - Chapter 4 - Case Study
4.1 Introduction (About the Case Study)

In this chapter a major project conducted within an Australian financial institution is observed and analysed.

As this research is about the impact on IT infrastructure and financial organisations, created by successful projects, the project selected for the case study had to fulfil this simple criteria:

- To have significant impact on the IT environment within the organisation
- To be considered a success in terms of project deliverables.

The earlier presented review of relevant literature highlighted the consistent approach in terms of project success criteria: comparison of project results with the original objectives. To explore further the importance of project success in organisational and strategic terms, it would be useful to examine in more detail a significant, successful project of strategic importance and evaluate it against additional criteria – mainly in terms of long-term organisational impacts and strategic significance.

The goal of this observation and analysis is to examine relevant elements throughout a project that contributed to the creation of long-term impacts on the environment and the organisation. With a detailed evaluation of a real-life example of a significant and successful project, this study is aiming to highlight the additional elements that should be considered in the overall evaluation of project success, the evaluation that should go beyond the isolated project goals, to embrace organisational-wide parameters for measurement of project success.

Another goal of this case study analysis is to evaluate the importance of various steps in project process, applied before, during and after this project, as a necessary tool that should aid, if not ensure, project success.

The reality of today’s financial industry is that information technology (IT) plays an
important role in creating a reliable, stable and efficient business environment. The quality of information technology solutions and success of IT project are some of the main drivers of organisational success, as technology advancements create opportunities for business development and achievement of competitive advantage.

In this discussion the term “IT environment” covers the information technology infrastructure, tools and services made available to the business.

### 4.1.1 Operating Within Australian Financial Industry

The overall management objective is to create a successful business, which will deliver quality goods and service and achieve organisational goals. These objectives can have various drivers, originating within the business, customers, competitors and technology developments.

As outlined earlier in the document (Section 1.7), the Australian financial industry is highly competitive and IT projects play a crucial role in the continuous race to conduct a successful business in this environment.

Two important aspects come into play when considering the environment in which the case study project was conducted: commercial success and regulatory requirements. IT projects within the financial industry are expected to excel in both aspects: obeying the rules while achieving competitive advantage.

In such an environment, time to market is crucial. While the methodology applied to project management ensures alignment with the regulatory aspect of the business operations, the criticality of the competitive element of project delivery often introduces “over the line” compromises, requiring quick decisions that can create impacts in the long run, often creating unplanned, additional maintenance costs for organisations.

The primary goal of every organisation is business success. Business success is often related to sets of guidelines that determine standards of expected quality, covered by
management, culture and practices within organisation. These standards are driven by expectations within the environment in which the organisation operates, often determined by the quality demanded by customers.

Management scholars such as Peskin and Hart (1996) refer to the overall management objective within an organisation to the goals of quality management. They define quality management as the management of the entire organisational effort to provide the customer with a high quality product or service, guided by two sets of criteria: customer-driven criteria and systems development (technical) driven criteria.

It is common for projects to solely concentrate on the customer-perceived success criteria during crucial stages and those activities that impact on a project’s critical path, since project objectives are generally set by the business and the success criteria is directly dependent on the achievement of objectives related to the specific project. It is often that the long-term (systems-development, technical) criteria is compromised as a result – the criteria covering integration, long-term supportability and impacts on the existing infrastructure.

Outside project activity there is a common approach and consensus between the business and technology about the quality. Orwig and Brennan (2000) promote an integrated view of the quality management within the organisation: integration between operations management that uses quality management to support and improve repetitive processes, and project management, which is used to create new, unique products and services. But, the reality is that, in times of crisis, projects tend to bend the rules of quality control and commit to various compromises in order to achieve deliverables. So, what are the main reasons for this common quality approach and consensus to be disturbed during projects? What makes project results deviate from the common quality criteria?

There is a clear distinction between the stated objectives of projects and systems development in general, with many authors such as Kerzner (2001), Bryde (2003) and Frame (1995) stating theoretical differences based on different processes and goals.
Projects are driven by business goals and the focus is on the business, even though they rely on delivery of technical solutions. The quality of technical solutions could be treated as secondary to business objectives. This type of distinction between business and the technical side of projects is visible in organisations where projects are strongly detached from the operational area. The difference between the long-term operational goals and “over the line” approach used in the project are clearly visible in such organisations. So, what happens during projects that create the quality gap between business and technical criteria? What triggers the unplanned long-term impacts on the IT environment and how can those impacts be taken into account, foreseen and prevented?

Some authors (Cadle and Yeates 2004; Nicholas 2004; Taylor c2004; Tinnirello 1999; (Schwalbe 2000); (Cornford 1993, 1998) suggest a merger between the business and technical side of projects and go even so far as to classify project management as an integral part of the overall technical process. With this classification, projects are managed as technical change, with strong emphasis on the level of technical quality of the project. Such an approach can be seen in organisations where project management is directed by the technology department, rather than the business. In such organisations the operational impact is valued more than in the organisation where projects are implemented in isolation from IT operations.

This case study should help provide answers the main research questions:

- What are the links between successfully completed IT projects and the ongoing information systems development and maintenance and how do those links impact negatively on the long-term organisational performance within the Australian financial industry?
- Can those impacts be predicted and managed as part of the overall project management process, with the aim of reducing the overall costs for the Australian financial companies?

By analysing an actual project and examining decision making processes that cause impacts on organisational elements of strategy and technology, it will be possible to
reflect on real-life examples of situations that create a pattern of behaviour in project management that is a focus of this research.

4.1.2 The Case Study Environment – The Company

There are three factors relevant to the project environment in this case study: the company in which the project is conducted, the process applicable to the management of this project and the industry in which the company operates.

The project that is being analysed is conducted within a major financial institution in Australia, referred to as “the Company” in this text.

The Company is a mid-size organisation, with around 600 employees. The Company is one of the major players in the Australian financial industry, with very dynamic project activity.

The IT infrastructure within the Company largely consists of in-house built systems and to lesser extent outsourced tools and solutions. The majority of systems have high-reliability and supportability targets, set by the business requirements.

It is important to mention the industry in which project is conducted. Each industry has some specific characteristics that influence quality criteria and the importance of various business and technology factors within projects. For example, for some industries the main quality factor can be safety (commercial flying), or aesthetic (fashion industry), or hygiene (food industry). Each of those industry-specific factors are highly important for an industry-specific project.

For the financial industry, the element of competitiveness is highly important. The financial industry is all about money, profit and numbers, which is closely reliant on technology capability. The success of projects within the financial industry and the success of the financial business are directly related, as today’s level of competition within the financial world does not tolerate failure. The financial industry measures
success and failure directly in dollars, so the competition capability of the organisation within the industry is a strong factor in judging the degree of project success.

Projects bring new opportunities for financial organisations, but also incur costs: both the project cost and maintenance costs. Therefore, the success of projects within a financial organisation should not only be measured by project objectives, but also by the long-term costs associated with technology and impacted by changes created by projects. The success should include the overall benefits (adjusted by any negative impacts) that projects create within organisations.

Successful projects within a financial organisation cover the mix of skills and actions between the technology, business, customers, marketing and organisational practices. The effectiveness and success of the project is closely linked with costs and profits, which can very much be influenced by the IT solutions selected by the project team. This influence of the IT component within the business solution introduces an additional responsibility for project management within the financial industry.

The business and technical environment in which a project is conducted is an important factor that determines crucial parameters on which the degree of project success is evaluated. In the fast moving financial industry the element of the environment can be an advantageous or obstructing factor, depending on the flexibility of the IT infrastructure and the business expectations.

The competitive nature of the industry has been recognised as a major driver for creation of specific project processes to suit fast-pace expectations within financial organisations. Competitiveness is closely linked with the factor of time, therefore projects within the financial industry are expected to take the same approach and deliver quick and reliable solutions. There have been many attempts to simplify the process under which projects are conducted (Tarnow 2002) within financial organisations in order to speed up the delivery of projects. This is highly relevant for the topic of this research, as the "time-to-
market” and “over the line” approach to project process opens the door for various compromises and opportunities to introduce long-term, unplanned impacts on the IT infrastructure, business and the overall costs to the organisations. These compromises are an example of shifting costs form the Project to the operational units which then have to bear this cost for an indefinite period.

In addition to the competition factor within the financial industry, the business and technology environment in which this project is conducted also has additional regulatory elements incorporated in the business goals and responsibilities of some organisations. The regulatory element within a financial organisation can be an opposing factor to the basic drivers of the financial industry, by forcing compliance with regulatory rules and limiting development of products and services. This puts additional importance on quality and highlights a different set of impacts that projects introduce into the existing business and IT environment.

4.1.2.1 The Project Management Process

Project processes constantly evolve due to continuous efforts by the project management community (both theoretical and practical aspects) by improving tools and techniques, communication and management methods. All these improvement efforts have a common goal: achieving and ensuring the project and organisational success.

For the purpose of this study, two project processes will be observed: the project process applicable during the Project and a new project process implemented within the same organisation, a short while after the implementation of the analysed project.

The overall methodology applied to the observed project was a PMBOK-based in-house developed project process, which was also used for other projects within the Company. This project process was applied on the high-level deliverables, managed from within the

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7 approach driven by the time required to create and prepare product or service for sale
8 approach primarily driven by the timeline, rather than quality of deliverables
Every project management process applied on an IT project needs to contain the relevant steps with regards to chosen software development process.

While the project process within the Company was based on the overarching PMBOK-based methodology, the development process was based on the Waterfall Model of software development and was concentrated primarily on quality of testing and project deliverables.

As described earlier in this study, a software development process (software lifecycle or software process) is a structure imposed on the development of a software product or a project. The Waterfall software development process is a linear, sequential model that covers the development phases: requirements analysis, design, implementation, testing (validation), integration, and maintenance. This model is the most commonly used model for large projects and is promoted as part of the project management methodology.

This adopted project management methodology (applied to the project under the case study) was combined with the project management methodology and associated processes used internally by the outsourcing company which was the major participant in this project. Those internal processes used by the Vendor combines various approaches, such as iterative software development process models and associated practices, which were quite different to the more traditional Waterfall practices used by the Company.

The Iterative (Agile) software development approach has been promoted by authors Clockburn (2002) and Konieczka (2003) as particularly attractive to business stakeholders within projects, presented as a “lean” and simple process that delivers solutions faster than more traditional methods. The agile approach works on the basis of iterations that can be performed on smaller pieces of work. Since the vendor on this

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9 PDR – Project Document Reference
project relied on Iterative and Agile development framework, the project process applied to the Project needed to be adapted to work effectively with the vendor. Although historically the Company largely followed the Waterfall approach to systems development and applied the same on the Project, some elements of the Iterative and Agile approach were adopted and incorporated into the process, especially in terms of testing cycles performed by the vendor on this project. The iterative side of the framework was only visible to people closely working on each vendor iteration – to the outside world the project was following the Waterfall framework.

4.1.2.2 The Project Structure Within the Company

During this research an interesting pattern has emerged with regards to long-term impacts on the project success and the organisational value of project deliverables: project structure within an organisation.

With IT projects, the deliverables extend beyond project implementation: the decisions made during projects in terms of maintenance costs, management effort and reliability are highly influential on the long-term effectiveness and productivity of the project deliverables. The decision made during projects in terms of IT elements such as maintenance, reliability, maintainability, scalability, etc. are reliant on the existing structure under which project office operates within the organisation.

The research has identified three most common types of project office structures within organisations:

- Project Office operating independently (isolated from both business and technology divisions). Under this structure, projects are usually managed with a strong emphasis on project management methodology and project process.
- Project Office operating within the business division. Under this structure, projects are usually managed with an emphasis on business objectives and delivery of business objectives, often underperforming on technical aspects and long-term technical issues introduced by projects.
- Project Office operating within the technology division. Under this structure,
projects are managed with an emphasis on the technical aspect of projects and associated costs, often neglecting the business and industry aspect of projects in favour of technical resolution.

In terms of the project position within the Company during the Project, the Project Office was part of the technology division, operated and managed by highly skilled IT people, with minimum focus on project management administration. (PDR#15)

After the Project was completed, the organisation went through a restructure and the Project Office moved under the management of the business division. This changed the hierarchy within the project organisation and management, as well as the approach to project process and systems development within project methodology. (PDR#9)

With project office being part of the technology group, the focus tends to be mainly on the technical aspect of projects, including detailed systems development practices and lifecycle. With projects being executed and managed as part of the business group, the focus of the project process concentrates around administrative and business priorities of projects, reducing the detailed emphasis on the technical details of project solutions. (PDR#9)

Both project processes and management structures (during and after the observed project) are examined as part of this study.

4.1.2.3 IT Environment

As noted previously, the Company is a major Australian financial institution that heavily relies on the information technology to conduct its business.

The IT systems within the Company can be divided into the following high-level groups:

- Primary (critical) systems
- High importance systems
- Non-critical (supporting) systems
Figure 24 shows a typical setup and communication of all three system levels, applicable to the infrastructure adopted by the Company.

![Figure 24 - Systems Classification Within the Company](image)

The primary systems are classified as mission-critical systems, essential to the normal operation of the business. Their expected level of operation is defined with the highest reliability, availability, performance and accuracy requirements. The primary systems are essential to the basic (primary) business function of the Company and without them the business cannot operate. (PDR#11)

The high-importance systems are the systems that interact with the critical systems, providing input into and receiving output from the critical systems. Even though the high importance systems are not considered mission-critical (as is the case with the primary systems) their reliability, availability, performance and accuracy requirements are very high, due to interdependence with the primary systems.
The non-critical systems are related to supporting functions of the business and the areas of the Company that are not on the primary business or systems path for the organisation. Although in some cases the non-critical systems interact with the primary systems and related business functions, their requirements for reliability and availability are at much lower level than is the case with the primary and the high-importance systems.

4.1.3 The Strategy Process

Johnson and Scholes at al. (2005, p. 10) see the strategy as the direction and scope of an organisation over the long-term, directed at achieving advantage for the organisation through its configuration of resources within a challenging environment, while meeting the needs of markets and/or to fulfil stakeholder expectations.

Every organisation practices some degree of business planning or strategising. Even organisations that do not have official strategy process incorporated into organisational activities still practice some degree of business planning as orientation for the future.

The strategies can be more or less conservative with regards to products, services or systems, but even those most conservative have to involve some degree of change. And, as changes are delivered with projects, the strategy approach needs to be tightly connected with the project process and prioritisation.

Within any organisation there are usually a number of different projects being executed at the same or different times, influenced by various drivers, each managed by a different project team and project owners, each concentrating on their business objectives, schedules and deliverables. It is essential to coordinate all these projects together and to have an overall strategy so that different organisational initiatives may have the best common solution in the long term. Good communication and knowledge sharing within the company can provide enormous help in finding the most effective strategy with competing priorities (Currie 1995; Heng 1996).

In Australia it has been the usual practice that IT management do not have much
influence over business and organisational strategy, sometimes even IT strategy (Coghlan and Hurley 1996). Senior organisational management is often unaware of the long-term impacts IT solutions can bring to their organisations and without including IT expertise to be part of their executive team, the possibilities of missed opportunities and hidden long-term costs are endless.

The strategy process linked with the Project is largely based on the business drivers, global competition and demands on technology.

The Company under consideration is driven by a business strategy, which is highly reliant on a successful technology strategy.

The Project that is being analysed as a subject of this study was a result of combined business and technology strategy objectives. It was considered one of the top priorities for both the business and technology areas within the Organisation.

Using earlier specified classification of strategy by Johnson (2005), it can be said that the Project was originally initiated as an Operational Strategy project, but over time it became recognised as a Corporate Strategy initiative, which impacted on priority, resources and the overall profile for the Project. Once the Project was seen as high-priority, it had all the required resources at its disposal.

While projects incur costs, they are often presented as capital or growth costs in the organisations’ financial picture, since they are an investment into the capital of the organisation. Companies are keen on reducing or managing their operational costs at a fixed level, since they are expenditure and therefore negative on their balance sheets. Unplanned long-term impacts transfer the project costs into increased operational long-term costs.

**4.1.4 About the Project**

The Project represented a major undertaking for the Company, from various perspectives:
financial, time, degree of change and risk. In terms of earlier specified criteria for the case study selection, this project satisfies all outlined criteria:

- The Project was classified as successful and has strategic importance for the organisation.
- The Project was a long-term project, involving multi-team activity, including external assistance (outsourcing and consulting)
- The Project utilised the existing project methodology within the Company
- The Project covered a business-critical function that required changes to business processes as part of project scope

The Project solution was a replacement and integration of two critical, primary systems within the Company. The first of the two involved systems (System 1) was a relatively old in-house built solution, while the second (System 2) was a few years old vendor-provided solution. Both systems were fundamental elements of the Company’s technical and business infrastructure, with the highest classification of importance and business criticality.

The systems involved had interfaces to external customers (the primary customer base), who by accessing it at the input point create various financial transactions that are further processed through other systems within the Company and disseminated to internal and external users. Both systems performed the same logical process and in a similar fashion, with the System 1 covering about 75% of the customer base and related transactions, and the vendor-based System 2 providing facility for the remaining customers and transactions. System 2 had been operating successfully for a quite some time, building the necessary confidence in technical solutions provided externally. Both systems were fundamental to the operation of the business function of the Company and any failure could cause serious business loss.

Historically, the Company opted for in-house built solutions for its critical systems almost exclusively, and System 2 was the first such system to be trusted to an external party for development and maintenance. Although the Company regularly used external
solutions for various areas of the business and the IT infrastructure, for the development and support of the critical systems they preferred internal development and resourcing.

Being one of the most fundamental elements of the Company’s business, both systems had to keep up with the increasing user expectations in terms of visual experience, capacity, performance, flexibility and scalability. Also, the technology advancements available and utilised within competition space became an element that could not be ignored with rapidly changing financial and information industries. With more and more customers using the functionality of both systems it became logical to integrate all functions of the previous separate customer base and related business areas under one system that would give consistent user experience in terms of functionality, visual elements, processing logic and timing.

The idea behind the Project was to integrate two systems into a new, upgraded solution that would cover functionality of both systems under one umbrella. By the time the Project was initiated, the latest System 1 version was almost eight years old, designed on the architecture that was implemented over 15 years ago. During the implementation of the System 2, the vendor committed to significant discounts if the Company was to decide to let the vendor provide a replacement for the System 1 in the future. This was an element worth considering, especially since System 2 has been running successfully and provided attractive new features and visual experience positively accepted by the user base.

From the very beginning, the Project was identified as strategic, of the highest priority and “must succeed” initiative. All areas of the organisation were aware of the importance of this undertaking, associated risks and priority. This initiative was fully supported by the senior management and the Company Board, which gave the necessary attention and required resources to action it and create the Project.

Due to the customer impact, business and technical interdependencies, the Project was one of the largest initiatives and undertakings ever performed by the Company. Taking
into account the historical preference for the reliance on in-house built solutions for the critical systems within the Company, and the recent positive experiences with the vendor-provided solutions with the System 2, the Project had two solution options: internal and outsourced.

4.1.5 Project Details Summary (Scope, Duration, Risk, Cost)

4.1.5.1 Project Scope

The Project scope covered the replacement of the two existing systems with a new, fully integrated solution that covered full functionality previously provided by the two separate systems. The scope also covered a number of enhancements and improvements to the existing functionalities and user experience.

The overall project solution covered the following elements:

- Vendor-provided product which integrated previous business and technical functions
- Development of the new interfaces between the integrated solution and other interdependent systems
- Coordination of changes to external customer systems that will interface with the integrated system
- Set of procedures, business rules and related legal coverage of the impact of the new solution on customers and other external parties

During the interview, the project manager explained that the control over scope was very tight throughout the project, however this still did not prevent the extension of the scope to include additional items, which impacted on delivery and cost of the project. These items proved to be mandatory and were not originally planned for in the budget or the timeline.

The elements that were added to the project scope during the project execution (that were not originally planned when the project was initiated) mainly covered some additional
functional product features and customisation to the proposed project solution, as well as
the impacted areas of the existing environment. The scope changes impacted on the
overall project timeline and costs, as well as long-term maintenance costs related to the
IT environment, not apparent or considered at that time.

4.1.5.2 Project Duration

The Project was originally planned to take 12-18 months in duration. At the end, it took
about 27 months to complete.

The original duration expectation was considered highly optimistic, since it was based on
the initial scope, which included only the basic functionality available on the existing
system. With subsequent changes to the scope to include additional requirements and
throughout the discovery of the extent of the impact on the interface systems and related
customers, the duration of the project was extended to over two years, almost doubling
the original optimistic expectation for the duration of this project.

This had a similar impact on the Project’s budget and risk.

The main element that impacted on the duration was testing, since every change that was
applied to the solution required thorough testing and verification. Due to the importance
and criticality of the affected systems, this project could not take risks with regards to
testing, therefore every new testing cycle impacted on the overall timeline and the final
project duration.

4.1.5.3 Project Risk

The Project involved a high degree of risk: operational, financial and business risk.

Operational risks were related to the logistics covering the implementation and
management of the impact on other systems and customers.

Financial risks were related to project spending, as well as the associated costs required
to ensure all customers’ and dependent systems’ efforts were synchronised and ready for
the implementation, in line with requirements and the project plan.

Business risks were related to the impacts on the normal business operations (internal and external) during the project, especially during transition from the old to new systems, parallel processing (old and new), and associated people and customer relationship risks.

In addition to internal risk factors, the external risk was also very high, as the project impacted on all customers and users of the system. This added to the public profile of the overall project and increased the emphasis on several elements and deliverables.

4.1.5.4 Project Cost
According to the Project Office documents (2004-2006), the cost of the Project was originally estimated to AU$8M. The final cost of the overall project activities ended up being a little over AU$12M, after budget adjustments and scope changes. (PDR#8, PDR#14)

The overall real cost of the Project was higher than the official figure, due to significant internal efforts on impacted systems being covered by internal maintenance budgets and not presented as part of the project budget and cost. According to the post implementation review documentation (2006) and change management statistics (2004-2006), operational costs directed towards the project work in the impacted areas were in excess of $500,000. While these costs were not added to the operational budget, the efforts spent on this work took the resources away from other planned activities, possibly causing missed opportunities.

4.1.6 Case Study Introduction Summary
The following summary highlights the points that are essential to successful understanding of the analysis and findings later in the text:

Financial industry environment:

- Competitiveness is an essential element of the direction and approach applied
within the financial industry

- Quality of IT project solutions are measured by:
  - Quality and customer satisfaction
  - Regulatory compliance

- Time to market is crucial, driven by competitiveness
  - Can introduce “over the line” compromises
  - Can create additional post-implementation cost increase for operations and maintenance

Organisational environment:

- The company is a major financial institution – it is referred to as “the Company” in this text.
- IT development historically done in-house
  - Based on waterfall method
  - Strict change management guidelines
  - Strict testing practices
- Project process changed during the course of the project
  - Originally based on the modified PMBOK methodology
  - Later moved to PRINCE-based methodology
  - Project office moved from IT to business operations
- Subject matter expertise was crucial to the projects and was responsible for management of projects under the previous project methodology
- High emphasis placed on quality of project delivery

Organisational strategy, norms and practices:

- All projects are supposed to follow the strategy
- All projects introduce change and need to be aligned with strategy objectives
- Multiple projects running at the same time – require coordination and multiple points of alignment with strategy
- Often senior management are unaware of the full extent of the possible conflicts – creating a potential for unforeseen impacts and increased costs
Companies are motivated to present the project costs as capital expenditure and have it recognised as additional to the capital value on their balance sheet, and ultimately achieve a reduction in operational costs. However, unforeseen impacts could potentially move the costs from the capital expenditure into the operational part of the balance sheet.

The Project:

- A major multi-million dollar undertaking, which is expected to provide valuable information for the research question
- Vendor-based solution chosen, with agile software methodology and practices
  - Possible conflict with in-house project and SDLC methodology
- Quality control a challenge
4.2 The Project - Lifecycle Analysis

The Project is analysed through basis lifecycle steps and evaluated against various criteria elements, such as adopted project process, alignment with strategy and best practices in project management methodology.

The analysis is based on interviews, observations, review of documentation and evaluation of project goals, objectives and deliverables. The main body of information is based on interviews with 23 project participants. Some of interview participants had only minimal involvement in the Project, but have had solid experience within the organisation, sufficient to help recognise certain patterns useful to this research. Other interview participants played major roles in the Project and were able to assist with portraying an accurate picture of the Project and organisational dynamics around it.

It is important to recognise that this research does not propose any statistical value brought by the findings of a single case study presented here. Statistical value contribution would require a larger, quantitative study that would target statistical significance in the data. Yin (2002) recognises the value of a single case study as a place to obtain the research direction and pointers towards larger, more statistically significant findings and research value.

The patterns recognised in this case study that cover a small research sample are expected to provide indication to where more quantitative-focused further research might focus.

As previously stated, during the Project, the Company followed an in-house developed project process, which was based on the PMBOK methodology, adopted to specific processes within the Company. The checkpoints and enforcement of the project process within the Company were admittedly “flexible”, therefore opening the door for deviations from the adopted project process and the project management methodology.

When interviewed, the majority of interviewees confirmed that the project process within
the Company at the time was not inadequate, but instead that the enforcement of the process was not present at the level that would demand full compliance and consistency across projects and project teams. This message was consistent throughout all conducted interviews.

The main body of the case study analysis process revolved around three simple steps for the analysis of qualitative data (Taylor-Powell and Renner 2003):

- Step 1: Getting to know the data – understanding data importance, priority and links with the research questions and case study flow
- Step 2: Focusing the analysis – identification of specific key questions that needed to be answered and their grouping around the main topics or events
- Step 3: Categorising information – pattern identification, organising data into coherent categories that help answer questions and bring meaning to collected data

The interview questions were organised in line with the adopted IT project process grouping, which helped focus the data around logical parts of the case study, for easier analysis:

- Project success
- Project goals alignment with organisational strategy
- Initiation
  - Scope initiation
  - Scope planning, definition, verification, change control
  - Communication
- Planning:
  - Project plan development
  - Activity definition, sequencing, estimating, scheduling
  - Quality planning, assurance, control
  - Resource planning
  - Cost estimating, budgeting
- Executing
• Resourcing
• Staff acquisition
• Team development
• Project plan execution
• Technical implementation

• Controlling and monitoring
  • Overall change control
  • Communication planning, information distribution
  • Performance reporting
  • Risk identification, qualification, mitigation and control
  • Procurement, solicitation, source selection, contract administration
  • Cost control

• Closing
  • Administrative closure
  • Technical closure

This grouping of the interview questions provides a logical framework for the discussion with the interviewees and helps with the analysis of collected data and easier presentation of the results.

In addition to the main process-based grouping, the interview questions are further organised in the following way:

• Questions for all participants
• Questions appropriate for each interviewee role:
  • BA Manager
  • Business Manager
  • Business users
  • Corporate Lawyer
  • Deputy Project Manager
  • Developer/team members
- Development Manager
- IT managers
- Project Manager
- Senior Business Analyst
- Senior Business Managers
- Senior IT managers
- Test Manager
- Test Analysts

This grouping provides necessary focus on the areas of respondents’ expertise and saves the time during interview, if only relevant questions are asked. While the best efforts were made to include only relevant question in each role-based group, there were still situations where some of the asked questions proved irrelevant or answered as part of other answers.

Out of the 23 interviewees, some had direct involvement in the project (with assigned responsibility and deliverables), while others were considered as impacted parties. The interview questions for each role are presented in the Appendix (P. 412).

The data collected from the interview was collated, sorted and coded into common answers to provide easier patter recognition and a basis for analysis. The coding was performed at the following levels (Douglas 2003):

- High-level coding, aligned with the desired presentation groping and order. This coding used open coding techniques for high-level aggregation of data and events.
- Low-level coding, sorting data within each group, according to commonalities between the data (mainly interview responses and relevant documentary support). This level of coding used axial coding to further establish links between the high-level coded groups and their relationships.
- Selective coding, which concentrated on specific phenomena relevant to the overall research. This in particular covered elements related to project success and alignment between projects and strategy.
The results of the data analysis were presented in a chronological manner, following the familiar SDLC steps applied to the Project, namely:

- Initiation
- Planning
- Analysis (Business and Technical)
- System Analysis And Design
- Build (Technical Development)
- Integration
- Acceptance
- Deployment
- Closure

So, the high-level (open) coding is performed around these groupings, to enable appropriate presentation of data in line with the SDLC. The coding process is made simpler by pre-grouping of the interview questions to prepare for easier analysis and coding.

The next level of coding (axial coding) includes detailed analysis of information related to each of the above phases of the Project. The responses and relevant documentation are again grouped according to similarity of data, evaluated based on researcher’s observation, documentation and interview responses.

This level of coding posed a challenge in terms of the theoretical sensitivity of the researcher, as there is continuous temptation to make early judgements while analysing available data, which can could influence the researcher’s objectivity. “Theoretical sensitivity refers to the researcher’s capacity to think about the data in theoretical therms. It requires the research to interact continually with the data collection and analysis, suspending judgement on possible outcomes” (Douglas 2003, p. 48)

To ensure the researcher’s objectivity is maintained throughout the analysis, constant
reflection between the data, questions and relevant documentation was maintained, to ensure continuous focus and prevent early judgement about the analysis results.

While the interview questions grouping goes in line with the SDLC steps used to present the results of the analysis, the following question groups were relevant to all stages of the project and were considered as part of each SDLC step:

- Alignment: covering questions #1- #11
- Project success: covering questions #12 - #21

(full interview questions are presented in the Appendix 3, P. 412)

These questions were subject to selective coding, which ensured these data elements were linked with all categories created through open and axial coding.

The most important findings for each high-level coded category (in line with the SDLC process) are summarised at high-level and continuously validated throughout the analysis.

Each related set of questions is visually analysed and then categorised, to establish clear patterns of responses, assisting with the final judgement for each category of data. The patterns are recognised through grouping of similar responses. Then each pattern is analysed to determine the background for the pattern, usually related to the respondent’s role or motivation in terms of the project and associated processes.

As a result of this process, a master spreadsheet is created, to assist with further categorisation of answers, correlated with the respondent’s roles and question groupings.

Next, the results of analysis are presented for each SDLC stage of the Project. Each project stage is defined by the questions relevant to a specific part of the case study, which helps with the initial (open) coding and then further axial and selective coding steps. Each project stage is described as a narrative, complemented by a table containing details on specific key responses and resulting coding notes.
4.2.1 The Initiation

To present the initiation stage of the Project, the following data was highlighted as the key data used for the analysis of this part of the study:

- Interview questions grouped under “Alignment” sub-area, namely questions: #4 and #6.
- Interview questions grouped under “Project Success”, namely questions: #13, #19 and #20.
- Interview questions grouped under “Initiation”, namely questions #22, #23 and #24.
- Project documentation:
  - post-implementation review (PDR#9)
  - project scope document (PDR#1)
  - meeting documentation and communication (PDR#5)

All 23 interviewees provided consistent responses to the presented questions and had similar views on the initial stages of the project, especially the motivation for the project creation, importance to the organisation and the assigned priority.

In addition to the targeted questions outlined above, the general flow of the interview provided valuable insight into the initial stages of the project, especially interviewees’ reflection on early decisions and the impact they had on the rest of the project.

The key interviewees (project manager, senior business manager and senior IT manager) indicated that the Project was originally initiated by a set of operational requirements, both business and technical. Although the origin of the requirements for this project was primarily technical (a major software system needing replacement), the Project was directed towards enabling business to exist in the future, by providing an upgrade to the existing technical tools. According to the project manager, this project was initiated as part of a natural process in improving the primary operational systems within the organisation. The only difference was in how it would be addressed in terms of the solution provider and the approach towards the systems upgrade.
While the motivation behind the project and the project itself were of a technical nature, the importance to the business makes it also a highly critical business project.

In fact, every project is a business project. An “IT project” is simply a business project with a strong IT component, which sometimes can be confusing to people who might see technology (especially information technology) as self-existent and self-preserving.

In the case of the Project, the interviews indicated that the initiation was long expected, as the system that needed replacement was fast approaching the end of the planned life expectancy and needed an upgrade in order to meet current and future business expectations.

Some of the main requirements and business drivers were related to capacity, innovation, performance and flexibility of the system that is one of the main enablers for the business operations of the Company.

When interviewed, the major players from both the business and technical side of management and the Project agreed that initiation was a necessity, that the Project was inevitable and that the only questions were: “how, when, by who and how much”. A senior technical interviewee noted that everyone expected this to be a mammoth undertaking in terms of cost, time and effort; however everyone was excited about the opportunity to participate in this project. From this, the conclusion can be drawn that the project initiation was supported by motivated players from both sides: business and technical.

Once initiation of the Project was officially acknowledged, full efforts were directed towards evaluation of possible solution options, as well as associated costs. The interviewees agreed that minimum consideration was given to any project process steps at this stage, including initial business consultations. The project manager admitted that the early stage of the process was focused on the solution choice, with little consideration of
the impact elements that could potential play an important role in the solution selection process.

Based on available (minimal) information, two options were presented: in-house development and an outsourced solution. Both options were evaluated and the outsourced solution was chosen. The evaluation criteria was based on costs, maintainability, timing, the existing technology strategy and reliability. Interviewees clearly stated that the financial element was highly influential in the evaluation of offered solutions.

According to the senior business manager’s (SBM) interview, some elements within the set of improvements expected to be delivered as part of the project were long overdue and the business was very excited about the opportunity to present and implement some important requirements. He added that the business “…knew that the situation with the old system needed to be actioned. As part of the previous negotiation with the same vendor, we ensured a good negotiating position for future developments…” This statement indicated that the vendor position for a solution was already indicated in earlier dealings and the terrain was prepared for future negotiations.

When asked about the initiation step of the Project and the areas that would have been addressed better after the experience with the Project, the majority of interviewees agreed on the two main areas of improvement and related valuable lessons: stronger consideration of business needs and better communication. Better performance in those two areas would have assisted in better preparation of solution options and more detailed evaluation, especially with regards to costs and timing. A senior IT manager stated in his interview that they had very little input into the cost estimation for the internal system solution. They were asked specific questions with a large set of assumptions, with expectations to estimate the efforts for an internal or external solution. Another IT interviewee supported this statement and added that many elements of both possible solutions, specifically around systems integration, were oversimplified. This meant inaccurate and lower estimates were provided, instead of more qualified ones.
According to the interviewees’ responses, the initial estimates for both solutions proved to be highly ambitious, therefore inaccurate with regards to the final costs and complexity of the Project. Since decisions made during initiation were based on those estimates, the question could be asked: if more information was available at the initiation stage, or if more effort was put into producing more accurate estimates, would the Project go in the same or a different direction? And, the corresponding question of this research: How would this impact on the outcomes, costs and deliverables of the Project, as well as on the long-term strategy and associated decisions?

The interviewees agreed that it would have significantly impacted on decisions for the Project, namely the evaluation criteria and even possibly the outcome of the chosen solution path. This automatically answers the question related to long-term impacts. The Project represented a major change of the IT infrastructure for the Company and any different decision within the Project would most definitely impact on the shape, costs and direction of the corporate strategy, especially technology strategy within the Company.

The case studies covered in the literature (Kerzner 2006) illustrate that companies often neglect the importance of the initial steps within projects. Regardless of being big or small, the decisions that are made in those initial stages of projects are often based on minimal information and predominantly inadequate communication within business and technology. Such (often unsubstantiated) decisions might even seem insignificant at first, but when they are eventually translated into a set of clear objectives and project deliverables, they start impacting the business, technology and the overall organisation, so the lack of required information or relevant details become highly relevant and impact on projects, costs and timelines.

In terms of the Project that is being analysed here, it can be concluded that the initial stage already created and accepted a large set of assumptions when choosing a solution and approving the project budget. The initial elements that could cause later unforeseen impacts can almost be recognised, once those assumptions are analysed and clarified.
With such large projects the impacts can be significant, especially with regards to the strategy and long-term future of the organisation. With smaller projects it is harder to evaluate the overall impact on a case-by-case basis, however the impacts should not be neglected, especially if groups of projects are not coordinated and have a similar pattern of solutions based on wide assumptions. However, the group impact of small projects can be as significant as the impact of large individual projects.

The analysis of the interviews indicated that the initiation approach used with the Project was normal for the Company and that it clearly highlights the pattern of minimal investigation into high-level assumptions and lacks the enforcement steps with regards to investigating the elements that could cause long-term impact on the Company.

When asked about alignment with the strategy and impacts on operational costs and efforts at this early stage of the project and the steps that could be taken in order to avoid or reduce these later discovered impacts, the interviewees did not have any suggestions or solutions, but agreed that the assumptions accepted as part of the solution choice created the initial elements for later unforeseen impacts and additional costs.

Relevant extracts from interviews are summarised in Table 7 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
- DPM-Deputy Project Manager
- ITM-IT manager
- PM-Project Manager
- SBA-Senior Business Analyst
- SBM-Senior Business Manager
- SITM-Senior IT manager
- TA-Test Analyst
- TM-Team member
- TMG-Test Manager
<table>
<thead>
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<th>Question</th>
<th>Response</th>
<th>Notes</th>
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<tr>
<td>Q22: Why did this project start? Who initiated it and why? How was the</td>
<td>PM: Need to replace or greatly enhance the old system for future growth and new business development ideas. The original idea was put to me by the vendor and I developed a business case and pitched it to senior management, who made the decision. SBM: We knew that the situation with the old system needed to be actioned. As part of the previous negotiation with the same vendor, we ensured a good negotiating position for future developments. SITM: We knew the system will be replaced sooner or later. It was logical and expected to have it addressed. PM: The decision to proceed was largely made from a financial perspective rather than a strategic goal. Vendor proposal seemed very attractive. SBM: Financial element was a strong factor in the chosen solution SITM: Vendor solution seemed much more appropriate and financially effective ITM: I believe that both solutions were equally effective, however vendor solution already worked well and seemed less costly and complicated.</td>
<td>In terms of initiation of the Project, all interviewees agreed that it was “logical” and “expected” that this project would have take place sooner or later. The initiation, although based on strategic goals, originated from technical discussions. This was due to the nature of project, the related drivers (technical capabilities) and related functionality requirements. Due to the size of the project and related costs, the decision to proceed with the project needed to be made by the top senior management level of the organisation. The decision was based on minimal information and relied heavily on the vendor’s assessment of the situation and associated costs.</td>
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<tr>
<td>solution/initiation decision made?</td>
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<td>Q23: What was the rationale for this particular approach for project</td>
<td>PM: Unified system, reduced support costs and thus savings for participants. Significant improvement in capacity of the current system. SITM: Purely technical reasons, however knowing that the Company heavily depends on the quality of the IT system, this project is clearly strategic. The business expected the technology experts to recommend the actual initiation.</td>
<td></td>
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<tr>
<td>initiation?</td>
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<td>Q19: Does this project represent the way the projects are implemented in</td>
<td>PM: Largely yes. Because it makes sense and it works SBA: Oh, God, yes! Very much so… It is probably what makes people comfortable. Does it work, and can it be done better, that’s another question… SITM: Definitely. DPM: Yes, it is all largely historical – I mean the way we address projects.</td>
<td>The interviewees agreed that the Project is clearly representative of the way projects are managed and addressed within the Company.</td>
</tr>
<tr>
<td>this organisation? Why?</td>
<td></td>
<td></td>
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<tr>
<td>Q42. How much did project scope rely on</td>
<td>PM: More on business than technology strategy. SBM: I would say both.</td>
<td>Interviewees had divided opinion when it comes to alignment with business</td>
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### Q24: What was the link to business strategy, if any?

PM: The owner was the head of Business Development

### Q1. How serious is the long-term impact of projects on strategy? How concerned are you about it?

PM: Not concerned. All projects have the approval of the Group Executive whose responsibility it is to define and disseminate the strategy. SBA: I see project resulting from strategy. Therefore, the results from the projects should be feeding back to strategy. It is relevant, but I am not that concerned.

### Q2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?

SBA: Project process as I see it in this organisation does not ensure any type of alignment. True, the projects are in line with strategy when they are created, but during project execution they are mostly oriented towards technical elements of the project, without any mechanism for continuous alignment.

PM: The new project process is much more thorough and consistent, with frequent checkpoints by various committees. The process applicable during the initiation of the Project was much more loose and relaxed, leaving it up to PMs to ensure visibility with the business.

SBM: It is all in communication. Having a process does not mean it is always followed. The level of communication between technology, business and project managers is the key to alignment success.

### Q3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy? But, all agreed that some alignment needs to exist, but had different ideas about who should take responsibility for it.

Consensus seems to be closer to joint technical/business responsibility, but from the senior management and strategic level, rather than operational.

The interviewees noted the changes to the process were positive in terms of checkpoints and senior management visibility which provided elements supporting alignment between project progress and strategic goals and objectives.

The answers clearly show that there is no clear process that ensures alignment and regular review of the strategy goals within the project objectives.

The interviewees agreed that the projects concentrate on tasks at hand and that roles outside the project should be responsible for ensuring alignment with the strategy.

Some answers also indicate the assumption that there is some degree of expected alignment, since both technical and business strategy are aligned and
Once project is started, the primary focus is on project deliverables. Changes to scope are difficult as it is, additional changes in strategy would not help the project delivery.
SITM: It should be senior business mgt. responsibility. Strategy goals should not be constantly changed – especially when looking into long-term projects that require time and commitment. Strategy should be long-term, and cover approved project interdependencies and commitment to implementation.

Q11. What can be done within the business-as-usual process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?

PM: Now that’s a good question!
SITM: Business and usual processes are crucial to the successful maintenance of the environment and support of the strategy. This aspect of the organisational activity is highly neglected during project initiation, since impact on those areas are long-term, usually unpredicted and fairly costly.
SBM: Operational managers should have their own plans to address strategic goals and support projects, therefore aligning their activities with strategic objectives.

The answers also support the idea of alignment, however without clear agreement on whose responsibility it should be.

PMs response to Q11 shows that the project process within the Company at the time of these interviews did not cover formal alignment with strategy and business-as-usual processes.

<table>
<thead>
<tr>
<th>Table 7 - Interview Summary (Initiation)</th>
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<tr>
<td>strategy and other initiatives?</td>
</tr>
<tr>
<td>Q11. What can be done within the business-as-usual process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
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4.2.1.1 **Initiation: Impacts and Mitigation Observations**

The main long-term impacts during the initiation stage are related to the chosen technical solution. By making a decision to proceed with the chosen solution, the Project achieved the new direction, approval and definite goal. However, for such a large project, the solution and approval was based on so many assumptions, which created a realistic risk that the element of “the unknown would eventually create unforeseen impacts on the project plan, timelines, costs and the overall organisation.

The assumptions made at the time of the decision to proceed with the Project and the selected solution presented the main parameters under which this project was approved and expected to deliver project and strategic goals.

At this stage of the Project, the parameters were set at a very high level, with minimal accuracy about associated contingency due to the large element of the unknown. The only parameter that seemed clear was the vendor cost, which was expected to remain static for the agreed requirements. This immediately positioned the rest of the Project elements to be highly variable in order to support the static element (vendor cost).

This situation created conditions for unknown impacts in all areas other than the vendor solution, since the contingency for the “static” element provided by the vendor did not have any contingency. Therefore, it was expected that the other areas of the Project, namely internal development and testing efforts would be impacted by the expectation of flexibility and readiness to adopt to the Project decisions.

At this early stage of the Project, it was impossible to determine just how much the associated systems and business would be impacted and therefore impossible to predict the expected level of effort and associated costs. As is usually the case with project initiation stage, the best case scenario was presented, so that project costs would be acceptable and therefore open the doors for project approval. The later stages of the Project showed that the unknown element of impact and low-level requirements were
much higher in terms of costs and associated efforts to be so optimistically underestimated.

The only way to mitigate the risk of such significant impact on the budget and the project timeline at this early stage of the project is to invest time and effort in more detailed analysis of all available solutions, before making a decision. This might mean a longer project timeline due to approval delay, however it would give a more accurate picture about the project size and definitely help with cost management and informed decision making.

If there were more up-front time and effort invested in investigating impact before approving this project, it might have caused a different approach and solution to be explored or chosen. Especially given that the internal efforts ended up being far more significant than originally planned, the attractive side of the vendor-based solution (less internal development efforts) might have been questioned and evaluated more in favour of the internal solution, if this information was available at the time of initiation.

The question is for every organisation to establish just how much risk they are willing to take during their projects’ initiation: whether they are more inclined to make decisions without up-front investment into more detailed investigation, or if they prefer to use high-level information and take risks with unforeseen long-term impacts.

4.2.1.2 Project Initiation Summary

The information collected about the first stage of the project – initiation covers the following main points:

- The project initiation was based on technical motivation and business necessity.
- The decision to proceed with a particular solution was made on a set of large assumptions, based on high-level analysis only. These assumptions directly created a possibility for later unforeseen impacts, as on such large projects large assumptions mean detailed clarifications later, which might create additional costs and impacts.
• The financial element was a strong motivator in the decision to choose particular solution path. The assumptions that were supporting the proposed solution can potentially create the environment for later additional costs and impacts that could not have been discovered this early in the process.

• Looking back on the project, the project manager suggested that he would have proposed a different solution, had he known about the later impacts.

• In terms of the research question, the initiation stage of the Project has shown high relevance to the topic of the research and a strong indication that the case study can assist in identifying the factors for long-term factors.

4.2.2 The Planning

The initial investigation of the research questions indicated the importance of the planning stage of projects, especially decision making that can lead to long-term unforeseen impacts on the organisation. This important stage of the Project relies on various data, which helps piece together the events that occurred during planning.

So, it is logical that the majority of interview questions are closely related to the process of planning. Specifically, some of the key data elements used to analyse and present the information for the planning stage of the Project are:

- Interview questions grouped under “Alignment” sub-area, namely questions: #6 and #8.
- Interview questions grouped under “Project Success”, namely questions: #13, #13, #17, #19 and #20.
- Interview questions grouped under “Initiation”, namely questions #22, #23 and #24.
- Interview questions grouped under “Project Plan Development” sub-area (questions #25-#36).
- Interview questions grouped under “Scope Planning, Definition, Verification, Change Control” sub-area (questions #41-#46)
- Interview questions grouped under “Activity Definition, Sequencing, Estimating, Scheduling” sub-area (questions #47-#51)
- Interview questions grouped under “Resource Planning” sub-area (questions #52-#56)
- Interview questions grouped under “Cost Estimating, Budgeting, Control” sub-area (questions #57-#62)
- Interview questions grouped under “Quality Planning, Assurance, Control” sub-area (questions #63-#68)
- Interview questions grouped under “Organisational Planning” sub-area (questions #69-#74)
- Interview questions grouped under “Communications Planning, Information Distribution” sub-area (questions #84-#88)
- Project documentation:
  - post-implementation review (PDR#9)
  - project scope document (PDR#1)
  - meeting documentation and communication (PDR#5)
  - project schedule document (PDR#4)
  - project budget document (PDR#8)

While the recollection of events related to initiation of the project was consistent across the interviewee group, views on the planning process were somewhat different.

Based on their responses to the planning-related questions, the following pattern of responses can be recognised:
- General consensus with regards to the approach to planning, including chronological events that covered this stage of the Project
- Some difference of opinion when it comes to the responsibilities related to planning and long-term impacts, due to the level of their involvement during this project stage. Three groups emerged here:
  - Interviewees who were actively involved in the planning process, who expressed the view that the planning was based on very limited information and that further detailed planning should have been done later in the project, rather than expecting the original high-level plan to be
Interviewees who were crucial to the project success, but were not involved in the initial planning process. They expressed the frustration of working “in the dark” and being responsible for deliverables and timeframes set out by others.

- Interviewees who were not involved in the planning process or deliverables, but were impacted by the project. This group of interviewees expressed frustration that the planning stage of the project did not indicate the full extent of the impact on staff, costs and other initiatives.

- All 23 interviewees responses to the question #20 (“If you could go back in time, what would you like to see differently done or addressed with this project and at which stages and how?”) included some reference to a desire for more effective early planning and communication.

The key data outlined above was used to create a chronological analysis of the planning stage of the Project.

At the high level, the initial planning stage of the Project evolved around the chosen solution: the new outsourced system, provided by an external vendor.

According to the interviewees, there were various factors that influenced the course of the planning of the Project. Some of them are:

- The existing assumptions
- The additional assumptions
- The influence of the vendor
- The power of (the lack of) wider communication

These factors are worth exploring in greater detail, as the case study has shown that most of the issues resulted in unexpected outcomes, delays and long-term impacts for the Project originated during planning stages, although they were not recognised at the time. The aim of this research is to highlight the factors that create unforeseen impacts on the
projects and organisations, investigate their origins and help understand them better. The ways to control them better in the future and possibly minimise the impact of the most common unpredicted elements that occur during projects can only be found through proper assessment of the reasons behind such factors.

When conducting high-level planning, various assumptions have to be accepted in order to provide the essential correlation between fundamental elements of projects, as well as the basis for further clarification and confirmation.

However, it is often the case that the original assumptions remain untested, unclarified and unconfirmed for the large part of projects. Some of the assumptions might be fundamental, fully accepted and built upon for the later stages of project, creating a huge risk in terms of scope, cost and timeline, as well as for the overall quality.

In the case of the Project that is analysed here, the assumptions used for high-level initiation and as a basis for the solution evaluation remained in place and greatly influenced planning process, especially with regards to the timeline. When interviewed, the key members of the project team stated that the planning process would have been much more effective if there was a chance for an additional, more detailed discovery phase, to clarify the original assumptions, especially with regards to impacts, cost estimates and business requirements. Instead, the planning process proceeded with additional assumptions, based on the vendor’s assessment of the situation and related cost estimates.

Authors such as Koch (2001) and Lee (1996) agree that with outsourced project solutions, it is the responsibility of the organisation to ensure the chosen vendor solution is in line with the existing business and technology strategy, as well as with the needs of the business. In order to implement an efficient and successful vendor solution, a clear guideline needs to exist, protecting the core business of the organisation, business processes and relevant organisational interests.
With the Project, the planning stage was heavily reliant on the vendor’s advice and interpretation of business needs. This resulted in a very ambitious timeline for the Project, especially in terms of requirements gathering, integration with the existing systems and user acceptance testing.

From the start of the project planning, the internal project team and the vendor had different ideas about the timing and effort that would be required to implement the system. For example, the internal team suggested five months duration for the business and technical requirements gathering, while the vendor claimed it could be completed in eight weeks. The internal team suggested six months duration for the user acceptance testing, while the vendor claimed it could be completed in six weeks. According to the interviews and project documentation, the testing eventually took 12 months to complete. The project manager explained that this was due to issues encountered in the planned test cycles, requiring further modifications to be performed and therefore additional testing effort. This immediately indicated additional costs and clarification of a large assumption that originally supported the original proposal and associated decisions.

As Sommer (2003) points out, the integration between the vendor solution and the existing infrastructure is crucial, and gives direct evidence of the overall benefits of the outsourced solution. In the case of the Project, the interfaces with the existing IT infrastructure, as well as associated business processes were somewhat neglected, or more accurately glossed over during planning, resulting in unrealistic timelines and additional costs associated with project delays.

It would be expected that communication for such large undertakings as the Project would be extensive and performed across multiple levels within an organisation. The interview data showed that this was not the case. According to the project manager, the initial planning stage was performed by a small group of people, utilising minimal communication channels, resulting in a highly ambitious plan without full commitment or sufficient information for all involved parties.
The acceptance of the ambitious plan in terms of costs and the timelines meant that the agreed parameters were imposed on development and business teams, without giving them an opportunity to participate in the relevant impact analysis, planning and solution design. This resulted in a great deal of ambiguity in terms of impact on various areas of the existing infrastructure, business processes and the overall strategy path. The IT managers who participated in the interviews indicated that they were almost completely excluded from the planning process. The initial inputs they provided to the planning and solution design was limited to answering specific questions for their area of responsibility, without the opportunity to gain insight into the overall high-level picture and to contribute more effectively.

This is highly relevant when it is known that the decision to choose one of two offered technical solutions was largely based on the financial element of the proposal. It is probable that if there was an opportunity to go through a more detailed discovery process in the first place (taking into account factors such as integration issues, rework and customisations) a different picture could have been produced, including the financial elements. Such a different picture could have resulted in a different proposal for the preferred solution and could have ultimately impacted the solution decision.

Since the financial factor was highly relevant for the project approval and the solution choice, and given that the vendor estimates were considered a fixed element in the project budget only a minimal contingency was approved for the project (15% for the in-house developed components only, no contingency for the vendor-developed components). This reduced the overall contingency on the originally approved budget to 4.5% for the whole project. Aware of the lack of detailed planning opportunity and the danger of ambiguous assumptions, the project manager requested approval for the 20% contingency for the entire project. The request was denied. The lack of understanding for any deviations from the original (although ambitious) estimates put a strong pressure on the project participants and opened the door for quick solutions and shortcuts\(^\text{10}\) instead of thought-

\(^{10}\) a quicker, often sub-optimal method at achieving a goal or bypassing an issue
through long-term solutions throughout the impacted infrastructure.

The pressure to perform within the budget and the timeline, the lack of extensive communication and detailed impact analysis during the planning phase of the Project, as well as heavy reliance on numerous assumptions, provided a clear path for creation of long-term, unforeseen and unplanned impacts on the IT infrastructure, business processes and the overall organisational strategy.

As this case study shows, the unforeseen impacts created by projects are firstly triggered during planning stages, with lack of visibility over all possible impacts, as well as with the assumptions that are not overly tested and communicated. The question is: how many projects would have had a different decision made in terms of solutions, costs or even project termination, if such information was available during the planning stages? The organisations prefer to invest minimal resources into the early stages of projects. This is an attempt to minimise costs for initial project investigations, especially on initiatives that might not gain the approval to proceed as projects. But, in the case of initiatives that are approved and become projects, this brings the new question: will the additional investment into more detailed impact analysis and planning bring more benefits in the long-term?

The example of the Project shows that the long-term impacts would have been minimised if there was more attention given to the planning, communication and impact analysis early on. The interviewed participants of the Project agreed that the situation is indeed the symptomatic of common practice within the organisation, but added that the Company was lucky not to have too many projects of this size, as the financial impact would have been very serious. With smaller projects this is much less visible and isolated to a smaller area within the organisation; however, in the long run the overall impact on the organisational financial position would not be insignificant, if it was to be assessed across number of smaller projects.

Relevant extracts from interviews are summarised in Table 8 (PDR#14).
The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
- DPM-Deputy Project Manager
- ITM-IT manager
- PM-Project Manager
- SBA-Senior Business Analyst
- SBM-Senior Business Manager
- SITM-Senior IT manager
- TA-Test Analyst
- TM-Team member
- TMG-Test Manager
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<th>Question</th>
<th>Response</th>
<th>Comment</th>
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| Q26: How would you describe the planning process for this project?      | PM: Troublesome. The vendor insisted requirements could be completed in 8 weeks, I suggested 5 months. It took 6. Vendor said testing could be completed in 6 weeks, I said six months. It took 12  
SBM: Almost non-existent. It seemed that the vendor had all solutions, we just needed to implement the software. But, soon it was obvious that their functionality was very different to our requirements.  
BM: We were very optimistic with planning, expecting that the vendor solution and documentation will be fitting our requirements.                                                                 | The planning process was underestimated, due to lack of the vendor’s understanding of the Company’s business processes and related complexity.                                                                 |
| Q27: How much was an overall organisational strategy (both business and technical) incorporated in the project planning? How? | PM: The business owner and the head of technology were on the steering committees and owner and sponsor of the project. No formal process.  
SBM: The Company provides technical solutions to the financial industry. This project was definitely strategic. There was no need to evaluate the alignment. The project had full attention from the highest management, including Board. This was validation of strategy element here.   | This project was already marked as a strategic objective, however the lack of formal strategy alignment processes within the company indicate opportunities for priorities conflict and misalignment between various projects and the overall strategic direction.                                                                 |
| Q28: What are the factors that were crucial to the success of the project? Were they considered as part of planning? | PM: Dogged determination. Total ownership by the business and operations of the project. Excellent staff. Those are not elements included in the plan specifically, however highly essential.  
ITM: We really pulled our weight on this project. We accommodated so much internally, both development teams and testers, all the shortcomings with the vendor had to be handled internally. Great team work within developers and testers, but very hard communication with business and project management. I think no one estimated just how complex and long this would be…  
SITM: The key was in priority. Everything else had to stop or wait if it came into conflict with this project. We had top priority and access to resources and great internal people who worked closely with vendors. However, it was hard to estimate the effort when it was all poorly communicated at the start and we ended up doing much more internally than originally anticipated. Definitely inadequate planning. | The interviewees agreed that internal efforts were crucial to the success of the Project. Also, the high priority given to the project allowed access to the best resources that had to be made available to the Project.                                                                 |
| Q29: How much did other projects/initiatives influence the planning of this project? | PM: None  
DM/BM/SBM: This project had top priority. All other projects had to take a back seat if there was conflict with this Project. | The interviews clearly indicated lack of sufficient planning for this level of complex solution as required by the Project. |
| Q30: Who was involved in planning process? | PM: Owner/Sponsor/myself and the vendor for the high level plan. Individual stream members for their own areas  
ITM: Very poorly planned. Also, communication was almost non-existent during the planning stages. We were given minimal information at the time when we could have contributed the most.  
SITM: The planning was performed by a very small group of people, who could not possibly have enough information about the extent of the impact on the infrastructure and business areas. This was discovered only when we were expected to commit to deadlines for delivery, and there was not enough information. |  |
| Q31: How flexible or accurate was the plan? | PM: The plan allowed for minimal contingency. The plan was rebaselined 4 times due to issues with the vendor software quality. After the product was accepted and we were largely operating under our own control no further slippages occurred.  
ITM/SITM: The plan was absolutely unrealistic. | Since the solution was approved based largely on the financial element, the lack of accurate planning and therefore costing gave false perception about the complexity and therefore cost of the proposed/chosen solution. |
| Q57: What was the original contingency and what was it based on? | PM: There was a 15% contingency on the internal costs. However with no contingency on the vendor costs this reduced the overall project contingency to 4.24% (very modest for such a large project). A request to add overall contingency of 20% was refused, since financial element was a crucial factor in the decision to proceed with this solution. |  |
| Q32: How often was the plan evaluated with regards to strategy and other projects within the organisational environment? | PM: Wasn't  
ITM: No evaluation. This project was given highest priority, assuming it was strategic…  
SITM: I am not aware of any evaluation. It would be useful for various projects, as it often happens that there is no communication between various business units and solutions might overlap or take priority without proper evaluation against strategy goals. | The interviews indicated that there was not a formal or informal process for regular alignment between projects and the overall  |
| Q33: Was there anything | PM: The project certainly introduced changes to business and technical |  |
### Q36: What is the process that was followed for the plan execution?

**PM:** Regular project meetings, individual discussions.

**ITM:** It took a while for communication to improve and for internal teams to understand their tasks and project expectations. There was no clear direction, until the deadlines became unrealistic and the project received much needed attention.

### Q34: What could have been done better in planning stage to ensure better alignment with strategy?

**PM:** This was not required for the project, as there were no conflicting priorities for this Project. It was the top priority for the Company and did not require constant alignment.

**SITM:** The alignment with strategy was not required for this project, as it was clearly of highest priority. However, the impact on the infrastructure could have been better assessed as part of the planning, which would highlight other strategic elements, such as business development and related processes.

### Q44: Did other projects impact the scoping? Why and how?

**PM:** An important additional functionality (related to another project) was not foreseen by the vendor even though it was in the requirements. They requested another 4 months and $1m to implement this functionality. This delayed both projects and increased impacted budgets, other business initiatives, as well as internal resources and external customers.

### Q42: How much did project scope rely on business or technical strategy?

**PM:** The project scope relied upon business strategy far more than IT, even though the technical elements were considered.

**SITM:** The overall technical strategy was not the issue, since our goal was to integrate two major systems. However, scope had issues with the complexity of the required solution and the compromise with what was offered.

### Q45: During project, did the scope change under the influence of any factors?

**PM:** Yes, it changed relatively often, since discovery phase was very short and such a large project had many additional requirements not available immediately. Also, from technical perspective, as the vendor understood business/technical strategy. Although the interviewees indicated that the strategy alignment was not applicable to this Project, they all agreed that such process does not exist and that other project do not have a chance to be evaluated against conflicting priorities and solutions.

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| within the plan that impacted or changed the way business/IT operates?   | areas. We did plan for various impacts, but it is impossible to plan for everything, or to predict the extent of the overall impact for such a large project.  
BU: Business process changes and technology and products changes  
SITM: Various impacts on the existing systems and processes. | business/technical strategy. Although the interviewees indicated that the strategy alignment was not applicable to this Project, they all agreed that such process does not exist and that other project do not have a chance to be evaluated against conflicting priorities and solutions. |
| Q36: What is the process that was followed for the plan execution?        | PM: Regular project meetings, individual discussions.  
ITM: It took a while for communication to improve and for internal teams to understand their tasks and project expectations. There was no clear direction, until the deadlines became unrealistic and the project received much needed attention. |                                                                                        |
| Q34: What could have been done better in planning stage to ensure better alignment with strategy? | PM: This was not required for the project, as there were no conflicting priorities for this Project. It was the top priority for the Company and did not require constant alignment.  
SITM: The alignment with strategy was not required for this project, as it was clearly of highest priority. However, the impact on the infrastructure could have been better assessed as part of the planning, which would highlight other strategic elements, such as business development and related processes. |                                                                                        |
| Q44: Did other projects impact the scoping? Why and how?                 | PM: An important additional functionality (related to another project) was not foreseen by the vendor even though it was in the requirements. They requested another 4 months and $1m to implement this functionality. This delayed both projects and increased impacted budgets, other business initiatives, as well as internal resources and external customers. | The data indicates serious scope changes and impact on deadlines, schedule and cost. |
| Q42: How much did project scope rely on business or technical strategy?   | PM: The project scope relied upon business strategy far more than IT, even though the technical elements were considered.  
SITM: The overall technical strategy was not the issue, since our goal was to integrate two major systems. However, scope had issues with the complexity of the required solution and the compromise with what was offered. |                                                                                        |
| Q45: During project, did the scope change under the influence of any factors, | PM: Yes, it changed relatively often, since discovery phase was very short and such a large project had many additional requirements not available immediately. Also, from technical perspective, as the vendor understood |                                                                                        |
our network more work was required from them in respect of the interfaces management and control. Providing we did not have a large contingency, this created significant impact on the project timeline and budget.

Q47: What could have been done differently in terms of activity definition, sequencing, estimating and scheduling?

| PM: Should have had an additional discovery phase, to highlight as many impacted areas as possible, especially the extent of technical efforts required to integrate vendor solution into our IT and the business. SITM: Involve internal technical and business teams early. This project impacted 90% of business and technology, and none of those areas were involved in discovery or the planning process. | The interview data indicates unforeseen and unplanned impacts that could have been largely predicted if the planning was done differently. Quick estimating and planning brought false expectations in terms of complexity, delivery and costs. More investment into the planning process would have provided the Company with more accurate information which might have resulted in a different solution decision for the Project. |
4.2.2.1 Project Planning Summary

The information collected about this stage of the project – planning covers the following main points:

- The planning largely revolved around vendor-specific activities, with no evidence of high-level perspective of the overall project effort and delivery.
- The level of planning was insufficient for such a large project, especially since major assumptions used for the project initiation were soon demonstrated to be largely underestimated.
- Looking back, the interviewees realised that the planning needed to include participation of internal IT experts and cover impacted areas, which were assumed to be simpler tasks than demonstrated later in the project.
- At the planning stage of the project, the alarm should have been raised, as soon as any of the assumptions proved to be inaccurate or underestimated, a larger-scale high-level impact analysis should have been undertaken to clarify the situation and adjust the estimates.
- The planning stage was shown to be highly relevant to the research question by demonstrating decision making which opened the door for later unforeseen impacts and additional costs.
- The interview data indicates unforeseen and unplanned impacts that could have been largely predicted if the planning was done differently.
- Quick estimating and planning brought false expectations in terms of complexity, delivery and costs. More investment into the planning process would have provided the Company with more accurate information which might have resulted in a different solution decision for the Project.

4.2.3 The Analysis (Business and Technical)

The next stage of the project process is the analysis. For the purpose of more detailed overview of the various components of the overall project analysis, this will be conducted in two parts: initial analysis of the business and technical requirements, and more detailed system analysis and design.
While there were 107 interview questions used in total, the following questions provided the key data elements used in the analysis:

- Interview questions grouped under “Project Plan Development” sub-area (questions #25-#36).
- Interview questions grouped under “Scope Planning, Definition, Verification, Change Control” sub-area (questions #41-#46)
- Interview questions grouped under “Activity Definition, Sequencing, Estimating, Scheduling” sub-area (questions #47-#51)
- Interview questions grouped under “Cost Estimating, Budgeting, Control” sub-area (questions #57-#62)
- Open interview question on business and technical analysis (question #106)

The remaining interview questions addressed less critical elements of the project and provided additional details in support of the key data. As part of the interview dynamics, it was often the case that answers to some of the key interview (especially open-ended) questions included answers to other related questions.

In addition to the interview questions, the following supporting documentation provided additional key data elements, mainly with regards to quantitative data in support of qualitative data collected through interviews:

- post-implementation review (PDR#9)
- project scope document (PDR#1)
- meeting documentation and communication (PDR#5)
- project schedule document (PDR#4)
- project budget document (PDR#8)

While many of the above key data elements were picked up and addressed during the analysis of the previous (planning) step of the Project, this stage concentrates more on the task discovery and the first steps in impact assessment (both business and technical).

The analysis activities on the Project were performed in two parts: primary business
analysis (closely related to the primary functionality of the vendor solution) and the analysis of the impacted business and system areas within the organisation.

The analysis of the interview data shows the following pattern of responses:

- Interviewees (led by the project manager) who were responsible for coordination of the initial analysis efforts, including impact assessment. This group expressed their frustration with the limited time available to conduct the analysis, as well as with the overly optimistic expectations outlined by the business (based on vendor promises).
- Impacted parties (IT managers and developers) who joined the project later and were pressured to deliver within unrealistic timeframes and minimal input information.
- The business who relied on the timeframes and costs outlined in the original project proposal, which was used as the basis for project approval.

All three groups of interviewees agreed that the project was underestimated and under-analysed for its size and complexity.

According to the project manager, the primary business analysis was performed over four months in complete isolation from the rest of the Company, solely concentrating on evaluation of the vendor product functionality and the required modifications to customise the product to suit specific business needs. At this stage of the project, it was widely assumed that the new system provided by the vendor would almost seamlessly integrate into the existing infrastructure (both business and technical). Under this oversimplified assumption, only the primary area of the business was closely involved in the analysis and functional evaluation of the chosen product. This prevented recognition of much needed awareness of the complexity and the impact the Project was going to create for all areas of business and technology.

Through the interview with the key project participants it became clear that this part of the analysis concentrated only around the primary business area for the Project. Other
areas of the organisation did not become actively involved in the initial analysis and evaluation activities. The IT manager indicated that the assumptions made during initiation included certain conditions in terms of dependencies and timing for key activities, which was not met by the project. The variation of these conditions caused confusion between various dependent (impacted) areas and a long inactivity period. After the vendor-specific analysis was done, it was expected that the original assumptions were still valid and that internal technical areas would be equally effective as if they were involved in the planning and analysis process.

The overall business analysis objectives for the Project were not centralised and coordinated across the project at this stage, so the objectives were lacking clarification and direction. There was an assumed expectation within the project team that the project business analysis resources were to concentrate on the new product functionality, and that each impacted business and technical area would perform their own analysis and take ownership of their work. According to IT interviewees, the internal impact on interfaces was largely neglected and underestimated. The analysis was not clearly communicated to all impacted areas, so by the time the primary business analysis was completed, many business and technical areas were not aware of their responsibilities or the project impact. Even for those areas aware of possible impacts there was not enough information to take action, or direction to indicate what was expected from each impacted area.

The level of communication at this stage of the Project was not sufficient for all impacted areas analysis to take place at the same time and to contribute to detailed planning and scheduling. This lack of wider analysis contributed to ambitious estimates around the implementation costs, especially in the areas of product customisation and integration.

The subsequent analysis showed that the degree of impact on the other areas (internal businesses and systems) was substantially underestimated, so when the time came for the impacted areas analysis to be performed, the deadlines were already established and accepted by the senior management.
This was the stage when some of earlier mentioned assumptions were tested for the first time. Business analysis is the first detailed step where the proper discovery is conducted and original assumptions confirmed or challenged. This is also the step where first earlier unforeseen impacts were discovered, qualified and quantified. By this time, certain expectations in terms of project delivery, cost and timeline were already established, so the results from the analysis that impact the project in a negative way are considered project slippages.

In most organisations there is a strong commitment already made to projects by the time their business and technical analysis are completed. Some organisations plan for deviations discovered during detailed analysis and cover them with generous contingencies in terms of timing, cost and resources. Other organisations perform reassessment of the original assumptions and have a decision made whether or not to proceed further with the project or chosen solution, where impact of the business analysis results are significant enough to force reassessment.

In the case of the Project, the Company already made the commitment to the chosen solution and the timeline, so various measures were taken to minimise the strong impact created by the detailed analysis results: the timeline was adjusted, costs were reassessed, requirements were reduced. In addition, the project impacted on a large customer base and therefore project objectives, approach and timelines were already communicated.

It is important to note an additional factor that contributed to the easy acceptance of the vendor-originated assumptions on the Project. The vendor was already a proven provider of a major software solution within the Company. The existing relationship with the vendor prior to the Project was highly positive. The expectations that the vendor would provide the same level of expertise and services with the Project were a contributing factor to the high reliance and trust in the assumptions provided to the Company. It was later demonstrated that, while the vendor was proven to be highly competent and successful with the functionality of their primary software already successfully employed within the Company, the functionality of the product required for the Project was much
more outside the vendor’s area of expertise than originally thought. This is clearly expressed through the interview with a senior IT manager, who stated that the vendor was not familiar with the business complexity and that the internal business and technical teams were involved late and only then the new tasks started appearing once more expertise was involved in evaluation and development. The interviews also indicated that customisations required to be performed on the original product to incorporate the new functionality proved to be much more complex than expected (by both the Company and the vendor).

According to interview data, at the time of the Project initiation the Company was not highly experienced in implementing vendor-provided solutions. The review of IT infrastructure and the interviews showed that the majority of Company’s technical solutions were developed in-house, so the expertise and project processes within the Company were more inclined towards internal development, and much less towards vendor-managed and outsourced solutions.

When interviewed about the usual practice within the Company with regards to project analysis, assessing assumptions and performing impact analysis on other areas (both business and technical), the project participants agreed that the complexity of projects is a primary factor in terms of the impact that is created as a result of pre-analysis assumptions and subsequent impact of the analysis results. With a complex project there is a greater chance for the original assumptions to have a larger impact on the project plan and outcomes than it is with the small projects. The reason is not just due to the size of the undertaking, but more to do with the number of impacted areas and the degree of the “unknown”. Large projects are not necessarily complex and small projects are not always simple. Even with large projects, if they are isolated to one or a small number of business and technical areas, it is easier to make realistic assumptions and to perform a more accurate initial assessment, no matter how large or expensive the project might be. With such large but not highly complex projects the risk is mainly with the effort and commitment to a long timeline, rather than unforeseen long-term impacts to the business, infrastructure or strategy.
There are examples of relatively small (in effort) initiatives completed within the Company in the past that were wrongly assumed to be simple due to low cost and minimal effort associated with the actual implementation of the project objectives. But, subsequent testing and analysis showed strong unplanned (and in some cases even unacceptable) impact on other business areas and/or technical systems. Such situations resulted in either complete change in scope or approach for those projects, or even termination. The impact of such small projects was not significant enough to raise strong awareness about the importance of accurate estimating, especially since most of the project costs were internal. Throughout the interviews it was revealed that the Company experienced another project in the past that originally started as a relatively small and simple initiative, but ended up being 20 times more expensive than originally thought once its full complexity and impact on other areas was revealed through more detailed analysis. The mentioned project was subsequently cancelled, but only after significant resources were utilised and every effort was made to keep the project going.

**From this it can be concluded that project risk increases as the gap between perceived and actual project complexity increases.** The complexity of project can be seen as an important factor in determining the risk for unforeseen impacts and associated costs created by project, as well as project size. In the case of the Project, both size and complexity were present, therefore increasing the overall risk of unforeseen long-term impacts on the environment, business and infrastructure. This brings a logical question: what specific factors prevent organisations from performing more accurate estimates early in the projects?

Relevant extracts from interviews are summarised in Table 9 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
- DPM-Deputy Project Manager
• ITM-IT manager
• PM-Project Manager
• SBA-Senior Business Analyst
• SBM-Senior Business Manager
• SITM-Senior IT manager
• TA-Test Analyst
• TM-Team member
• TMG-Test Manager
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<td>Q49: What could have been done in terms of predicting the additional tasks and activities that occurred during the project? Would it in any way impact the decision to proceed or to terminate the project?</td>
<td>PM: Yes they would have impacted the decision since this was largely made from a financial perspective rather than a strategic goal. I believe that if we had all the facts beforehand (full cost, duration, impacts), we would have looked for and possibly selected an alternative solution (internal development or a different approach).</td>
<td>The interview data indicates that the initial (and crucial to the solution decision) analysis was performed by only a small number of people from the Company and concentrated on the vendor product and functionality. No internal impact analysis was performed, with the assumption that internal impact would be minimal and that vendor product would provide a wide-range solution, as a replacement to the existing technical system.</td>
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<td>Q50: How did the new tasks come about? What was the discovery process? Were they predicted during planning and what could have been done with regards to them being discovered earlier?</td>
<td>PM: Requirements analysis and testing brought out misunderstandings. Longer time frames for these activities would have helped. SITM: The vendor was not familiar with the business complexity. Also, internal business and technical teams were involved late and only then the new tasks started appearing once more expertise was involved in evaluation and development.</td>
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<td>Q48: Can you quantify any impacts on costs or the project in terms of changes in activities and schedule?</td>
<td>PM: A number of changes were requested of the vendor once we had commenced testing. This has a financial impact to the project as well as 2-3 months of delay. SITM: One of our systems required a change, which was originally estimated to $100,000. With scope changes and various compromises throughout the project, it ended up costing over $1M. Much of this cost was covered by business-as-usual allocation and was not included in project budget. This moved resources from other tasks and impacted other initiatives.</td>
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<td>Q60. What are the areas within the infrastructure that needed changes after this project? Are there any new ongoing maintenance/infrastructure costs related to those changes? Were they planned originally and presented in the plan?</td>
<td>PM: Internal systems were impacted, but they were included in the overall project scope. SITM: Many changes required for the Project were covered from our internal maintenance costs. We still have issues with some shortcuts we had to make in order to meet the deadlines. In all, we did not compromise quality, but did include various workarounds in order to meet the deadlines and requirements.</td>
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<tr>
<td>Q106. How was the business and technical analysis conducted? Was it</td>
<td>PM: We had a selected number of business representatives working closely with the vendor to analyse product and requirements.</td>
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11 A temporary measure used to bypass, mask or otherwise avoid a system issue, until a more permanent solution is implemented.
adequate? What could have been done to improve it?

SITM: For months we had no information about the complexity, requirements or specifications for the work that is required from us. The participation of internal people in analysis was minimal, which proved to be highly risky.

ITM: We were asked to estimate internal efforts based on minimal information, and then expected to commit to deadlines, even though the dependencies were late to begin with. The communication during analysis phase was very poor and we had to make a lot of assumptions to be able to estimate work.

BAM: The analysis efforts were concentrated around business functionality provided by the vendor software, and neglected to review all changes required to impacted systems and business areas.

SBM: The efforts invested into analysis were not sufficient for the size and complexity of the project. The analysis phase did not include detailed impact analysis and missed revealing any impacted projects and services, as well as systems.

Table 9 - Interview Summary (Business and Technical Analysis)
4.2.3.1 Project Analysis Summary

The information collected about this stage of the project – analysis covers the following main points:

- The majority of the analysis was product-specific and excluded internal impacted areas, such as systems and interfaces. This caused confusion and inactivity within the impacted areas, the time that could have been spent more effectively if the representatives from those areas were included in the analysis process.

- The communication was not at the satisfactory level in this crucial stage of the project. It was assumed that each impacted party would “figure out” what to do and take full responsibility for analysis. This might have worked if there was some central coordination and communication that would initiate relevant discussions and analysis activities.

- The assumptions and conditions under which the estimates of the impact were initially made were not supported and therefore caused confusion and additional costs during the analysis.

- There was not enough information provided to the impacted areas before system analysis was to start and the deadlines were already decided for delivery and testing.

- The mentioned factors are highly relevant to the research question and this stage of the case study highlighted just how quickly some of the large impacts could be initiated just by insufficient communication and collaboration at such a crucial stage of the project – the analysis.

4.2.4 The System Analysis And Design

This part of the project concentrated closely on the technical aspect of project analysis.

To present the details of this project stage, the key data elements were drawn from the following sources:

- Interview questions grouped under “Alignment” sub-area, namely questions: #6 and #8.
Interview questions grouped under “Project Success”, namely questions: #13, #13, #17, #19 and #20.

Interview questions grouped under “Initiation”, namely questions #22, #23 and #24.

Interview questions grouped under “Scope Planning, Definition, Verification, Change Control” sub-area (questions #41-#46)

Interview questions grouped under “Activity Definition, Sequencing, Estimating, Scheduling” sub-area (questions #47-#51)

Interview questions grouped under “Resource Planning” sub-area (questions #52-#56)

Interview questions grouped under “Cost Estimating, Budgeting, Control” sub-area (questions #57-#62)

Interview questions grouped under “Quality Planning, Assurance, Control” sub-area (questions #63-#68)

Interview questions grouped under “Organisational Planning” sub-area (questions #69-#74)

Interview questions grouped under “Communications Planning, Information Distribution” sub-area (questions #84-#88)

Open interview question on business and technical analysis (question #106)

Project documentation:
- post-implementation review (PDR#9)
- project scope document (PDR#1)
- meeting documentation and communication (PDR#5)
- project schedule document (PDR#4)
- project budget document (PDR#8)

In addition to the previous stage (initial business/technical analysis), separate patterns of responses emerged related specifically to the technical analysis:

Interviewees who were part of the project team during the initial analysis stage believed that the optimistic approach to the original timeframes was the issue and that the original solution decision was largely based on the vendor information
and promises.

- Impacted parties (IT managers and developers) who started getting involved in the analysis process a little later than the original project team felt somewhat scrutinised for outlining the additional effort requirements and related to impacts on the infrastructure that were not discovered during the project proposal stage.

The data collected for the analysis of this stage of the Project showed the first significant recognition of unplanned and unforeseen impacts on this project.

According to the Project Manager, the Project had two stages in the system analysis and design: initial assessment and detailed analysis.

The first stage was a preliminary stage performed during initiation of the project, with the aim of assessing the overall costs of two solution options that were presented. The preliminary system analysis and design was conducted at a very high level, using the initial assumptions made at the beginning of the project, based on a very high level understanding of presented solutions. The results of this preliminary analysis were added to the list of the initial assumptions and used for the overall assessment of presented solutions. The initial analysis was largely based on oversimplified elements and assumptions, therefore produced fairly optimistic results in terms of complexity, costs and the overall impact on the systems.

As the chosen solution was based on the functionality of the existing vendor software, it was originally assumed that the integration element would just be the extension of the components already integrated with this software. It was expected that extension of the existing functionality to include additional requirements would be much simpler than it later proved to be. Therefore, the initial system analysis was very much simplified under those assumptions.

The second stage of the system analysis and design was conducted after the initial business analysis was performed and the interim assumptions tested, clarified or
confirmed. With more information available in terms of functionality, integration points and the overall logic of the technical components of the solution, it was possible to perform a more accurate system analysis and commence design activities. According to the IT interviewees, the pressure to absorb additional efforts and deliver as per original requirements was immense.

At this stage it became obvious that the Project was underestimated in terms of complexity, required resources and the risk. For the Project to succeed it was necessary to ensure that the highest priority was assigned to it and required resources made available. This is when the first budget estimate adjustment was made, with the increase of 25% - from $8M to $10M.

Further analysis activities were performed in various areas of impact: external customers, internal systems, information dependencies and affected business and technical processes. The original estimates and schedule deadlines were imposed on all project participants (including the vendor), but it soon became clear that the schedule was too ambitious and needed adjustment.

The first delays with project deliverables appeared during this stage of the project. The vendor did not provide the necessary technical documentation to the Company and as a result, the dependant systems and participants could not start with their technical analysis as planned. However, the schedule was not updated until the first acceptance testing was unsuccessful and forced the change in schedule.

During the design stage, it became apparent that the data setup covered within the vendor software deviated from the existing business and processing logic of the Company. The interview with the Project Manager and Senior Business Analyst revealed that functionality and technical discussions further revealed that the vendor needed more assistance than originally expected in order to match their data model to the business requirements. This adjustment in the data setup also created additional technical requirements within related systems, therefore increasing the effort required for the
At this stage it became clear just how important skilled resources were to the Project. It was assumed and expected that the best skilled people would be available to perform all the tasks, but majority of design steps required a specific combination of business, system and process skills. Only a limited number of people possessed the crucial skills set combination, so many tasks that could have been performed in parallel had to be addressed in sequence as they relied on a small number of key people. Also, some of the key people planned to perform technical analysis and design had to participate in complex business discussions and decisions related to resolving the discrepancies between business requirements and the capabilities of the new technical solution.

The technical analysis and design phase results impacted on the original schedule and the dates were adjusted to incorporate the additional complexity discovered during this phase, therefore delaying the Project by around three months.

Focus of this phase of the Project was largely technical, and later it will become apparent that the project was running a strong risk in terms of key resources and technical complexity. When interviewed, the Project Manager highlighted that this was the phase where more emphasis should have been given to resource planning, especially cross-skilling and retention of key staff for the duration of the project.

With the focus on quality and the deadline, the Project team proceeded towards the build phase, heavily relying on the vendor’s estimates in terms of delivery of the primary software and subsequent acceptance by the business.

Relevant extracts from interviews are summarised in Table 10 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer

overall development for the Project.
- DM-Development Manager
- DPM-Deputy Project Manager
- ITM-IT manager
- PM-Project Manager
- SBA-Senior Business Analyst
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| Q17: What was the highest/lowest point of the project? | **SITM:** I must say that the communication was the lowest point of the project. I think we were all naïve to believe that the vendor would provide such complex solution without need for internal integration and close communication. The highest point was great teamwork towards the end of the project, when everyone really worked hard and together to deliver.  
**DM:** It was hard to contribute to the project analysis and solution development without being formally involved in discussions and decision making. And, at the end we had to work very hard to make up for lost time and meet the objectives and tight deadlines.  
**ITM:** We did not imagine just how much customisations and interface points would need to be developed. I believe at some point we all felt a bit overwhelmed with the tasks assigned to our teams, but I must say that the team work prevailed, which was the highest point of the project. We have some very skilled and hard working people who really helped make this project successful.  
**PM:** Changes in schedule and budget were the hardest part of the project, especially when testing would show too many defects and deadlines needed to be adjusted. The highest point of the project was when we successfully negotiated inclusion of an additional functionality without increasing the budget.  
**BM:** The highest point of the project was successful delivery, almost issue free, for such a complex project it was really wonderful! | The organisation had a strong in-house development history and quality controls and assumed that the vendor solution would by default meet the same expectations. Furthermore, the major analysis and solution efforts were concentrated around ensuring the vendor solution fit the requirements and business processes within the organisation.  
During the project it became clear that the integration element was much more complex than originally anticipated, with multiple integration points requiring further adjustments to ensure smooth processing upon delivery.  
The interview gave evidence of strong reliance on internal skilled resources to mitigate impacts and resolve issues that were not foreseen or planned at the beginning of the project.  
 Only a subset of business processes and impacted systems were involved in the original design discussions. Overall, the extent of the impact was well underestimated and resulted in changes to the budget, as well as urgent (and not always the most optimal) systems and business process changes to ensure successful integration |
Q20: If you could go back in time, what would you like to see differently done or addressed with this project and at which stages and how?

PM: Budgeting for contingency and allowance for longer time frames. Change to the way change requests were handled. Improvement to Joint Steering Committee management. Also, I would have liked to see more early discussions about solutions and requirements, so that expectations could be more realistic with regards to timelines and costs.

TMG: We could have done more end-to-end testing upfront. We mainly concentrated on vendor-related testing and gave less emphasis to internal interfaces and integration points.

SITM: I think we would probably focus more on detailed requirements and solution discussions before committing to the project. Small differences decided in favour of the vendor-developed solution, but if we had more insight into the additional work and complexity that followed, maybe our decision would have been different (in favour of other vendor or internally developed solution).

SBM: I would seek more information and clarification around the vendor’s understanding of our business, especially our business processes.

The interviewees agreed that more thorough up-front analysis and earlier discovery of unforeseen impacts and related complexity could have resulted in a different solution being selected for this project.

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<td>SITM: I think we would probably focus more on detailed requirements and solution discussions before committing to the project. Small differences decided in favour of the vendor-developed solution, but if we had more insight into the additional work and complexity that followed, maybe our decision would have been different (in favour of other vendor or internally developed solution).</td>
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<td>SBM: I would seek more information and clarification around the vendor’s understanding of our business, especially our business processes.</td>
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Table 10 - Interview Summary (System Analysis and Design)
4.2.4.1 Project Design Summary

The information collected about this stage of the project – systems analysis and design covers the following main points:

- The design stage of the project forced the validation of the original assumptions in terms of costs and the associated project impact. This process led to the first discovery of unplanned and unforeseen impacts that affected the budget and project delivery dates.
- It was discovered that the assumptions were oversimplified and that the impact was much more involved and costly, which required an increase in the budget predictions and the overall project cost estimates.
- The design process contributed to more realistic assumptions and parameters that are relevant to the overall integration of the new product into the existing infrastructure.
- This project stage is highly relevant to the research question as it illustrates the unforeseen impacts that directly affected the costs of the project, and highlighted the pressure that was placed on the project team to deliver on time and within budget. This opened the door for quick decisions and shortcuts that would further create impacts that would be shifted to after the project implementation.
- An additional point to note in this stage is the recognition of the project priority and the importance of the skilled resources required for the project success.

4.2.5 The Build (Technical Development)

This part of the study analysis concentrated around the responses received by the interviewees who participated in the technical development of the solution. The key data elements used for this part of the analysis are:

- Interviews with the following roles:
  - DM-Development Manager
  - DPM-Deputy Project Manager
  - ITM-IT manager
• Open interview question on business and technical analysis (question #106)
• Open interview question on development and testing (question #107)
• Project documentation:
  o post-implementation review (PDR#9)
  o project scope document (PDR#1)
  o meeting documentation and communication (PDR#5)
  o project schedule document (PDR#4)

The data results maintained the same patterns of responses from the previous stage (technical analysis):

- Interviewees who were part of the project team during initial analysis stage believed that the optimistic approach to the original timeframes was the issue and that the original solution decision was largely based on the vendor information and promises.
- Impacted parties (IT managers and developers) who started becoming involved in the analysis process a little later than the original project team. They felt somewhat scrutinised for outlining the additional effort requirements and related to impacts on the infrastructure that were not discovered during the project proposal stage.

Two elements were especially highlighted by all interviewees during this stage: communication and prioritisation – especially the impact they had on the technical development dynamics.

According to the interviewees, the build phase of the Project was performed in four areas:
• Vendor software development
• Internal interfaces development
• External interfaces development
• Business processes reengineering (additional tools development)

The main area of complaint from the IT interviewees revolved around the fact that the development of vendor software was given a primary focus, with little emphasis on the internal impact and required actions. The Project Manager indicated that this was due to the size of changes and strict deadlines around delivery. The Company worked very closely with the vendor, especially with regards to the acceptance planning of the primary software components. A number of highly skilled technical and business people worked intensively with the vendor and provided support and clarification for requirements (both business and technical). The vendor software was conditioned by the full acceptance of agreed requirements and delivery timelines.

The project manager also noted that the internal interfaces development was given top priority within the Company in terms of resources and time, compared to other activities happening during the life of the Project. This allowed for effective allocation of key people to the internal development and testing required for the project. The main obstacle for the internal development efforts were ambiguities related to some detailed functionalities of the vendor software, which needed to be clarified through testing. This meant that a risk was present that the assumptions used for internal development might not be confirmed once vendor software becomes available for integration testing.

Similarly to the internal development situation, the efforts and complexity related to the development of external interfaces were largely oversimplified and heavily dependant on the assumptions created based on scarce information provided by the vendor. This meant that both the internal and external interfaces pushed some of the crucial design and corrections work until after the first integration testing, which increased the overall implementation risk for the Project. Many customers that needed to utilise the project solution for their own systems did not even start with their development until the testing was available, some due to their misunderstanding or oversimplification of the
requirements, others expecting a much longer time for the project implementation.

While the first three areas of build activities were purely technical, the fourth area was concentrated around the preparations for the business management of the new software and relevant process changes to ensure full efficiency and quality. This area included various technical developments of business tools that would enable easier management of related business areas and data.

According to the interview data, dependency on key technical and business staff became one of the main risk areas for the Project during the build phase. Especially after the customers of the Company that needed to interface with the new system realised how complex the changes were. Some of the customers became competitors for the same skills set on the job market and employed some of the key resources from the Project.

At the time of the technical analysis and solution design, and subsequently the build, the Project was mainly concentrating on the quality of solution and the best way to integrate technical elements, satisfying the business requirements and processes. Very little consideration was given to the retention of staff or cross-skilling of the less experienced team members. While some key people were give incentives to stay until the end of the project, there were no penalties for early departure, which did not prevent some of the highly critical resources accepting lucrative offers to leave the Company and join some of the external customers.

During the crucial build phase, some of the key business and technical resources left the Project, creating a brief crisis in terms of knowledge gaps and technical deliverables. This required tighter planning and management around key resources and the need for additional contingency planning.

After the realisation of the full extent of the impact on the internal interfaces and associated required efforts and complexity, a technical forum was formed to regularly exchange information and prepare for integration activities. This stage of the project
would have been much easier to handle and far more effective if such a forum was formed earlier in the process, preferably during analysis and especially during the design stages. Although challenging in the beginning, the benefits of regular communication and information exchange helped quickly build confidence in the delivery of the overall solution and a common understanding of the complexity, interdependencies and reality of the associated technical and business deliverables.

Relevant extracts from interviews are summarised in Table 11 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
- DPM-Deputy Project Manager
- ITM-IT manager
- PM-Project Manager
- SBA-Senior Business Analyst
- SBM-Senior Business Manager
- SITM-Senior IT manager
- TA-Test Analyst
- TM-Team member
- TMG-Test Manager
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| Q100: What were the main lessons learned on this project in terms of vendor management? | PM: We should not underestimate the importance of solid business understanding within vendors IP. We should not rely on vendor perceptions of quality; we should clearly state our objectives and standards and expect them to be followed.  
DPM: We have a solid base of subject matter and technical expertise within the organisation and we should be comfortable to participate in estimates based not just on vendors perception of complexity and effort, but our own.  
SITM: Vendor solutions often sound too-good-to-be-true when presented by their sales departments, but before any solution is trusted to an external party, we need to ensure that their quality and expertise standards are in line with ours.  
CL: We definitely used this project as a valuable experience for our future vendor negotiations. Having being involved in such a large project, related to so important part of our systems and business function was a great way to understand our business better and to be able to use this experience for other projects. Also, it was valuable for managers and staff to become more acquainted with the legal aspects of their jobs and vendor negotiations. | The development phase of the project clearly showed that the organisation was going through an adjustment in terms of the development approach. Previously, the organisation relied on internal development for crucial systems. Business and technical areas were used to having full control over deliverables and systems development, so working with a vendor was a challenge. Previously, business relied on the subject matter and the technical expertise of internal technical staff to understand business requirements with only minimal information. Working with a vendor requires detailed communication, specifications and negotiations, so this required cultural adjustment for internal business units who were very much used to the convenience of availability of internal skilled staff. Quality standards needed to be negotiated throughout the project, which required strong involvement of internal testing efforts, with testers who understood the business processes well and were able to contribute to quality control of the development. |
| Q102: What were the best and the worst experiences with regards to working with an external party? | PM: The biggest issue was with the level of the vendor’s understanding of our business and readiness to accept customisation to fit our expectations.  
DPM: We actually learned to appreciate more our internal quality standards and subject matter expertise that we took so much for granted. Also, our business quickly learned to cut down the requirements when they realised that the vendor charges for every customisation and how different it was to internal development.  
DM: We actually created a very good team towards the end of the project, where we were working very well with the vendor on achieving the deadlines and expected quality.  
CL: Some of our managers did not have any experience in legal negotiations and that created risks in terms of our position in negotiations with the vendor. They quickly learned, though…  
SBM: We learned to respect our internal developers more. We were so used to availability of internal skilled staff. |
having them available around the clock and ready to fulfil any new requirements we threw their way. Working with vendor is very different: everything is fully chargeable and requires formal details and communication, which seems to take longer than when working with internal staff who are well familiar with our business and can quickly respond to our requirements.

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<th>Q103: What is the exit strategy process with regards to the selected vendor? What is associated risk? What is the long-term impact on IT costs?</th>
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<td>CL: Our contract ensures ownership over software and components in case the vendor is unable to meet expected support levels. SITM: We are considering fully in-sourcing the support function for this product, to have full control over its reliability and continuity. Historically, our organisation prefers to have full control over systems support.</td>
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<th>Q6: What can be done within the project planning to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</th>
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<td>PM: The senior management should be responsible for this through regular reviews and checkpoints as part of the project process. SITM: The new project process allows for more close monitoring of priorities and therefore alignment between project and strategy. However, when it comes to systems-related impacts and long-term strategy, I’m afraid I cannot see the current project process ensuring that. ITM: We would need clear responsibilities around continuous alignment with IT strategy. In theory, this exists through “architecture review” for project solutions, but that is only when the solution is presented at the start of projects. There is no follow-up or control over details that sometimes create additional impacts as part of modified solution, which is not evaluated further to ensure compliance with the technical strategy direction.</td>
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<th>Q107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?</th>
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<td>ITM: I think we would have done it better internally; the efforts and associated costs with vendors sometimes seemed so hard, especially for organisations such as ours that prefer to have full control over their projects. SBA: I have to say that it was surprising that we really pulled it off successfully after so much complexity and misunderstanding with the vendor at the beginning of this project.</td>
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A number of internal (business and technical) resources were considered critical to the successful and timely implementation of the project. The risk of losing any of those resources became very high, especially with some key staff leaving the organisation. To mitigate this risk and to compensate for the loss of some of the key resources, other areas of the organisation had to reprioritise some of the work and assist with critical elements of the project.

Table 11 - Interview Summary (Build/Technical Development)
4.2.5.1 Project Build Summary

The information collected about this stage of the project – build covers the following main points:

- The build covered various areas:
  - Vendor software development
  - Internal interfaces development
  - External interfaces development
  - Business processes reengineering (additional tools development)

- The major focus was given to the vendor software development, which caused issues with the internal impacted systems, due to minimal information exchange and focus on preparations for integration and testing.

- Quality standards needed to be negotiated throughout the project, which required strong involvement of internal testing efforts, with testers who understood the business processes well and were able to contribute to quality control of the vendor product and associated interfaces.

- The development phase of the project clearly showed that the Company was going through an adjustment in terms of the development approach. Previously, the organisation relied on internal development for crucial systems. Business and technical areas were used to having full control over deliverables and systems development, so working with a vendor was a challenge. The organisation realised that they would prefer to have more involvement and control over the post-project product support function and started negotiations.

- The testing planning was focused around the primary (vendor) product and neglected to include early testing for the internal dependencies. This caused some late rework during the integration and implementation stage. Some of these efforts were shifted to after the implementation, and were bypassed by shortcuts. All this created long-term impacts on the operational element of the infrastructure.

- The importance of effective communication becomes apparent through this project stage – especially in establishing the accurate assessment of impacted areas and associated efforts for effective delivery of technical components.
4.2.6 The Integration

This stage of the Project is the final extension of the development and testing activities described earlier. The same key data elements were used as in the analysis of the development phase, with the inclusion of the business integration aspect, which was collected through the responses from business users and management.

The data related to this project stage shows consistency in the responses and views expressed by the interviewees, which demonstrates strong focus on the goals and methods utilised during the crucial integration process.

While all interviewees were consistent in their responses related to the chronological account of this project stage and associated priorities and focus, the data analysis also showed a highly relevant demonstration of one of the key elements described in the Chapter 1 of this study: different motivation across the project team. On one side there is the project team, which is highly motivated to deliver the project within the timeframe and within minimal acceptance criteria, ready to take on shortcuts to achieve the project objectives – a short-term focus. On the other side there are the IT staff who participates in ongoing maintenance and has post-project operational responsibilities – with a long-term view and motivation to implement stable solutions that will reduce the long-term unplanned impact on the organisation.

According to the interviewees, the integration stage of the Project covered the following activities:

- Internal integration
- Integration with external interfaces
- End-to-end integration testing

Internal integration covered various activities, mainly testing, between various internal interfaces and vendor software. This included all levels of testing: unit, system, regression and integration testing, depending on the functionality of various (both new and existing) components required to integrate the overall project solution. The first
integration testing activities highlighted the shortcomings of some earlier assumptions, largely related to communication protocols and logic for interaction between various systems, including the vendor solution. With the now available test version of the vendor software, this stage of the Project was able to be performed largely in an iterative way, combined with build and additional design activities, helping to successfully integrate with all interfaces across the Project. The internal integration was a crucial element of the later acceptance process of the vendor software and the overall project solution.

The external integration activities were related to the testing of input and output interfaces outside the Company. While input interfaces were easier to control, due to internal coverage of the requirements and linkages with the new software, the integration of external output interfaces proved to be much harder to manage. This was largely due to a different level of preparation for the integration testing within the receiving customer base. The level of readiness for integration was ranging from complete unawareness and lack of preparation, to full cooperation and active participation.

Prior to the integration activities, and in parallel with earlier states of the Project such as analysis, design and build, the Company concentrated on detailed communication with the customer base, assisting them with their efforts to participate in the integration testing and later successful implementation, leading to full compliance with the new system.

According to the interviewees and project documentation, during the integration stage of the Project, it was expected that the deadlines will not be adjusted. Therefore, any delays with the activities were absorbed and pushed within the allowed timelines. This directly reduced the available time for end-to-end testing, increasing the risk of late defects discovery or inadequate quality.

It is common for the Company that the final stages of testing are shortened in favour of deadlines. This often creates two types of impact: compromised quality and associated costs with manual workarounds. The Project Manager’s extract from the interview confirms it: “The most used way to cut corners on a project is to drop non-essential
requirements (usually to be scheduled in a future releases). However, when a project is under pressure to deliver and dropping requirements is not a possibility the "level" of final testing is always brought into question. For example: Do we need to run a full regression test?"

With the Project, the full regression testing was not an option, it was an essential way to provide the expected level of quality assurance before the final acceptance and implementation. Therefore, any issues discovered during the integration testing that did not compromise quality and business integrity were classified as operational inefficiencies and “handled” after the project implementation.

This represents a good example of unforeseen and unplanned long-term impacts and costs introduced by projects – the main objective of this research. Cutting corners in terms of functional and non-functional requirements always a result (in some form) of impact and short, medium or long term compromise. Such impacts related to the Project are clearly articulated in the extract from the interview with the Project Manager: “If functionality is dropped it is almost always related to operational efficiencies. In other words the first thing to go is usually not related to the end customer but the operations department with the requirement to manually work around the problems that were not fixed or the functionality that was not built. This usually puts more pressure on the operational and technical support teams.”

This pattern of “cutting corners”\textsuperscript{12} towards the end of projects, is well known in systems development practices and often a subject of auditors research articles (Singleton 2007). The Project Management and the Test Manager indicated that non-critical issues experienced during the final stages of testing were accepted and handled in a way that allowed for easier implementation of the project. Such decisions are most likely to impact various areas of business, related resourcing, and ultimately, the financial side of the organisation.

\textsuperscript{12} taking a shorter and less expensive route towards the outcome, often compromising on fine details and quality
With projects such as this one that is being analysed here, the impacts on the organisation might be easier to quantify and qualify, due to the obvious high-profile and visibility within the organisation. Once the organisation is faced with the choice to allow for unplanned impacts to occur consciously in order for a large project to be implemented, it has an opportunity to learn from the experience and apply the lessons to future projects. But, when smaller projects follow the same pattern, the impact might not be as visible and easily quantifiable. Therefore, it is crucial for the project process to cater for such occurrences and provide a framework that can assist with earlier identification of the indicators of the impending unforeseen impacts, and subsequent methods for effective management.

Relevant extracts from interviews are summarised in Table 12 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
- DPM-Deputy Project Manager
- ITM-IT manager
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<td>Q104: How much of internal costs for interfaces was planned and how much of it resulted from the risk mitigation related to vendor management?</td>
<td>DM: We greatly underestimated the integration complexity and associated costs. The budget had to be adjusted to cover additional internal efforts, but there was much more work performed under the BAU arrangement with internal teams and was not always presented as part of the project costs. ITM: Changes to one of our central internal systems were largely underestimated, with the original cost estimate being around 100-200K, ending up costing more than 900K to implement. DM: Everything that was too hard or too expensive to include in the product customisation ended up being built in the internal interfaces.</td>
<td>The interview data confirmed that the biggest unplanned impacts were manifested throughout the integration phase of the project, where interfaces and associated processes needed to be further modified in order to compensate for changes or wrong assumptions made at the time of planning. Although the unforeseen impacts are created at the planning stage, the full manifestation was during late discovery, where new decisions need to be made in terms of changes to systems, business processes and even requirements that might not be able to be addressed as part of the original solution. With such a large project and multiple impact areas, the potential of associated unforeseen and unplanned costs were very large, especially in terms of additional workload and manual procedures that needed to be implemented to ensure project delivery. Some of those short-term solutions might seem simple and unimportant as they are seen as shortcuts or workarounds to assist with lack of functionality or logical limitation, but in the long run they are associated with additional costs and inefficiencies to the overall solution, lacking elegance and stepping out of the strategic technology goals, standards and guidelines.</td>
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<tr>
<td>Q107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?</td>
<td>ITM: If you ask where the most impacts were discovered, I must say it was during the integration phase, more specifically during the first integration tests, where many short-term solutions needed to be implemented in order for the solution to work. We are still feeling the aftermath of some of those impacts, especially with regards to inefficient processes and semi-manual workarounds. DM: Our internal expertise and the teamwork really pulled us through the integration phase. There were so many things to address, so many details that were crucial to the success. Surely, we had to improvise more than once, but the ultimate result was successful. PM: Our focus was primarily with the product and dealing with vendor and internal business in terms of basic functionality. Our expectations were that the internal resources would find a way to address the integration issues. What was frustrating was the heavy dependence on some key people that just could not be at two or even three places at the same time.</td>
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<td>Q88: How well informed were the business and technical impacted areas and how did changes in the</td>
<td>ITM: In the beginning we were not informed very much, but as project progressed we became more involved. This, of course, caused many unplanned impacts that could have been avoided and more effectively managed if we were involved more actively in the beginning.</td>
<td></td>
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The interview data confirmed that the biggest unplanned impacts were manifested throughout the integration phase of the project, where interfaces and associated processes needed to be further modified in order to compensate for changes or wrong assumptions made at the time of planning. Although the unforeseen impacts are created at the planning stage, the full manifestation was during late discovery, where new decisions need to be made in terms of changes to systems, business processes and even requirements that might not be able to be addressed as part of the original solution. With such a large project and multiple impact areas, the potential of associated unforeseen and unplanned costs were very large, especially in terms of additional workload and manual procedures that needed to be implemented to ensure project delivery. Some of those short-term solutions might seem simple and unimportant as they are seen as shortcuts or workarounds to assist with lack of functionality or logical limitation, but in the long run they are associated with additional costs and inefficiencies to the overall solution, lacking elegance and stepping out of the strategic technology goals, standards and guidelines.
SBM: We had to change some of our business processes and compromise on some requirements in order to accommodate impacts created by the project. Also, some of our other initiatives were impacted due to project delay and demand on resources.

Table 12 - Interview Summary (Integration)
4.2.6.1 Project Integration Summary

The information collected about this stage of the project – integration covers the following main points:

- The integration process covered the following activities:
  - Internal integration
  - Integration with external interfaces
  - End-to-end integration testing
- This stage of the project demonstrated a strong presence of unplanned impacts and issues that caused quick decisions and sub-optimal solutions that introduce long-term impacts.
- The impacts were largely manifesting through the additional work that was discovered during integration - interfaces and associated processes needed to be further modified in order to compensate for changes or wrong assumptions made at the time of planning. This is highly relevant to the topic of this research.
- Although the unforeseen impacts are created at planning stage, the full manifestation is visible during late discovery, where new decisions need to be made in terms of changes to systems, business processes and even requirements that might not be able to be addressed as part of the original solution.

4.2.7 The Acceptance

The key data for the analysis of the acceptance stage of the Project was based on the following sources:

- Open interview question on business and technical analysis (question #106)
- Open interview question on development and testing (question #107)
- Project documentation:
  - post-implementation review (PDR#9)
  - meeting documentation and communication (PDR#5)

According to the project manager, the acceptance activities were divided into two main parts:
The product acceptance covered the approval of the functional and non-functional characteristics of the vendor-developed technical solutions for the Project. This involved extensive testing preparation and execution activities, performed by technical and business testing teams associated with the Project. The product acceptance was one of the major milestones in the Project, as the vendor-developed software was the key component of the new system.

Also, product acceptance was a condition for the vendor to be entitled to a major part of their payment, according to the legal agreement. The acceptance of the product was expected to validate the project schedule and remaining plans for implementation.

The acceptance of the vendor-developed product required four iterations until it was finally completed. As a result, the project needed to be replanned each time and deadlines adjusted. The Company was not ready to compromise on quality and the deadlines were adjusted to allow for fixes and additional testing. As a result, the product was accepted after the delay of six months.

Once the vendor product was accepted, the emphasis was on internal development, integration and subsequent final project acceptance. Once the remainder of the work was under internal management and control, no further delays were encountered.

The subsequent acceptance of the full project deliverables covered the internal systems integration and external participants validation. It included functional, non-functional and user acceptance testing. The effort required for the validation and acceptance of the project was one of the largest testing undertakings within the Company. It required thorough coordination of skilled resources across various areas of expertise: testing, quality assurance, technical, business and process.
According to the Project Manager, this stage required the final increase in the project budget, from $10M to 12M, which was the final official cost of the project. The increase was closely related to the unplanned test stages and additional issues resolution, which quantified earlier created unplanned impacts.

The acceptance phase was intertwined with the build phase of the development cycle, allowing for iterative development and testing of both internal and external software components. According to the interviews, acceptance of the vendor product and internal components opened the path towards the implementation, while introducing additional work considered to be of lower priority and “manageable”. This lower priority work included manual adjustments to the impacted systems and additional changes to accommodate late changes to the impacted areas of the existing infrastructure.

This additional work involved manual workarounds, non-critical and low-priority bug fixes, maintenance and enhancements recommendation; all highlighted during the acceptance phase. The efforts required to perform this work were not part of the project budget and were excluded from project deliverables. It was decided that they would become part of technical and business operations, classified under “business as usual” and addressed after the implementation.

Only minimal consideration was given to the extent of this work, as well as to the impacts those tasks created in terms of resources, risks, efforts and ultimately the financial picture. The main objective was to ensure project implementation as per agreed schedule, anything that was considered non-critical and manageable was accepted and the Project proceeded towards the deployment phase.

Relevant extracts from interviews are summarised in Table 13 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
• DM-Development Manager
• DPM-Deputy Project Manager
• ITM-IT manager
• PM-Project Manager
• SBA-Senior Business Analyst
• SBM-Senior Business Manager
• SITM-Senior IT manager
• TA-Test Analyst
• TM-Team member
• TMG-Test Manager
Q107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?

TMG: The internal testing expertise was absolutely crucial to the successful acceptance of the vendor product. This expertise was built through years of experience in working with the business, understanding the processes, business logic and our infrastructure. It was very challenging getting the vendor to accept the same level of quality standards. Our organisation is known for very high standards in software testing and technology solutions, and it was not open to negotiation.

TA: Testing with the vendor was very challenging. Especially bridging the gap between our testing culture (accepted by our business) and the vendor’s way of doing things. We had to constantly negotiate on changes and severity of defects, which gave us an insight into working with vendors, whose motivations and interests were not always the same as ours on this project.

SBM: Our test team was excellent in translating our requirements into acceptance criteria. We learned to appreciate the constant efforts and service provided by internal developers over the years, when we faced the difficult negotiations with the vendor. The vendor’s goals were to have the product accepted, and our goals were to have it first working to our expectations. It was very, very challenging.

ITM: Our testing efforts were mainly directed towards the product, but the majority of impacts were around interfaces and integration, and we felt somewhat neglected in that sense, relying on our own testing, while waiting for acceptance of the product, so that we could conduct some serious testing with the data and the product. The late testing meant further impacts and shortcuts to resolve issues that were uncovered very late in testing, therefore adding to the post-project maintenance work and associated risks. But, we were all focused on the primary goal: successful implementation.

Q66: Was quality compromised in any way? How, why?

PM: From the project perspective we were supposed to accept the product on 7th July 2005. In order not to compromise on software quality and functionality the product was not accepted from the supplier until 31st January 2006. We spent the remaining time prior to production implementation integration testing. I do not believe we compromised quality. This can be seen in a 100% up time since the initial launch of the new product on 10th July 2006.

SBM: No, definitely no. We cannot compromise on quality. Our reputation depends on the quality. The vendor had to go with our standards, as we would not accept the product otherwise.

The acceptance phase further uncovered the cultural differences, as well as discrepancies in quality standards and motivations between the organisation and the vendor. Throughout the acceptance phase, the remaining unplanned impacts were uncovered, manifested in last-minute changes and fixes to get the project going through to the delivery phase. The quality of functionality was the primary driver for the acceptance and ultimately, the success of the project. The unplanned additional impacts and inconvenience were considered side-effects and secondary to project success.

Table 13 - Interview Summary (Acceptance)
4.2.7.1 Project Acceptance Summary

The information collected about this stage of the project – acceptance covers the following main points:

- This stage of project had two aspects:
  - Product acceptance
  - Overall project acceptance
- The acceptance phase further uncovered the cultural differences, as well as discrepancies in quality standards and motivations between the organisation and the vendor.
- The quality of functionality was the primary condition for the acceptance and ultimately, the success of the project.
- The unplanned additional impacts and inconvenience were considered side-effects and secondary to the project success.
- This behaviour goes in line with the research questions around the long-term aspect of the project success, which goes outside immediate project goals – and looks into long-term benefits and impacts on an organisation. While the primary project goals are immediate success criteria, should there be an additional, long-term criteria for project success?
- The analysis of the acceptance stage of the Project came closer to examining the nature of these impacts and the motivation behind immediate criteria for success, in opposition to the long-term impact and success perspective, which is the subject of this research.
- The acceptance stage of the project further quantified earlier unforeseen impacts, manifested in the rework and additional testing efforts.

4.2.8 The Deployment

The primary source of data for the analysis of the deployment stage of the Project was based on the following sources:

- Open interview question on development and testing (question #107)
- Project documentation:
The deployment of the Project covered the following areas:

- Deployment of vendor software components
- Deployment of the internal interfaces
- External participants compliance
- Implementation of the changed business processes

To minimise risk associated with implementation of such a large system change, it was decided to perform the deployment over three functional implementations, during the period of four months. The deployment was highly complex; it involved the implementation of the new system components, integration with the existing systems, as well as a full migration from the old system to the new platform. Each of the scheduled implementations had a different level of associated risk, distributed over vendor software, internal interfaces and external compliance. The deployment plan included back-out procedure, troubleshooting and contingency management. All of the implementation steps were rehearsed over a few weekends and involved internal and external project participants.

Each of the implementation stages was successful. Only minor issues were encountered, but no down-time or data inaccuracies were discovered. Since the main quality criteria for a system of this nature are availability and reliability, the overall deployment of the Project was considered successful.

During the implementation stages of the Project, all issues encountered were handled by the operational teams, rather then being addressed as part of the Project. This created the conditions for the project impacts to be absorbed within the normal systems and business operations. The implementation of the project, followed by the subsequent decommission of the old and replaced systems components marked the end of the Project.
Relevant extracts from interviews are summarised in Table 14 (PDR#14). The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
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- PM-Project Manager
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- SBM-Senior Business Manager
- SITM-Senior IT manager
- TA-Test Analyst
- TM-Team member
- TMG-Test Manager
Q90: Can you quantify the impact of unplanned activities on the performance of the project?

PM: I know that we have had many unplanned impacts and therefore costs, but I am unable to quantify. I cannot say that those impacts were not unexpected. We did know that our estimates were too optimistic and that adjustments would need to be made. This was a major project and those impacts should be expected. But, the final result was very positive, and project performance (although with adjusted parameters: schedule, budget) was still successful. Our deployment was very complex, but well organised and therefore highly successful. SBM: The project performance was good, as we haven’t had any issues since delivery. However, the impact was more on the missed opportunities and additional work our resources had to perform for the project. We were so relieved by the successful implementation that no one really wanted to quantify any impacts. SITM: We had to redirect many resources from other initiatives. Also, some of our competitor and customers within the industry poached some of our valuable staff. Hiring new people and training them takes effort and costs money. In addition to that, we still have a lot of manual work and “babysitting” of related systems in order to accommodate shortcuts we had to implement for this project. Furthermore, with any new initiative, we have to consider all those inefficient parts of the system and successfully incorporate into or modify for future solutions.

Q91: What were the main “unplanned” and “unpredicted” areas that impacted this project? Can their impacts be quantified?

PM: Business and technical support.
SITM: Business support and technical support processes. Some of our systems are inefficient and need further modification. It would be interesting to quantify the impacts, yes… ITM: I see impacts on people, systems, processes, infrastructure and maintenance processes and associated costs SBA: We missed a few good business opportunities for initiatives that just could not be addressed due to this project. There were two initiatives that were directed towards revenue increase and three projects related to cost reduction. Due to this project running longer and taking more resources, none of those initiatives were actioned, therefore missing opportunities to further increase revenue and reduce costs.

There is no formal process to quantify and evaluate the unplanned project impacts. Everyone’s focus was on successful deployment and completion of the project, rather than into analysing how the project could have been done better, or used as a source of lessons for the future, more efficient project management.

Table 14 - Interview Summary (Deployment)
4.2.8.1 Project Deployment Summary

The information collected about this stage of the project – deployment covers the following main points:

- The deployment included the following activities:
  - Deployment of vendor software components
  - Deployment of the internal interfaces
  - External participants compliance
  - Implementation of the changed business processes

- This was one of the final stages of the project and one of the more successful, as it included all project participants, had stronger coordination and benefited from the lessons learned during earlier stages of the project.

- The focus was on the successful deployment rather than analysis of how this all could have been done better.

- This stage of the project is largely covering the execution of final stages of the implementation. However, it provides a useful insight into the teamwork and collaboration that was focused on a common goal. The project would have benefited if this approach was practiced in earlier project stages.

4.2.9 The Closure

The primary source of data for the analysis of the final stage of the Project was based on the following sources:

- Open interview question on development and testing (question #107)
- Interview questions grouped under “Performance Reporting” sub-area (questions #89–#92)
- Interview question covering “Administrative Closure” sub-area (question #93)
- Project documentation:
  - post-implementation review (PDR#9)
  - meeting documentation and communication (PDR#5)

The Project implementation marked the end of the official and non-official project
activities. The remainder of the work was purely administrative, concentrating on the financial and operational side of the Project, preparing various reports and clarifying the remaining responsibilities.

The closing activities in the Project were directly related to ensuring all relevant reports and documents were completed and that a post implementation review was conducted.

The purpose of the closure step was to evaluate the scope and deliverables of the Project and to assess whether the original objectives\textsuperscript{13} were achieved. When asked about evaluation against organisational alignment and the overall value to the organisation, the Project team members expressed the views that the project closure should not include strategic alignment assessment and that it should only evaluate what the project was expected to achieve. The interviewees were adamant that the strategic alignment should be the responsibility of senior management and that project teams should not have the additional burden of thinking strategically, since their priorities should be around project objectives.

This is understandable, but how will the senior management have the opportunity to validate their own decisions with regards to the original justification for the project, including strategic alignment? If relevant data from projects is not collected and evaluated against strategic elements that contributed to the original decisions, how then will senior management be able to use any lessons from projects to improve their strategic alignment justification?

As the initial decisions about strategic justification were based on various assumptions accepted during the initiation phase of the project, it is only logical to have them again evaluated against the facts during the closure stage. The experiences and lessons gained during the project should be evaluated not just for project management’s sake, but for the sake of future evaluation and acceptance of new assumptions, which in many cases might

\textsuperscript{13} Adjusted by any approved changes during the life of the Project.
be similar in nature and impact. If the closure phase of the project is limited only to
evaluation of the project objectives and administrative completion, an opportunity will be
missed to collect additional valuable information that can assist with better management
of future projects, as well as more accurate assessment of the usually unforeseen and
unplanned impacts that might be potentially relevant to the strategic management and
programme management within organisations.

The Project was officially closed one month after the final implementation step, 27
months after initiation. The Project was evaluated as successful against the objectives.
The evaluation was conducted in line with the adopted project process, which included
the outlined success criteria, feedback from the post-implementation review and post-
implementation system performance.

Relevant extracts from interviews are summarised in Table 15 (PDR#14).

The following codes are used to identify the interviewees in the table:

- BAM-BA Manager
- BM-Business Manager
- BU-Business user
- CL-Corporate Lawyer
- DM-Development Manager
- DPM-Deputy Project Manager
- ITM-IT manager
- PM-Project Manager
- SBA-Senior Business Analyst
- SBM-Senior Business Manager
- SITM-Senior IT manager
- TA-Test Analyst
- TM-Team member
- TMG-Test Manager
<table>
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<th>Question</th>
<th>Response</th>
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| Q13: What do you consider the main criteria for project success?         | PM: Meeting the project objectives, timeframes and financials  
SITM: Meeting objectives set by the project  
SBM: Project objectives are clear, if the project meets them – then it is successful.                                                   | The interviewees agreed that the project provided valuable lessons for the future. All participants in the case study agreed that the project is successful if it meets project objectives and timelines. For this project those parameters had to be adjusted, and the final outcome was in line with those adjusted parameters, and therefore successful. There was no evaluation on whether the solution was optimal, especially considering significant changes to the project success parameters, as well as the discovery of many impacts throughout the organisation. The interviewees made it clear that the project success was determined based on success parameters (no matter if they were adjusted throughout the project), such as budget, timelines, deliverables. The lessons are not formalised the use on future projects, they are more seen as personal experiences for the individuals. The question remains on how such lessons can be translated into measures that would assist with future projects and help minimise (if not eliminate) the overall negative and unplanned impacts created by projects. |
| Q92: What is the impact of the final outcome with regards to the original strategy pointers and how much did it remain in line with business interests and plans for the future? | PM: This was a strategic project, therefore it remained in line with strategy objectives.  
SBM: This project was in line with the strategy and business plans for the future. We might consider integrating more of our technical functions in the future, but we will surely try to do it with less stress.  
SITM: Projects are approved in line with the strategy. However, we are often casual about our technical long-term picture. With so many projects running in parallel, it is hard to ensure full efficiency and keep optimal solution at all times. I am not sure if this should be necessarily be part of the project, but it should surely be more controlled and considered in terms of technology infrastructure strategy and the big-picture solution that can accommodate multiple initiatives, without creating negative impacts. |                                                                                                                                                                                                  |
| Q89. How did the project go against the original objectives? What were the main lessons learned with regards to performance of this project? Q93: What is the final assessment with regards to success against objectives? Is the success assessment applicable to all project deliverables? Why? | PM: Project met the objectives. We learned a lot about vendor management and, ultimately, about ourselves. For many of us, this was the greatest professional challenge that provided many valuable lessons for the future.  
SITM: The project met the objectives and we have been happy with the performance since the implementation. We learned many lessons, among them we learned to appreciate more the internal efforts and expertise that is readily available to the business. Also, we learned to work with the external party and to be prepared to negotiate on solutions and requirements.  
SBM: This was a very large project, which met the objectives, but took much more effort than originally anticipated. I believe that the biggest lesson is that outsourcing cannot always be the best way to go, and that we need to invest more time and effort into investigation before committing to solutions, especially for such large projects.  
DPM: We all learned how important effective communication is – with vendor and internally (business and technical). We were all very relieved that the project met the objectives and that it was declared successful. |                                                                                                                                                                                                  |
4.2.9.1 Project Closure Summary

The information collected about the final stage of the project – closure covers the following main points:

- The evaluation of the project success was based solely on the project goals, budget, timelines and quality. It did not include any evaluation of long-term impacts and shortcuts implemented during the project.
- The project evaluation assumed that the changes around the budget and timelines were approved changes, therefore not the elements of the evaluation of any unforeseen impacts that contributed to variations to the original plans and assumptions.
- There were no formal lessons or process improvements as a result of this project, although the project participants experience can be seen as a valuable tool for future improvement of approach to projects and their execution.
- This practice of project success evaluation is highly useful to this research, as it highlights the narrow perspective when it comes to project contribution and impact on organisations.

4.2.10 Lifecycle Analysis - Findings Summary

The summary of findings resulting from the lifecycle analysis:

Initiation:

- The project initiation was based on technical motivation and business necessity.
- The decision to proceed with a particular solution was made on a set of large assumptions, based on high-level analysis only. These assumptions directly created a possibility for later unforeseen impacts, as on such large projects large assumptions mean detailed clarifications later, which might create additional costs and impacts.
- The financial element was a strong motivator in the decision to choose particular solution path. The assumptions that were supporting the proposed solution can
potentially create the environment for later additional costs and impacts that could not have been discovered this early in the process.

- Looking back on the project, the project manager suggested that he would have proposed a different solution, had he known about the later impacts.
- In terms of the research question, the initiation stage of the Project has shown high relevance to the topic of the research and a strong indication that the case study can assist in identifying the factors for long-term factors.

Planning:

- The planning largely revolved around vendor-specific activities, with no evidence of high-level perspective of the overall project effort and delivery.
- The level of planning was insufficient for such a large project, especially since major assumptions used for the project initiation were soon demonstrated to be largely underestimated.
- Looking back, the interviewees realised that the planning needed to include participation of internal IT experts and cover impacted areas, which were assumed to be simpler tasks than demonstrated later in the project.
- At the planning stage of the project, the alarm should have been raised, as soon as any of the assumptions proved to be inaccurate or underestimated, a larger-scale high-level impact analysis should have been undertaken to clarify the situation and adjust the estimates.
- The planning stage was shown to be highly relevant to the research question by demonstrating decision making which opened the door for later unforeseen impacts and additional costs.
- The interview data indicates unforeseen and unplanned impacts that could have been largely predicted if the planning was done differently.
- Quick estimating and planning brought false expectations in terms of complexity, delivery and costs. More investment into the planning process would have provided the Company with more accurate information which might have resulted in a different solution decision for the Project.
Analysis:

- The majority of the analysis was product-specific and excluded internal impacted areas, such as systems and interfaces. This caused confusion and inactivity within the impacted areas, the time that could have been spent more effectively if the representatives from those areas were included in the analysis process.
- The communication was not at the satisfactory level in this crucial stage of the project. It was assumed that each impacted party would “figure out” what to do and take full responsibility for analysis. This might have worked if there was some central coordination and communication that would initiate relevant discussions and analysis activities.
- The assumptions and conditions under which the estimates of the impact were initially made were not supported and therefore caused confusion and additional costs during the analysis.
- There was not enough information provided to the impacted areas before system analysis was to start and the deadlines were already decided for delivery and testing.
- The mentioned factors are highly relevant to the research question and this stage of the case study highlighted just how quickly some of the large impacts could be initiated just by insufficient communication and collaboration at such a crucial stage of the project – the analysis.

Design:

- The design stage of the project forced the validation of the original assumptions in terms of costs and the associated project impact. This process led to the first discovery of unplanned and unforeseen impacts that affected the budget and project delivery dates.
- It was discovered that the assumptions were oversimplified and that the impact was much more involved and costly, which required an increase in the budget predictions and the overall project cost estimates.
- The design process contributed to more realistic assumptions and parameters that are relevant to the overall integration of the new product into the existing
infrastructure.

- This project stage is highly relevant to the research question as it illustrates the unforeseen impacts that directly affected the costs of the project, and highlighted the pressure that was placed on the project team to deliver on time and within budget. This opened the door for quick decisions and shortcuts that would further create impacts that would be shifted to after the project implementation.

- An additional point to note in this stage is the recognition of the project priority and the importance of the skilled resources required for the project success.

Build:

- The build covered the following areas:
  - Vendor software development
  - Internal interfaces development
  - External interfaces development
  - Business processes reengineering (additional tools development)

- The major focus was given to the vendor software development, which caused issues with the internal impacted systems, due to minimal information exchange and focus on preparations for integration and testing.

- Quality standards needed to be negotiated throughout the project, which required strong involvement of internal testing efforts, with testers who understood the business processes well and were able to contribute to quality control of the vendor product and associated interfaces.

- The development phase of the project clearly showed that the Company was going through an adjustment in terms of the development approach. Previously, the organisation relied on internal development for crucial systems. Business and technical areas were used to having full control over deliverables and systems development, so working with a vendor was a challenge. The organisation realised that they would prefer to have more involvement and control over the post-project product support function and started negotiations.

- The testing planning was focused around the primary (vendor) product and neglected to include early testing for the internal dependencies. This caused some
late rework during the integration and implementation stage. Some of these efforts were shifted to after the implementation, and were bypassed by shortcuts. All this created long-term impacts on the operational element of the infrastructure.

- The importance of effective communication becomes apparent through this project stage – especially in establishing the accurate assessment of impacted areas and associated efforts for effective delivery of technical components.

Integration:

- The integration process covered the following activities:
  - Internal integration
  - Integration with external interfaces
  - End-to-end integration testing

- This stage of the project demonstrated a strong presence of unplanned impacts and issues that caused quick decisions and sub-optimal solutions that introduce long-term impacts.

- The impacts were largely manifesting through the additional work that was discovered during integration - interfaces and associated processes needed to be further modified in order to compensate for changes or wrong assumptions made at the time of planning. This is highly relevant to the topic of this research.

- Although the unforeseen impacts are created at planning stage, the full manifestation is visible during late discovery, where new decisions need to be made in terms of changes to systems, business processes and even requirements that might not be able to be addressed as part of the original solution.

Acceptance:

- This stage of project had two aspects:
  - Product acceptance
  - Overall project acceptance

- The acceptance phase further uncovered the cultural differences, as well as discrepancies in quality standards and motivations between the organisation and the vendor.
- The quality of functionality was the primary condition for the acceptance and ultimately, the success of the project.
- The unplanned additional impacts and inconvenience were considered side-effects and secondary to the project success.
- This behaviour goes in line with the research questions around the long-term aspect of the project success, which goes outside immediate project goals – and looks into long-term benefits and impacts on an organisation. While the primary project goals are immediate success criteria, should there be an additional, long-term criteria for project success?
- The analysis of the acceptance stage of the Project came closer to examining the nature of these impacts and the motivation behind immediate criteria for success, in opposition to the long-term impact and success perspective, which is the subject of this research.
- The acceptance stage of the project further quantified earlier unforeseen impacts, manifested in the rework and additional testing efforts.

Deployment:

- The deployment included the following activities:
  - Deployment of vendor software components
  - Deployment of the internal interfaces
  - External participants compliance
  - Implementation of the changed business processes
- This was one of the final stages of the project and one of the more successful, as it included all project participants, had stronger coordination and benefited from the lessons learned during earlier stages of the project.
- The focus was on the successful deployment rather than analysis of how this all could have been done better.
- This stage of the project is largely covering the execution of final stages of the implementation. However, it provides a useful insight into the teamwork and collaboration that was focused on a common goal. The project would have benefited if this approach was practiced in earlier project stages.
Closure:

- The evaluation of the project success was based solely on the project goals, budget, timelines and quality. It did not include any evaluation of long-term impacts and shortcuts implemented during the project.
- The project evaluation assumed that the changes around the budget and timelines were approved changes, therefore not the elements of the evaluation of any unforeseen impacts that contributed to variations to the original plans and assumptions.
- There were no formal lessons or process improvements as a result of this project, although the project participants experience can be seen as a valuable tool for future improvement of approach to projects and their execution.
- This practice of project success evaluation is highly useful to this research, as it highlights the narrow perspective when it comes to project contribution and impact on organisations.
4.3 Case Study Quantification of Unforeseen/Unplanned Costs

While the case study interviewees agreed that there was no official process to quantify the effects of unplanned and unforeseen impact, they made an attempt at estimating some of the costs associated with those impacts.

The origin of these estimates is related to the following activities:

- Increased effort to support new or changed systems after project implementation
- Missed opportunities with other projects due to resource contention
- Quality of system after implementation – number of outages and issues
- Post-implementation changes to correct project shortcomings
- Complexity related to impacted systems and their flexibility for future projects

According to the IT and business managers, post-project effort to support new or changed systems and operations were significant. Over the first 18 months since implementation, business operations required 1-2 additional staff members to help with the manual workload related to ongoing business support. While these new staff members were able to perform other tasks and take on additional workloads within the group, it was estimated that this increased the overall operational costs of their unit by 15% per annum, or by approximate $130,000 per year.

The technical support teams did not employ additional staff members, due to restrictions with the approved operational headcount. However, the efforts of the existing technical support members were directed at supporting this new system, hence reducing the attention and efforts planned for other systems and projects. While this did not increase the overall technical operational costs in the first two years after the project, the cost of missed opportunity was quantified through the employment of contracting staff to replace the support team members on other activities, mainly related to project and analysis work. The cost of contracting staff was estimated to $200,000-$300,000 per annum over two years. The support efforts were directed towards issues resolution and changes required to further automate some of the manual workarounds, as well as addressing some deficiencies in automated processing of various dependencies.

The interviewees also added that some technical decisions and shortcuts made during the project created certain level of inflexibility within systems and interfaces, which will be
propagated into future projects. For example, one of the interfacing systems connects with a number of internal and external systems. This particular system had to make quick adjustments to the logic for distribution of data to various other systems, covering only part of the processing logic. This situation created additional development efforts before the system is to be changed for future projects where the remaining processing logic might be executed. The efforts to change this dependency over time cost around $200,000 and required three separate production changes, which increased the overall production risk.

The business management also noted that the cost of missed opportunity due to extended project duration was evident with three other projects planned for the same timeframe. With two of the three projects the deliverables were postponed, which caused risk with the competitive advantage and delay of product delivery which could have delivered multi-million dollar revenue opportunities. The third project was still actioned, but with higher costs, due to contracting staff being acquired to execute project tasks instead of already paid company employees.

The rough estimates provided by the interviewees in relation to this particular project are quite significant and they give additional reason for the cost management process to be more formal and visible to the entire organisation.

If the project costs were put into perspective together with these additional, impact costs, then perhaps the senior management would take more notice of future projects that could exhibit similar characteristics to the Project covered in the case study.

It is appropriate to reflect on the original decision about this project, which was based on an estimated budget of $A8M. The overall cost of the project at the end was $A12M, adding to that the estimated post-implementation unforeseen impact cost. While the case study indicated that the project was fully necessary and would have been addressed regardless of cost, the project manager clearly stated that the chosen solution was based on financial elements. So, the figures put the entire original decision to proceed with the chosen solution into perspective.

While this project was not revenue-generating project, the numbers indicated that effective cost and impact management would be even more appropriate for cost-
conscious initiatives that are based on ROI\textsuperscript{14} calculations and predictions.

The quantifications resulting from this case study are based on the estimates provided by the interviewees and related operational documents (PDR#13), but they are too significant to be ignored in future project planning and cost considerations.

Even though the majority of interviewees believe that the upfront project costs would have been lower than the additional operational costs due to unforeseen impacts, it is important to note that this might not be the case with every project and every organisation.

However, regardless of whether the up-front costs are higher or lower than the related unplanned impacts and associated costs, it is appropriate to properly identify all project-related costs and assign them to the related area of origin, rather than have them hidden in the operational costs and not have an opportunity to effectively manage them in the future.

In summary, the following conclusions could be drawn from the case study in terms of decision making and associated costs:

- Project/strategic decisions might be different if the full cost picture was available, leading to more effective funding of projects, and ultimately, different strategic choices.
- Project costs would have been lower due to better planning and less rework and shortcuts required if the picture was more clear upfront.
- More control over effective management of capital and operational costs is highly welcome in a budget-driven environment, where project decisions are highly influenced by financial elements.

\textsuperscript{14}ROI – Return On Investment
4.4 The Project - Case Study Findings Summary

The observed project in this study is an example of a typical large project of strategic importance conducted within an Australian financial organisation. This project was selected with the goal of observing and examining various patterns of behaviour common to this organisation as a typical representative of the Australian financial industry.

The case study analysis was directed at examining the applied project management practices and related methods that could help answer the research question related to strategic alignment of projects and the possibility to predict and manage the project-introduced unforeseen and unplanned impacts that can affect the overall organisation.

The case study also takes into consideration the additional elements: the project process prior, during and after the Project, as well as any changes to those processes resulting from the observed project.

The analysis also concentrated around identifying the impacts and the effectiveness of the management in terms of those impacts.

The main findings are divided into following areas:

- Project process observation
- Impact analysis
- Management Analysis

Each of the above areas are presented in more detail.

4.4.1 Project Process Observation

Before and during the Project, the Company was following the in-house built project process, based on the PMBOK\textsuperscript{15} methodology.

\textsuperscript{15} Although based on PMBOK methodology, the process was created in-house.
Since almost all projects conducted within the Company are technology (IT) projects, the process was also heavily based on the waterfall systems development methodology. The project management was largely decentralised across the organisation, with every business and technical unit being responsible for their own priorities when it came to projects and initiatives.

The official Project Office was situated within the Technology Division. The main responsibilities of the Project Office were:

- Ownership of the project management process and associated administration
- Provision of skilled project management staff
- Ownership of management of projects initiated within Technology

Although the Project Office employed skilled project managers, the management responsibility over projects and initiatives was largely based on the subject matter expertise and the association with the business area where the project was initiated. This created a situation where projects would be managed by people highly skilled in the relevant technology or business area, but not so experienced in project management methodology.

Based on the analysis of interview and project data, it can be stated that the project management process was not strictly enforced on all projects within the Company. The applied project process prior and during the Project was highly flexible and largely dependent on the project sponsors’ view of the process and their direct expectations on how projects should be run. This resulted in some projects adhering strictly to the existing project process, with some opting for a more flexible interpretation of project administration and management. Although the project process was not strictly followed for all projects, the quality of projects output was considered to be high, due to very strict controls around change management for internally-built systems.

The Company has had an excellent record in terms of quality of the internally developed
systems. Historically, the majority (if not all) of highly critical systems were well maintained, with minimal unavailability and incidents record. With such strict processes around changes to the existing systems and the implementation of the new ones, the project process within the Company had very good IT development practices to rely on. This created an illusion that the project process was highly effective, since issues with the quality of the delivered solution were minimal.

The interviews suggested that additional elements such as non-criticality of the internal costs and a strong knowledge base of intellectual property that provided fairly accurate estimates for projects, added further to the perception that the project process was working well. Over the years, the Project Office implemented various changes to the project process, as part of the continuous improvement initiative. Those improvements were largely related to the development of project management skills, consistency across project documentation and knowledge sharing.

The inefficiencies around the project process appeared under the influences of two elements: outsourcing and challenges to the traditional development lifecycle.

The interview with senior management of the Company revealed that the Company, (although somewhat hesitantly) embraced the outsourcing trends that emerged after the Y2K project, in an attempt to reduce maintenance and project costs and increase profit margins. Historically, the Company was not highly experienced in outsourcing and the lack of an appropriate vendor management process was soon evident.

According to the Test Manager, the main area of conflict within the outsourcing trend was with the level of expected quality during testing process. Historically, the Company had very high standards in terms of reliability, quality control and change management. Both the Test Manager and the Project Manager observed that the high quality of internally developed software was accepted as a norm prior to outsourcing, as the historically accepted quality standard within the Company. Having an outside company providing solutions soon raised issues with different standards and quality perception
between the Company and vendors. This disparity was enhanced by the lack of experience with vendor quality control and strict procedures within the project process, which became evident during the Project.

According to interview data, the outsourcing trend, as well as the planned review of the project process resulted in improvements concentrated around vendor management and legal coverage of support and maintenance agreements. The improvement process coincided with the start of the Project, so many changes to the process were tested on the Project.

The Project was executed over 27 months. During this time, the Company went through two major restructures, which affected the project process and the setup of the Project Office.

The choice for the project team and management was based on subject matter expertise, rather than experience in project management. For many of the key project people this was the first project where they had a major responsibility and many of them needed time to realise the full extent of their responsibility with regards to project management methodology and project process.

The initial issues on the project can be easily linked with the major emphasis being given to subject matter rather than to project methodology and management. The same people who were concentrating at a very low level on how to approach the business initiative and evaluate possible solutions were also responsible for managing the project. This clash of priorities resulted in poor communication, unawareness of the project impact and oversimplifying the extent of the project and the effort required to implement it. The project process during the early phases was reduced merely to necessary communication and the approval checkpoints. Only after the decision was made about the preferred solution and the project team was officially formed and assigned the mandate for project delivery, was the project process was more seriously considered and followed.
By this time, the series of assumptions were accepted, expectations set, together creating a strong ground for potentially unforeseen and unplanned impacts created by the Project.

The project team struggled very much with vendor management during the initial negotiations. The successful negotiations were heavily reliant on the expertise of some key people within the Company, rather than the process. This resulted in couple of crisis points related to the discrepancy between the business expectations and the quality of vendor software delivery, which had to be rectified. This was a turning point for both the Project and the project process. The experience with vendor management during the Project helped to establish some strict guidelines and standards for vendor management that could be used on future projects.

An additional factor in terms of the changing project process was towards the end of the Project, when the Company went through another restructure due to a merger with another entity. This merger resulted in a new project process, this time based on Prince 2 methodology. As part of the restructure, a new Project Office was formed, under the business wing of operations. This change separated the Projects Office from Technology and created a different set of criteria for approvals, administration, resourcing and management.

The new project process fully centralised the Project Office and relevant project activities. As with the majority of project processes that are based on the Prince 2 methodology, the emphasis is given to the approval checkpoints and the business approach to project management. Such project process is more effective in the environment where a majority of technology solutions are outsourced and the vendor has the primary responsibility over systems development methodology and quality of implementation. The process does not go into detailed management of SDLC, which shows that it is more suited to “black-box” solutions rather than detailed project-managed systems development process.

With the implementation of the new project process, the Company moved from a largely decentralised and informal process which concentrated around the IT development cycle
checkpoints, to a strongly formalised and centralised project process that more strongly emphasises administrative and governance elements.

The new process strongly concentrated on administrative and managerial elements of project management, giving less attention to the technical side of projects. This required additional technical management resources for projects, since the focus of the project manager role became primarily administrative. This was in contrast to the previous process, where project managers were responsible for the systems development side of the project and overall delivery. This required some adjustment within the systems development area and the stakeholders expectations, which impacted on productivity and priorities management.

This transition period created a hybrid-like project process applicable to the final stages of the Project, which heavily relied on the project manager’s subject matter expertise. In this situation, the project manager was making technical decisions that would not normally be expected of a project manager. The process changes were mostly visible in the areas of vendor management and cost control, as well as more formalised communication with the senior management. The technical part of the Project was already in the final development stage entering implementation, so the process changes were not applicable to the software development lifecycle.

Further observation of the Company and the new project process application showed the ineffectiveness of this process in terms of technical delivery, which was in line with the comments from the interviews with technical managers.
4.4.2 Lessons Learned

Due to its size and importance, the Project provided highly valuable lessons to the project team and the Company, contributing to the development of the new project process, as well as future improvement of project management within the Company. Those lessons can be summarised as follows:

- Lesson 1: Project process
- Lesson 2: Vendor management
- Lesson 3: People management
- Lesson 4: Project costs and planning
- Lesson 5: Project methodology

4.4.2.1 Lesson 1: Project process

The first lesson is related to project process. In order to maximise effectiveness in management of all project costs, including unforeseen and unplanned impacts, it is necessary to ensure that the adopted project management process takes into account formal steps and methods for minimisation of unforeseen and unplanned impacts created by projects. The key to delivery of successful projects is in appropriate assignment of roles, responsibilities and accountabilities, together with effective communication.

With clearly assigned roles and responsibilities around thorough investigation and management of all impacts created by projects, a formal line of accountability should be established. This is especially important with large projects, where it is impossible for one person (project manager or technical project lead) to investigate and manage all impacted areas. It is crucial to assign various roles across the organisation to ensure full coverage of all related and potentially impacted areas, so that they are appropriately included in project-related analysis, costs estimates and solution design.

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16 The lessons are the result of interviews, observations and documentation review
The case study illustrated a typical example of a large project that did not have these roles and responsibilities defined. Combined with a very high-level analysis and optimistic assumptions and inadequate communication with impacted areas, this example showed just how large those impacts can be on the project budget, other projects and business areas. These impacts affected the whole organisation.

4.4.2.2 Lesson 2: Vendor management

The case study demonstrated the need for a well defined vendor-management process within the organisation as a mandatory element within the adopted project process. Also, it illustrated the issues that can arise when the vendor solution is implemented into an organisation and integrated with in-house built existing systems that have different standards to those adopted by vendors.

Any integration of a vendor-provided solution within the existing IT and business environment requires thorough analysis and effective communication between internal technical and business experts and vendor representatives.

The importance of the thorough understanding of complex business and technical infrastructure should not be underestimated by either client organisation or vendors.

Although the out-of-the-box solutions presented by vendors can often sound and look very cost and time effective, the complexity of successful integration and related costs should not be neglected or rushed at the time of negotiations, decision making and cost estimates. In the case study example the majority of unplanned and unforeseen impacts and costs came from integration efforts and modifications to the existing infrastructure, as well as customisations to the original vendor solution to fit the organisation’s business processes. Up-front investment into a more thorough analysis and discovery process might uncover significant elements that, if known and available at early stages of projects, could significantly impact on project path, solution, choice of vendors, or even approval/cancellation of projects.
4.4.2.3 Lesson 3: People management

The appropriate choice of resources is one of the key elements of project success. Every organisation heavily relies on subject matter expertise in both business and technical areas. The effective management and retention of key staff is essential to organisational success and project delivery.

For any high-priority project, the key resources (both business and technical) need to be identified and secured. This might, where appropriate, involve incentives and penalties for key resources that are crucial to the success of the project. The case study showed the risks and impacts associated with key resources departure during the project. Retaining key resources can greatly reduce those risks. This can be especially important when projects are long-term, resource-dependent and where key staff might be sought and pursued by competitor organisations.

The key people element needs to be carefully evaluated, to ensure effective management of resources and associated risks. The people element and efforts to involve, motivate and retain the appropriate staff need to be addressed as high-priority risks on projects and effectively managed by effective teamwork and communication between the project and line management.

The active involvement of subject matter experts and other key staff in the early stages of projects are one of the crucial elements for a realistic estimate of project goals and costs, and ultimately essential to project success.

4.4.2.4 Lesson 4: Project costs and planning

Project planning is key element of ensuring appropriate project goals and costs are foreseen and unplanned impacts minimised.

Project budgets and the associated timelines require realistic contingencies in line with
the level of accuracy of the data they are based on. High-level and brief analysis of projects where multiple areas are impacted might not always be appropriate, especially with large-scale projects. Any unqualified high-level assumptions in the early stages of such projects could introduce unplanned impacts and associated costs.

It is essential to perform adequate planning, even if it is only at a high-level. Adequate planning does not necessarily mean low-level planning and analysis, it can simply mean that all areas of impact and association to project goals are covered and evaluated even at a high-level. With comprehensive high-level evaluation, inclusion of all impacted areas and appropriate communication with all stakeholders, the project planning can provide more clarity into the complexity and the overall costs of projects, helping minimise unforeseen and unplanned impacts and costs as a result.

The common issue with comprehensive high-level planning, as illustrated in the case study, is with resources availability, lack of time or already set and imposed project expectations. Organisations need to make decisions if the investment into a more comprehensive discovery process at the early stages of projects is their preferred approach to project planning, or they are ready to accept approval of projects with a higher degree of the unknown, which ultimately increases the chances of unforeseen and unplanned impacts created by projects.

The interview respondents in senior management roles agreed that thoroughness is necessary even if that means more up-front effort before a decision is made on projects. They agreed that thoroughness does not necessarily require detailed study, but the confidence that all aspects of impact are covered at a high level. They added that they look to the business and technical analysis to be fairly confident with their results when proposing a project solution. In situations where time is of the essence, larger contingencies are expected and it should be the responsibility of the analysts to highlight the risk factor that is associated with a high level of confidence in the high-level analysis.

The case study highlighted the widespread culture within organisations, based on the
perception that if a project starts earlier, it will finish earlier, therefore pushing for brief initial analysis and relying on results and assumptions that might not be accurate. Real examples (such as this case study) show that any incorrect and unqualified assumptions at the early stages of projects create even more work later in the project, introducing additional costs, resulting from unplanned and unforeseen impacts.

Although such changes can qualify as scope changes (covered by project process) allowing for budget and timeline adjustments, the fact is that the original expectations and project picture change as a result, which might have impacted on the original project approval and solution decisions had this information been available earlier.

The majority of interview respondents also confirmed that the cost of rework or later fixes to quick decisions is almost always more expensive as in the case of their organisation, which was reflected in the Project. The additional costs are not only transferred to operations, they also manifest themselves in prolonged tasks on projects, as was demonstrated in the case study. The project cost increase in the case study demonstrated both impacts: directly to project deadlines and budget, as well as to long-term impacts on organisational (operational support) costs.

While it might not always be the case that the cost of the additional detailed planning and actioning within project would be lower than the long-term costs caused by the unforeseen project impacts, it is important to note the nature of costs within the organisational financial position. A large portion of project costs are often considered and presented as capital costs on the balance sheet, which increase the overall capital value of the company. Operational costs, however, are expenditure and considered a liability. It is in the interest of organisations to reduce their operational expenditure and increase their capital value. Transferring costs from projects into the post-implementation (operational) stage does not impact favourably on the balance sheet, therefore companies are motivated to ensure their project costs are capitalised, instead of being transferred into the liability side of the balance sheet. Project managers and project owners should have an awareness of and responsibility for the financial impact on the overall organisation caused by their
projects, and to not only be responsible for their own project budgets.

So, even if in some cases the costs of the up front additional analysis and planning might be higher than the long-term post-implementation costs caused by the quick decisions and shortcuts during the project, it is still important to associate those costs with the correct project. This would help give a more accurate picture of the overall project costs and provide more information for decision making in the earlier stages of the project. The case study indicated that, had the information about the full costs been known earlier, the solution decision might have been different. It is in the interest of organisations to understand the costs associated with the projects they undertake – first for the opportunity to make sound and qualified decisions around the project direction, but also to manage the overall organisational costs, ensuring stronger control over the balance between capital and operational costs.

This further highlights the need to pay adequate attention to the planning process as part of the efforts for effective management and minimisation of unforeseen impacts and related post-implementation operational costs, as well as the need for overall awareness of the organisational financial impact and project expenditure.

4.4.2.5 Lesson 5: Project methodology

The case study touched on two different project management methodologies being applied in the organisation prior and after the analysed project.

Although the project process improvements within the organisation brought more structure into the approval process and strategy alignment through PRINCE-based methodology, the new process did not bring improvements in terms of project success and minimisation of unplanned and unforeseen impacts. The interviewees who were part of projects under the old and the new methodology did not see any changes in addressing the unplanned and unforeseen impacts created by projects.

While previous process was more concentrated around the project implementation and
systems development lifecycle and less around formal prioritisation and project checkpoints, the new process strengthened the formal checkpoints, but also gave priority to the administrative side of project management, somewhat neglecting systems development elements and therefore impacting on overall productivity.

Therefore, it can be concluded that project methodology does not provide any guarantee for successful and effective project management – the key is in the effective application of the chosen methodology so that projects are aligned with strategy and any unforeseen impacts minimised, giving appropriate attention to all elements of project management: business, administrative and technical.

4.4.3 Impact Analysis – Impacted Areas

The long-term impacts on the infrastructure and overall organisational environment, created by the Project, can be categorised in the following areas:

- Impact on other projects and activities
- Impact on resources
- Impact on budget
- Impact on infrastructure
- Impact on people
- Impact on business operations
- Impact on development of other areas of business

Each of the impacted areas are further described in more detail:

4.4.3.1 Impact on other projects and business activities

Due to the highest priority applied to the Project, many other projects initiated or actioned during the lifecycle of the Project had to be cancelled or delayed. The impact manifested itself through missed business opportunities and associated revenue. Some of the cancelled activities had already incurred costs and set expectations with the customer
base for deliverables that had to be either rescheduled, downsized or altogether cancelled.

4.4.3.2 Impact on infrastructure

Incorporation of such a large and important new system means a significant impact on the existing infrastructure and support processes that have been worked on and improved over a long period of time.

High priority of the Project meant that a number of compromises had to be made in terms of last-minute solutions to issues encountered during the late stages of testing. Such changes involved workarounds, additional risks in terms of support within the infrastructure, as well as business and technical support.

Late involvement of the internal technical and business resources led to late discovery of the full-extent of the impact on the infrastructure, therefore extending the project time line and increasing costs.

During the implementation stage of the project, while the old system was still operational, and the new one was being implemented, together with the new and changed interfaces with the other systems within the infrastructure, the support of the overall production environment was a great challenge. It required a strong handle on both the business and technical support procedures, as well as a readiness and flexibility around changing the existing methods of support for the infrastructure.

The positive benefits were in the areas of rationalising the production infrastructure by decommissioning some of very old elements while introducing the new and better hardware, as well as improved support procedures.

4.4.3.3 Impact on people

The Project had a great impact on people involved inside and outside the project team, due to its size, importance and priority. The impacts were both positive and negative.

In terms of positive impacts, a number of key people from the project were promoted
internally into new roles that rewarded their new skills and abilities demonstrated during the Project.

Other positive impacts on people were:

- Increased IP (intellectual property) within the organisation and the financial industry
- Stronger project skills
- Motivation increase in terms of teamwork and deadline management
- Sense of teamwork and individual achievement

Negative impacts were manifested in the following areas:

- Long project timeline and stressful environment reduced motivation with some teams and individuals
- Many “quiet achievers” were not recognised in the post-implementation recognition process and were not properly utilised, positioned within the organisation or motivated for future projects and initiatives
- Some areas of business and support suffered high attrition rate due to project-related process reengineering and lack of focus on people during the crucial stages of the Project
- Some technical and business teams suffered a high-stress periods, due to impacts on their systems and processes being discovered relatively late in the Project.
- Due to the industry-wide impact created by the Project, many associated organisations (external customers) created a strong demand for skilled technical people and successfully acquired a number of key resources, creating even more pressure for the remaining project members to perform and produce results on time, despite the impact.

Both positive and negative people impacts are long-term impacts on the Company, as is usually the case with large, crucial, strategic projects.
4.4.3.4 Impact on business and technical operations

Technical and business operations were an active part of the implementation project stage. Although the business operations have had an active role in the Project from an early stage, technical operations became involved relatively late in the process and did not have a good chance to participate in the decision making process that impacted their area. This was particularly related to the shortcuts and workarounds decided on during testing, which were expected to be performed and looked after by the operations (both business and technical).

The situation created additional stress on the operational staff, who were already responsible for the operations of the existing systems, infrastructure, interfaces and associated support processes. Handling the new responsibilities, preparation for decommission and transition to the new system proved to be highly challenging. Some of the operational staff worked numerous weekends and very long hours to meet the expected deadlines and the level of support quality.

The Project created an opportunity for the existing operational processes to be thoroughly changed and improved during the Project, however, due to late involvement, limited time available and associated risks, this opportunity was only partially realised, and only to the extent of hardware improvements, business operations merger and simplification of some existing procedures.

The project would have benefited if the systems and business support staff were involved in solution planning earlier in the project. Their late involvement limited the value of the contributions they were able to offer to the project with their expertise and experience. This meant that the role of business and technical support was more reactive rather than proactive, creating situations that required shortcuts and improvisation, so that the project timeline and budget would not be further impacted. These manual workarounds and quick adjustments to the existing systems and processes introduced additional manual efforts and risks associated with non-automated actions.
4.4.3.5 Financial Impact

The financial impact created by the Project can be categorised in the following way:

- Project budget
- Missed opportunities/revenue
- Additional operational costs
- Additional people cost
- Other costs

The original budget for the Project did not have a sufficient contingency: 15% for internal costs and 0% for vendor estimates – making it 4.24-4.24% for the overall project. With project delays and re-estimates, as well taking into account internal costs not officially covered by the budget – it is clear that the project significantly impacted the financial side of the Company. This impact is mainly unforeseen impact, created by highly optimistic estimates of the costs associated with such a large initiative.

The Project was originally planned to take only minimal internal resources and to be completed within 12-18 months. With the Project taking on massive internal resources towards the implementation, and taking about 27 months to complete, it made it difficult (if not impossible) for other initiatives to take priority and resources which can be considered an opportunity cost. This prevented possible revenue flow, especially those business areas that required changes to the systems and business processes also impacted by the Project. The Company was unable to quantify the impact on those missed opportunities, but the interviewees agreed that the revenue increase would not be insignificant if the company completed the Project within 12-18 months, as originally planned, and was ready to take on additional projects and initiatives.

Many of internal costs were not accurately estimated during the project planning stage, including the associated operational costs required to support the new system in the existing infrastructure, especially during transition stage. Those unplanned costs were largely covered under the operational costs, with people incorporating their project tasks into their normal workload and overtime.
A high attrition rate in some of high-risk areas of the Project caused unplanned recruitment and training costs, which did not only create impact only on the Project, but also on the overall organisation. Some highly skilled people left the Company and took with them a significant level of IP, which took years to acquire.

Other costs include travel, staff incentives, additional equipment and consulting time.

Overall, the Project created a significant financial impact. Knowing that one of the major factors in the decision to proceed with the chosen solution within the Project was a financial aspect, it is logical to ask the questions:

- “Would the decision be the same, if the financial impact could have been predicted earlier in the project”?
- “How much of those impacts would have been relevant regardless of the solution?”

The interviewees had divided opinions when asked these two questions. One group thought that the choice for the solution would have been the same, while the other thought that the choice would have been different (i.e. an internal development option might have been selected).

But, everyone agreed that the majority of these costs would have been there regardless of the chosen solution, and that the full impact could not have been possibly predicted at the start of the Project without detailed analysis, which would have delayed the project start.

But, they agreed that one of the benefits if the internal solution was chosen would be an important psychological one, giving internal management more control over delays and deliverables, rather than having the frustrating periods of waiting for the vendor to respond. An internal solution would have given more opportunity for wider internal involvement in the planning and analysis stage, which would have helped crystallise some of the later impacts beforehand.
The impact areas are summarised\(^{17}\) in the table:

<table>
<thead>
<tr>
<th>Impact Area</th>
<th>The Cause</th>
<th>Significance(^{18}) and Effect</th>
<th>Predictability(^{19})</th>
<th>Mitigation(^{20}) Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact on other projects and business activities</td>
<td>• Project delays and demand on resources</td>
<td>High</td>
<td>High</td>
<td>• Additional resources to be deployed to other projects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lost opportunities to other business initiatives</td>
<td></td>
<td>• Regular evaluation of the capacity to address all scheduled projects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cancelled or delayed projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact on infrastructure</td>
<td>• Shortcuts and workarounds to achieve deadlines</td>
<td>High</td>
<td>Medium</td>
<td>• Include prediction of costs into the budget, to highlight the overall project cost, even if it occurs after the implementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Additional efforts required in the future to improve on solutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact on people</td>
<td>• Deadlines pressure and long duration of project</td>
<td>High</td>
<td>High</td>
<td>• More attention should be given to the incentives scheme for key resources, especially including penalties for early departure</td>
</tr>
<tr>
<td></td>
<td>• External demand on highly skilled staff</td>
<td>• The project required resources with specialised skills to be retained for the whole project and beyond</td>
<td></td>
<td>• A contingency related to loss of key people to be planned and incorporated into schedule and budget</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Many staff lost the ability to balance their work life during the project and that impacted their motivation level</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strong market demand for specialised skills attracted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{17}\) Summarised in terms of significance, predictability and possibility for mitigation within the same project

\(^{18}\) Significance to the organisation

\(^{19}\) How possible it was to predict the impacts as part of the applied project process

\(^{20}\) Mitigation actions to prevent reoccurrence – based on interviews and observations
<table>
<thead>
<tr>
<th>Impact Area</th>
<th>The Cause</th>
<th>Significance and Effect</th>
<th>Predictability</th>
<th>Mitigation Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>some key resources away from the project – causing additional costs and delays</td>
<td>Medium:</td>
<td>• Include prediction of increased operational costs into the budget, to include it in the overall project cost, even if it occurs after the implementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Medium:</td>
<td>• Prepare and communicate a plan for the post-implementation improvements</td>
</tr>
<tr>
<td>Impact on business and technical operations</td>
<td>• Shortcuts and workarounds • Stressful environment</td>
<td>Medium:</td>
<td></td>
<td>• Perform more detailed estimates and assign higher contingency to match the level of unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Gradually reduce contingency when the level of ambiguity reduces</td>
</tr>
<tr>
<td>Financial impact</td>
<td>• Project delays • Shortcuts and workarounds • Unplanned tasks • Rework • Additional staff</td>
<td>High: The budget contingency was minimal for such a large project (15% for internal costs and 0% for vendor estimates – 4.24 – 4.24% for the overall project) Every delay created additional costs that needed to be covered and explained Strong pressure to minimise internal costs or to cover them outside budget</td>
<td>High:</td>
<td>• A project of this size requires a more detailed estimates and more conservative budget With such a large undertaking that involves a vendor, zero contingency is not realistic</td>
</tr>
</tbody>
</table>

Table 16 - The Case Study Project Impacts Summary
4.4.4 Impact Analysis - Impact Factors

So far, the research findings identified the following factors that can influence creation of unplanned and unforeseen impacts created by projects:

- Cost management approach
- Lack of communication between various projects
- Internal politics and people factors
- Overlapping projects and lack of impact analysis
- Lack of thorough planning
- Lack of skills
- Project/strategy process issues
- Change in project environment
- Vendor selection

Each of the factors are further explained.

The factors outlined here are certainly not the only factors that can influence creation of unplanned and unforeseen impacts created by projects. However, this study suggests that by effectively managing these factors, organisations can reduce the unpredictability of project impacts and therefore reduce the overall costs associated with projects and post-project operations and maintenance.

The importance of these factors and their influence in creation of project impacts will be further evaluated through a survey analysis.

4.4.4.1 Cost management approach

Financial components are one of the major elements of project management. Project budgets are often limited and can be the deciding factor in how projects are addressed, managed and delivered.
As the case study illustrated, financial elements are often a key deciding factor with regards to solution choices for projects, which immediately creates parameters within which the project can operate, limiting flexibility in terms of changes to scope, costs and timelines.

In such a limited environment, decisions are often made that are cost-effective for projects, but might not necessarily be the most effective for the infrastructure and long-term organisational goals or other projects, or post-project operations. Since projects are managed by a separate group of people to those that have responsibility for post-project operations or technology and business infrastructure, project management decisions can be often influenced by the project’s financial elements, and therefore create unplanned and unforeseen impacts for the infrastructure and other areas of the organisation.

Projects often uncover additional elements that were not included in the original scope or find issues that need to be corrected, which require additional efforts and attract costs. In such situations project managers prefer to make cost-effective decisions requiring least project effort and impact on their budgets, often allowing for sub-optimal solutions to take place, which creates unplanned and unforeseen long-term impacts, that will eventually increase the overall costs for organisations.

4.4.4.2 Lack of communication between various projects

It is common for large and dynamic organisations to run multiple projects concurrently. This requires strong coordination to ensure optimal use of resources, alignment between various project goals and solutions, as well as to minimise conflict situations and waste of resources.

In cases where multiple projects involve common systems within the organisation there is a strong chance that some efforts will be duplicated, that solution conflict will arise and as a result create further issues on one or more projects, as well as impact on post-project infrastructure. For example, the organisation covered in the case study has less than 600 employees and runs more than 70 projects concurrently (with different priorities). This opens the door for inefficiencies in terms of resources management, optimal long-term technical solutions and alignment with business and technology strategy.
Projects are often executed in isolation from one to another, concentrating on their own deliverables, which further increases the chances for creation of unforeseen and unplanned impacts.

4.4.4.3 Internal politics and people factors

Projects are initiated, approved and delivered by people. Internal politics is a powerful factor in project success, communication and overall organisational progress and direction.

Projects are monitored and approved by senior members of organisations, who often have their own agendas that might include interest in one or more projects or initiatives. Naturally, their influence within the organisation can strongly impact on projects and the results they deliver to the organisations.

Key project team members also have a strong influence over project results and the impacts they create on an organisational environment. Highly skilled individuals often suggest solutions for projects and can influence the project flow, results and therefore unplanned and unforeseen impacts.

Personal skills, agendas and motivations are powerful elements that can influence projects and strategies. They can also introduce impacts that are not originally planned or foreseen, but can reduce or increase the overall organisational costs and direction.

4.4.4.4 Overlapping projects and lack of impact analysis

Similar to the earlier mentioned communication factor between multiple projects, the lack of impact analysis between overlapping projects can also cause unplanned impacts and associated costs for organisations.

As the case study indicated, without thorough impact analysis (especially on such a large projects as the one analysed here), the negative impacts are imminent and can cause significant issues for the organisation. Even on a smaller scale, where two or more
projects are running and possibly impacting each other (and that are highlighted only at later stages) the unplanned impacts would create additional work and require efforts to resolve issues.

A situation where multiple projects have overlapping interests and impact each other are often resolved by shortcuts and workarounds instead of permanent solutions that would benefit the long-term strategy and direction of the organisation.

4.4.4.5 Lack of thorough planning

Project planning is the tool that indicates how much projects will cost, what they will involve and how the goals will be achieved.

With rushed planning that lacks thorough impact analysis and an appropriate discovery process, it is probable that any new discovery after the project is approved will result in unplanned and unforeseen impacts that will need to be addressed at some point.

As the case study indicated, organisations are not keen on approving budget increases and scope changes if there are ways to accommodate those changes within the allocated budget and resources. This is a motivating factor for the rushed decisions that will resolve issues to project satisfaction, even though it might impact on the long-term organisational goals and costs.

As the case study indicated, the short planning phase was the major source of issues that required adjustment to project budget, solution and timelines and created various unplanned impacts on the existing infrastructure.

4.4.4.6 Lack of skills

Appropriate skills are essential for any job, especially for project management tasks.

Specialised and quality skills are essential for senior management that is required to make strategic decisions involving complex matters and multiple elements.
Project managers and project teams are expected to perform their tasks with expertise and knowledge of multiple areas, as well as with specialised skills related to their project tasks.

If any individuals are performing roles they are not appropriately skilled for, this will create issues and require additional work to address those issues.

The case study highlighted the importance of appropriate skill sets for project team members, as well as high dependence on subject matter expertise and the issues experienced due to limited vendor understanding of the organisation’s business processes.

4.4.4.7 Project/strategy process issues

Processes are created to ensure consistency, predictability and quality with business, technical and project tasks.

The implementation and execution of project and strategy processes is an essential element to successful general and project management within organisation.

According to the literature and practical examples, there is no magic process that ensures successful delivery of projects and strategy. The case study and the literature review indicated that the key for a successful process is in the actual implementation, execution and compliance within organisations.

Inefficiencies with project and strategy processes create uncertainty, ambiguity and misunderstanding within organisations and open the door for unplanned and unforeseen long-term impacts created by projects and general management.

4.4.4.8 Change in project environment

Once projects are approved, it is expected that they will be executed according to approved plans, covering budget, resources and timelines, following outlined project process.
Any changes in project environment that have an impact on planned and approved project parameters directly create additional impacts that are outside the approved plan, which puts them into the category of the unplanned and unforeseen impacts on the overall organisation.

These changes can include staff changes, priority adjustments, technical or business issues, project process modification, interdependencies with other projects and many other changes to the planned and approved project parameters.

### 4.4.4.9 Vendor selection

When a project solution includes vendor engagement, it is important to ensure a proper balance is achieved between the costs, benefits, long-term interests of organisations and effective ongoing vendor management.

Vendor interests are often different to that of their clients, so it is imperative to ensure the organisation’s interests are fully maintained throughout vendor engagement.

The vendor selection process should include various factors, which cover common ground for a long-term interests for maintainable solution, as well as the vendor’s skills, reliability and integrity.

Where possible, a partnership with the vendor should be evaluated as an alternative to a contract-based business transaction. This would help mitigate the risks around motivation difference between organisations and their vendors.

### 4.4.5 Management Analysis

The first part of the research question is clearly highlighted in the analysis so far:

- *What are the links between successfully completed IT projects and the ongoing information systems development and maintenance and how do those links negatively impact the long-term organisational performance within the Australian financial industry?*
The analysis of the Project so far shows clear links between this major, successfully completed initiative and the long-term impacts on various areas of the organisation. The impacts created by the Project represent a pattern of behaviour across the Company, as well as other organisations in the financial industry. Within the Company, the project-introduced impacts were identified as highly significant, and their effective management as an unexplored area of financial savings and more effective organisational management.

The case study analysis indicated that the unforeseen impacts created by projects need closer investigation, as their management is a key to create a positive long-term benefit to the organisation in the area that is currently unexplored and highly volatile. The interviewees also agreed that these impacts are easily seen on the large projects, while with smaller projects they can remain undetected, however still significant as an overall impact on the organisation.

Management effectiveness and the organisational motivation are the key answer to the second part of the research question:

- *Can those impacts be predicted and managed as part of the overall project management process, with the aim of reducing the overall costs for the Australian financial companies?*

The case study results and recent scholarly interests in long-term strategic alignment indicate that organisations that are able to successfully predict and subsequently manage the otherwise unforeseen project impacts on an organisation will pave the way for opportunities with strong benefits, ultimately financial, as well as strategic and operational.

The following are some observations of the Project in terms of the applied management in various areas. While there are multiple dimensions under which management can be observed and analysed, only the elements relevant to this research are explored.

The management style applied to the Project was highly focused on delivery. Since the
solution was vendor-supplied, strong attention was given to the vendor management and communication, as well to the legal side of the project and subsequent support.

As in the earlier detailed analysis of the various project stages, since the internal communication was somewhat neglected early in the Project in favour of the external vendor communication, a situation was created where the full extent of the impacts and related costs were still not discovered or even hinted at.

This delay in internal communication, together with the oversimplified impact assessment to the existing infrastructure, created a highly optimistic picture and supported a very ambitious timeline for the Project. The number of resources assigned to the Project in the early stages was not adequate to evaluate the overall impact, as well as to maintain the vendor-related activities. This can be seen as a missed opportunity in terms of time, impact assessment and effective planning and management.

The case study indicated that the complexity of the Project solution (in terms of requirements, development, integration and implementation) and required efforts to implement it were largely underestimated from the very beginning, which set certain expectations in terms of the timelines, budget and deliverables. Once the internal communication channels were properly established, the conditions for evaluation of so far unforeseen impacts could be realised.

Also, the project process applicable at the time provided little or no control over the communication aspect of the project management, which then left the project team with their own interpretation of the project methodology and related process. Also, the majority of project team members were chosen and assigned to the Project because of their expertise in the subject matter relevant to the Project, and not for their project management expertise. Naturally, their efforts were focused primarily on the task detail level, rather than on the overall project process or project management methodology.

This is not unusual for projects, but the issue with this project was that the expectations
were already set for the timeline, without having a fully operational project office created and some of the mandatory checkpoints fulfilled.

The experience with the Project helped shape the later project process within the Company, incorporating some of the learned lessons, especially with regards to communication and management impact evaluation.

In summary,

The main strengths observed within the management style applied to this project were:

- Strong attention to the primary business and technical requirements that determined conditions under which the vendor was expected to deliver and perform
- Effective legal negotiation with the vendor. Although the initial communication approach with the vendor needed improvement and caused unexpected delays, the subsequent communication was highly effective and provided the basis for quality implementation.
- Highly effective communication with the external customer base, testing and subsequent implementation
- Highly effective attention to detail in terms of reliability and supportability of the overall technical solution
- Post-implementation support arrangements were built with the highest standards, ensuring the quality of the implemented solution and high reliability – the objectives that were non-negotiable
- Change management during project implementation and related negotiation with the vendor during the acceptance phase. A couple of mandatory changes (one based on the regulatory requirements) were incorporated into the Project without additional external costs, even though the initial vendor estimate was A$1M for the change to be included.

The areas that were less effective in terms of the applied management style were:
• Internal communication – with impacted technical teams and non-primary business areas. This area improved during the delivery stage of the project, when all affected areas were fully engaged in the Project.

• People management – ability to retain key staff and plan for effective use of people, avoiding single-point sensitivity. This area of the management became critical during the period when demand for skilled staff became an issue with a number of key people leaving the company to accept positions with other organisations. This would be seen as a normal staff turnover in different circumstances, but due to their expertise and key role on the project, it was considered as a very important risk. Also, during the highly important internal development, the project highlighted the risk and impact of high dependence on some of the key individuals who were required to perform multiple duties on the Project and caused delays due to unavailability or inability to perform effectively in multiple roles.

• Clear project process and project methodology – the project followed a self-evolved version of the existing process, which later provided the basis for the new project process within the Company. While this journey was highly educational and valuable for people who built their project management skills as a result, the Project of this size and complexity would have benefited greatly from a consistent process imposed on all aspects of the Project for its entire duration.

Project management style and effectiveness can be evaluated from many aspects, but ultimately it is measured by the overall project success. The project manager and the project team are given a clear task and associated deliverables.

The Project that was observed in this study was evaluated as fully successful by the organisation. There is no reason to dispute the evaluation, since all participants of the Project agree with this statement. However, projects such as this one provide a great opportunity to explore any possible future actions that can be taken in order to improve the overall management of projects and changes within organisations, to enable them to maximise project benefits and ultimately, minimise associated costs and negative impacts.
Meeting project objectives at the end, overcoming all obstacles and managing risks on the way, towards final completion is considered a successful project by the criteria outlined in the project process. But, in terms of the original expectations and missed opportunities due to the extended timeline and increased costs, the project success should be looked on from the overall organisational perspective, to the extent of evaluating if the project would have been actioned in the same manner if additional information was available at the very start. All these elements, although outside the project objectives, should have been evaluated in terms of the organisational success level; how it makes decisions with projects and other strategic actions.

Since many decisions that affected the original picture of the project and related expectations were made as part of the project discovery, it is only logical to include certain steps of alignment, monitoring and data collection for the strategic element into the project process, helping gather required information for continuous improvement of project evaluation, strategic decision making and overall project and cost management.

A project process that fully includes continuous strategic alignment and multi-dimensional impact assessment is one way to help ensure consistency across all projects within an organisation and help to minimise the overall unforeseen impacts created by projects. However, project process alone cannot be sufficient to really go beyond and provide additional value to the organisations by fully minimising and effectively managing the unplanned and unforeseen impacts. Such process needs to be fully supported by all levels of the business, management and support structures, led by the senior and strategic management within the organisation.
4.5 Conclusion

This chapter presented the detailed case study of a project that satisfied the selection criteria set around a major project within the financial industry in Australia. The project was an example of an IT project with all the attributes relevant to this study: strategic importance, significant size and impact on the existing environment. Such a project provided a good opportunity for examining the unplanned, unforeseen long-term impacts on the organisation.

The case study created a set of observations and findings that are highlighted as common across many similar projects, confirming the problems highlighted at the beginning of this research and helping provide some answers to research question.

These observations and findings were then formulated into survey questions and tested on a wider audience across the project management community in Australia, primarily focusing on financial industry, but also including other industries for a more thorough comparison.

Here is the summary of the case study findings in relation to research statements:

1. **(RS#1) The confirmation of impacts and their relevance:**
   Based on this case study and literature review so far (especially interviewee responses in terms of pattern of project lifecycle within the company), it can be concluded that projects, regardless of size, type and cost do create unforeseen impacts that are highly relevant for the long-term success of organisations. The project analysed through the case study identified a set of highly relevant but unplanned impacts created by projects.

   The case study interviewees agreed that the analysed project is representative of a regular pattern of projects conducted within their organisation and industry, which create unforeseen impact that are highly relevant to their organisations. The costs of
those impacts can be quantified through estimates of possible savings if the impacts were avoided or managed better.

2. **(RS#2) The readiness to address the issue:**
The organisations are generally keen on managing and effectively reducing these impacts. The interviewees’ experience within their current and previous organisations, as well as their communication through professional networks indicate that organisations are keen on reducing unforeseen impacts created by projects and maximising the benefits of project solutions while minimising and more effectively managing project costs.

3. **(RS#3) The impact factors:**
Based on the case study findings, the factors that are highly relevant to how unforeseen impacts are managed as part of project management and strategic alignment are: the effectiveness of the applied project process, project office structure and organisational position, project size, project priority, senior management motivation, formal responsibilities and readiness for constant evaluation of the alignment with the strategy and project goals.

The additional factors that are also relevant to the level of the unforeseen impacts are: project team expertise, project discipline, organisational size, the management of the IT infrastructure, existence of the long-term business and technology strategy and the project manager profile.

4. **(RS#4) The cross-industry relevance:**
The interviewees who have insight and experience in other organisations and industries agreed that the problems with the unforeseen long-term impacts are not relevant only to the financial industry, but equally applicable to many other industries. The financial industry is a particularly profit-driven industry and therefore a good environment for the detailed study and emphasis of costs created by unforeseen project impacts.
5. **(RS#5) The actions:**

There are certain actions that can be taken to effectively manage and ultimately reduce the long-term impacts of projects.

The actions identified through the case study involve incorporation of formal measures for management of impacts as part of an adopted project process, assignment of appropriate roles and responsibilities and constant commitment to effectively manage project impacts.

In addition, more comprehensive high-level planning in the early stages of projects (involving skilled representatives from all relevant areas impacted by the project) would help identify the areas of potential impacts and assist with reduction of their unpredictability, including a more accurate effort and cost estimates. More comprehensive planning would provide valuable input information to the planning, estimating and decision making process, minimising risks for unforeseen impacts at later stages of projects.

The results of the case study indicate that this planning should include a formal impact analysis, which is standardised across all projects within organisation. The standardisation will ensure mandatory consistency of detail and coverage of all projects and help with the discovery process. Such formal impact analysis needs to be included in the project process as part of planning stage.

The case study had a situation where the vendor solution increased the degree of project impacts, which indicates that additional vendor-management elements need to be included in this impact evaluation and linked together in the overall project management process within an organisation.

These statements will be further evaluated through survey analysis. The next chapter concentrates on the survey analysis and the subsequent findings, which should further
assist in answering the key research questions:

- *What are the links between successfully completed IT projects and the ongoing information systems development and maintenance and how do those links negatively impact the long-term organisational performance within the Australian financial industry?*

- *Can those impacts be predicted and managed as part of the overall project management process, with the aim of reducing the overall costs for the Australian financial companies?*
5 Chapter 5 – Survey Analysis

Figure 25 - Chapter 5 - Survey Analysis
5.1 Introduction

This chapter concentrates on the results of the research survey and relevant analysis conducted on the collected data. It starts with the description of the survey respondents, then describes the survey structure and purpose, further continuing with the results and their link to the research question.

The survey analysis continues the thinking flow from the previous chapter, further clarifying the case study findings and investigating their relevance over a wider number of respondents across other organisations and industries.

As stated earlier in the text (Chapter 3), the value of survey findings has certain limitations. The survey covered in this research is not directed at providing the vital information for the findings of this research – it is rather an extension of the case study findings and an attempt at extending the findings outside the case study environment.

The case study established the pattern of project management and organisational behaviour where unforeseen impacts are truly present and recognised as issues that need addressing. While the case study provided the answers to the research questions within one organisation, the survey tests the resulting assumptions and findings on a wider sample of organisations with various application of project management methodology and applied project processes.

This survey is aimed at providing a window into the possible application of the case study findings outside the case study environment, as well as to open the door for the future research opportunities and potential further generalisation of the research findings.

With the associated limitations in mind, the survey findings aim to provide further references (together with the case study findings) to the original research statements:

1. (RS#) Problem confirmation.
There are unforeseen and unplanned impacts created by projects that are highly relevant to organisations and successful project management.

2. **(RS#2) Willingness to address the issue.**
   Organisations are willing to address this problem.

3. **(RS#3) Impact factors.**
   There are number of discoverable and manageable factors that influence the existence and degree of unplanned and unforeseen impacts created by a project. By clearly identifying these factors the research can come closer to effectively managing them, therefore reducing the overall impact created by projects.

4. **(RS#4) Cross-Industry Relevance.**
   This problem is not only relevant to the observed financial industry. The patterns and impacts are applicable to other industries where IT projects are conducted.

5. **(RS#5) Actions.**
   By improving project and strategy processes within organisations, the overall project, post-project and maintenance costs can be reduced and more effective use of the available resources could be made, maximising project benefits for organisations.

The use of survey is performed under the interpretive research framework and should be viewed as one of the supporting research data methods, rather than an introduction of the positivist research framework in this study.
5.2 Survey Approach, Structure and Characteristics

The survey was created using an online facility, providing a convenient way for data collection and survey distribution. The survey participants were sourced through the AIPM (Australian Institute of Project Management) member network, as well as the researcher’s professional network. There were 123 valid\textsuperscript{21} survey responses in total, covering respondents from various industries and organisations, with diverse experience and skills. The respondents were not targeted with specific backgrounds and industry coverage in mind - what they have in common is the association with the AIPM and willingness to participate in this survey.

The majority of respondents originated from the Australian financial industry (which was the primary environment for this research), while the remaining respondents originated from other industries, allowing for further validation of the findings initially applicable to the Company analysed in the case study and the Australian financial industry.

A partial insight into possible cross-industry and cross-skill application of this research is a positive indication for further research opportunities on the same topic. Although based on a small sample, the survey helps validate some of the assumptions and findings derived through this research, namely those related to the universal nature of unforeseen project impacts and the need to address them as part of the project management process.

The case study investigated a typical large strategic project within a financial organisation in Australia, which can act as an example of similar projects conducted within the industry. An extension of the case study findings through this survey sample gives valuable additional information to the overall research effort, by providing a brief insight into an application to a wider community.

The survey consisted of 46 questions, organised across the following three parts:

\textsuperscript{21} There were over 150 responses to the survey. Only responses with all mandatory questions answered were considered valid.
The first part concentrates on the background of the survey respondents: the age, experience, their views about the project process, their involvement in the organisational strategy (both business and IT), as well as their experience with projects. By acquiring this information about the respondents, their further responses can be better classified and further analysed based on this information.

The second part of the survey concentrates on the respondent’s organisation, such as: industry, organisational size, approach to strategy, project office organisation and position, projects size, budget and activity. Combined with information about respondents experience and role, this part of the survey gives an opportunity to further classify and validate the case study findings across various industries and IT project application.

The third part of the survey covers key questions related to project initiation, handling, strategy alignment, project methodology, reflection on past projects, general project dynamic and respondent’s views in terms of strategic alignment, project success evaluation, the importance of unforeseen impacts and the ways to address it.
5.3 About Respondents

The first element in the survey analysis is information about the respondents.

Understanding the respondents’ background is crucial to a successful analysis of their responses and the relevant correlation between their answers and those of the others in the sample.

In total, there were 123 valid responses to the survey. The following are some details on the background of the respondents:

5.3.1 Respondents Age, Role and Experience

The age of respondents is not highly relevant to this research, but it is captured to indicate the sample diversity and to provide a more complete picture in case there are possible correlations between respondents’ preferences and their age and experience.

The majority of respondents were over 45 years of age, followed by respondents in the age groups 35-45 years and 30-35 years. The smallest number of respondents were under 30 years of age.

Table 17 shows the breakdown of the respondents age:

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>30-35</td>
<td>34</td>
<td>27.6</td>
</tr>
<tr>
<td>35-45</td>
<td>39</td>
<td>31.7</td>
</tr>
<tr>
<td>Over 45</td>
<td>42</td>
<td>34.1</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 17 - Survey Respondents Age

Respondents’ roles determine largely how they perceive projects and related processes.
The survey sample covered a range of various roles, with the majority of respondents being project managers (52.8%), followed by IT managers, IT professionals and business owners.

The roles within the survey sample are diverse, since the survey was distributed via the AIPM network, with the hope of attracting professionals who are actually officially involved in project management. This assisted with a more objective view of the subject matter and provide an opportunity to collect opinions related to various positions within organisations and their project management processes.

Table 18 shows the full details on the roles performed by the respondents in the survey sample:

<table>
<thead>
<tr>
<th>Respondents Role</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>65</td>
<td>52.8</td>
</tr>
<tr>
<td>IT Manager</td>
<td>20</td>
<td>16.3</td>
</tr>
<tr>
<td>IT Professional</td>
<td>15</td>
<td>12.2</td>
</tr>
<tr>
<td>Business Owner</td>
<td>12</td>
<td>9.8</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>5.7</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 18 - Survey Respondents Role

The experience of the respondents within the sample is highly relevant to the results. More experience means a higher quality contribution to the research and therefore more accurate results.

In terms of experience, the majority of respondents (47 or 38.2%) have between 10-20 years of experience, followed closely by the respondents with over 20 years of experience (41 respondents, or 33.3% of the survey sample). By examining this data it can be concluded that the overall survey population can be accepted as highly qualified
respondents and contributors to this research.

Table 19 shows the details and the breakdown of the respondents’ experience:

<table>
<thead>
<tr>
<th>Experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>7</td>
<td>5.7</td>
</tr>
<tr>
<td>5-10 years</td>
<td>28</td>
<td>22.8</td>
</tr>
<tr>
<td>10-20 years</td>
<td>47</td>
<td>38.2</td>
</tr>
<tr>
<td>Over 20 years</td>
<td>41</td>
<td>33.3</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 19 - Survey Respondents Experience

Table 20 gives a further breakdown of the respondents’ age, cross-referenced with their years of experience. As expected, the most experienced respondents were in the age groups over 45 with the experience of over 20 years, followed by the age group 35-45 with the majority of respondents stating 10-20 years of experience:

<table>
<thead>
<tr>
<th>Years Experience</th>
<th>Under 30</th>
<th>30-35</th>
<th>35-45</th>
<th>Over 45</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>5-10 years</td>
<td>8</td>
<td>12</td>
<td>4</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>10-20 years</td>
<td>0</td>
<td>15</td>
<td>32</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Over 20 years</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>34</td>
<td>39</td>
<td>42</td>
<td>123</td>
</tr>
</tbody>
</table>

Table 20 - Survey Respondents Age/Experience

5.3.2 Respondents Organisational Involvement

Together with their individual experience, respondents’ involvement in organisational structure in terms of project process is also highly relevant to this research, as it helps establish and position their views and their influence on strategy and project management processes.
Respondents’ views of the project process, organisational dynamics and relevant responsibilities need to be seen in light of their role, experience, motivation and influence.

Respondents’ involvement in organisations was categorised in the following way:

- Involvement in business strategy
- Involvement in IT strategy
- Involvement in the project process

### 5.3.2.1 Business Strategy Involvement

In terms of business strategy involvement and influence, all 123 respondents provided valid responses. Interestingly, only 13% declared they have a strong involvement in the business strategy. The majority of respondents (32.5%) declared that their involvement and influence over business strategy was minimal. 22.8% have no involvement or influence. Table 21 shows the details:

<table>
<thead>
<tr>
<th>Business Strategy Involvement</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal involvement/influence</td>
<td>40</td>
<td>32.5</td>
</tr>
<tr>
<td>No involvement/influence</td>
<td>28</td>
<td>22.8</td>
</tr>
<tr>
<td>Active involvement/influence</td>
<td>20</td>
<td>16.3</td>
</tr>
<tr>
<td>Moderate involvement/influence</td>
<td>19</td>
<td>15.4</td>
</tr>
<tr>
<td>Strong involvement/influence</td>
<td>16</td>
<td>13.0</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 21 – Respondents Business Strategy Involvement

If these responses are cross-referenced against the roles of the respondents, the results are not surprising: all business owners and IT directors among the respondents declared strong involvement and influence in terms of the organisational business strategy, while other IT roles had none or minimal involvement in the business strategy.

This is in line with the findings of the case study, where it was recognised that IT roles
have little or no influence or involvement in the development of business strategy. The detailed view of roles and their involvement in business strategy are presented in Table 25.

Knowing that the majority of business strategy actions are dependent on successful implementation of IT projects, this raises an interesting question: will the overall success of IT projects be improved and their unforeseen impacts on the organisation minimised if IT was more involved in business strategy development and evaluation before projects are initiated? When asked, both technical and business respondents in the survey and case study agreed that the business strategy development should be the responsibility of the business and that strategy development should not be influenced by IT. However, they also agreed that more active IT involvement in the solution evaluation would be beneficial, especially during project initiation, where strategy is already defined and translated into goals and objectives. Although IT should not drive the business strategy, the actual evaluation of the solutions to business initiatives do ultimately influence the business strategy development.

### 5.3.2.2 IT Strategy Involvement

<table>
<thead>
<tr>
<th>IT Strategy Involvement</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal involvement/influence</td>
<td>49</td>
<td>39.8</td>
<td>41.2</td>
</tr>
<tr>
<td>Moderate involvement/influence</td>
<td>35</td>
<td>28.5</td>
<td>29.4</td>
</tr>
<tr>
<td>No involvement/influence</td>
<td>23</td>
<td>18.7</td>
<td>19.3</td>
</tr>
<tr>
<td>Active involvement/influence</td>
<td>8</td>
<td>6.5</td>
<td>6.7</td>
</tr>
<tr>
<td>Strong involvement/influence</td>
<td>4</td>
<td>3.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>96.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>4</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 22 – Respondents IT Strategy Involvement

In terms of IT strategy involvement, only 119 respondents gave valid answers to this
question. The majority of respondents stated that they have minimal or moderate involvement in IT strategy. Only 12 out of 119 answers stated active or strong involvement in IT strategy development. The summary of their responses is presented in Table 22.

Taking a step further and looking into the detailed breakdown of the roles and their involvement in the IT strategy (Table 26), it can be seen that the results are not surprising in terms of senior IT managers (IT directors), who have primary responsibility for IT strategy development. Since there were only four IT directors/senior managers in the survey sample, the result is in line with their presence among the respondents. What is interesting is that 75% of IT managers within the sample declared minimal involvement in IT strategy. This raises a concern that IT managers and other IT professionals do not have sufficient opportunity to participate in the IT strategy development. Providing that project managers rely on IT managers to deliver technical solutions for their projects as people who assign the resources and decide on design and integration, the involvement and input into the long-term IT strategy is crucial for minimising any impacts created through those projects. This supports some of the case study findings.

5.3.2.3 IT Projects: Cost or Revenue

When asked whether they see the project as cost, revenue or both, the respondents were divided: while the majority (43.1%) saw it as both cost and revenue, only 18.7% saw it as revenue.

<table>
<thead>
<tr>
<th>Project Meaning</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both (cost and revenue)</td>
<td>53</td>
<td>43.1</td>
</tr>
<tr>
<td>Cost</td>
<td>47</td>
<td>38.2</td>
</tr>
<tr>
<td>Revenue</td>
<td>23</td>
<td>18.7</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 23 – Projects: Cost or Revenue

It is interesting to see how these answers relate to different respondents’ roles (Table 27).
As expected, business owners see the projects more as cost, while IT professionals see it more as revenue. Again, this is in line with the case study findings.

### 5.3.2.4 Project Management Process Involvement

In terms of project management process involvement within their organisations, more than 43% of respondents declared their involvement as active, 26% as leading and 24.4% as minimal. Only 6.5% of respondents stated no involvement in the project management process.

Table 24 shows the summary of responses:

<table>
<thead>
<tr>
<th>IT Project Management Process Involvement</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>53</td>
<td>43.1</td>
</tr>
<tr>
<td>Leading</td>
<td>32</td>
<td>26.0</td>
</tr>
<tr>
<td>Minimal</td>
<td>30</td>
<td>24.4</td>
</tr>
<tr>
<td>None</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 24 – Respondents IT PM Process Involvement

Overall, more than 85% of the respondents have either a leading or active role in the project management process, which makes this survey sample reasonably qualified to give qualified answers and to assist in the validation of the case study and the overall research question and findings.

This information is also valuable in terms of cross-referencing with the responses related to the assessment of the existing project process and potential need and readiness for improvement.

This correlation is demonstrated in Table 25, Table 26 and Table 28, showing more detailed analysis of the same data, linked with the respondents’ roles and their involvements.
<table>
<thead>
<tr>
<th>Degree of Involvement in Business Strategy</th>
<th>Role</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Owner</td>
<td>Project Manager</td>
</tr>
<tr>
<td>No involvement /influence</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>Minimal involvement /influence</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>Moderate involvement /influence</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>Active involvement /influence</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>Strong involvement /influence</td>
<td>Count</td>
<td>12</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>% within Role</td>
<td>75.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>% within Role</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>12</td>
</tr>
<tr>
<td>% Within Involved in Bus. Strategy</td>
<td>% Within Role</td>
<td>9.8%</td>
</tr>
<tr>
<td>% Within Role</td>
<td>% Within Role</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 25 – Respondents’ Business Strategy Involvement Per Role
Table 25 shows the degree of respondents’ involvement in the business strategy within their organisations. Out of 123 respondents, 28 (or 22.8%) have no involvement or influence on the business strategy. The largest number of respondents (40 or 32.5%) have minimal involvement or influence. 19 respondents (or 15.4%) have active involvement in the business strategy, while only 16 (13%) have strong involvement. The respondents that have strong or active involvement are those performing senior roles in their organisations.

Table 26 shows the level of respondents’ involvement in their organisations’ IT strategy. 119 survey participants provided their responses to this question. The majority of those who responded have minimal involvement in the IT strategy (49 respondents or 41.2%), while 35 respondents (29.4%) have moderate involvement. Only four respondents have strong involvement/influence – all of them senior IT managers/directors. 23 respondents (19.3%) have no involvement or influence on the IT strategy within their organisations, five of them are IT managers.

Table 27 displays the responses to the question about the meaning of projects to respondents. 43% of respondents see projects as both cost and revenue opportunities, while 38% see it only as cost and 18.7% as revenue opportunity. The majority of project managers see projects as either cost or combined cost and revenue, while all surveyed business owners classified projects as cost. This result supports the importance of the financial element when it comes to project decisions, in line with the case study analysis and the degree of influence of financial factors that influence solution selection for projects.

Table 28 displays the results related to respondents’ involvement in the IT project management process within their organisations. Over 43% of the respondents have active involvement in the project management process, while only 6.5% have none. 26% of the respondents have leading roles in their organisations’ project processes. These numbers show that the survey population is well qualified to provide valuable insight into the effectiveness of project processes within their organisations.
<table>
<thead>
<tr>
<th>Degree of Involvement in IT Strategy</th>
<th>Role</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Owner</td>
<td>Project Manager</td>
</tr>
<tr>
<td>No involvement/influence</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>.0%</td>
<td>47.8%</td>
</tr>
<tr>
<td>% within Role</td>
<td>.0%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Minimal involvement/influence</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>8.2%</td>
<td>44.9%</td>
</tr>
<tr>
<td>% within Role</td>
<td>33.3%</td>
<td>36.1%</td>
</tr>
<tr>
<td>Moderate involvement/influence</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>22.9%</td>
<td>68.6%</td>
</tr>
<tr>
<td>% within Role</td>
<td>66.7%</td>
<td>39.3%</td>
</tr>
<tr>
<td>Active involvement/influence</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>.0%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Strong involvement/influence</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>61</td>
</tr>
<tr>
<td>% within Involved in Bus. Strategy</td>
<td>10.1%</td>
<td>51.3%</td>
</tr>
<tr>
<td>% within Role</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 26 – Respondents’ IT Strategy Involvement Per Role
<table>
<thead>
<tr>
<th>Project Meaning</th>
<th>Role</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Owner</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Both (Cost and Revenue)</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>% within Project Meaning</td>
<td>.0%</td>
</tr>
<tr>
<td></td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>Cost</td>
<td>Count</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>% within Project Meaning</td>
<td>25.5%</td>
</tr>
<tr>
<td></td>
<td>% within Role</td>
<td>100.0%</td>
</tr>
<tr>
<td>Revenue</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>% within Project Meaning</td>
<td>.0%</td>
</tr>
<tr>
<td></td>
<td>% within Role</td>
<td>.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>% within Project Meaning</td>
<td>9.8%</td>
</tr>
<tr>
<td></td>
<td>% within Role</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 27 – Projects: Cost or Revenue (Role Cross-Reference)
<table>
<thead>
<tr>
<th>IT Project Management Process Involvement</th>
<th>Role</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Owner</td>
<td>Project Manager</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>% within Involved in IT PM Process</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>% within Role</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>Minimal</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>% within Involved in IT PM Process</td>
<td>.0%</td>
<td>53.3%</td>
</tr>
<tr>
<td>% within Role</td>
<td>.0%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Active</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>% within Involved in IT PM Process</td>
<td>22.6%</td>
<td>54.7%</td>
</tr>
<tr>
<td>% within Role</td>
<td>100.0%</td>
<td>44.6%</td>
</tr>
<tr>
<td>Leading</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>% within Involved in IT PM Process</td>
<td>.0%</td>
<td>62.5%</td>
</tr>
<tr>
<td>% within Role</td>
<td>.0%</td>
<td>30.8%</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>% within Involved in IT PM Process</td>
<td>9.8%</td>
<td>52.8%</td>
</tr>
<tr>
<td>% within Role</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 28 – Respondents’ Involvement in IT Project Management Process (Per Role)
5.3.3 Respondents Project Experience

The survey sample of 123 professional respondents has very strong project experience, which gives confidence in their ability to provide qualified answers relevant to this research.

To determine the level of project expertise, the respondents were asked to state the number of projects they worked on, then for each project to specify the role they performed, namely as: project manager, project owner, project sponsor and project participant.

The results showed wide experience across various roles for the majority of respondents. The detailed analysis of respondents’ project experience follows:

5.3.3.1 Project Manager Experience

35 (over 28%) respondents managed more than ten projects in their career, 38 (over 30%) respondents managed more than 5, and only 12 respondents did not have any project management experience. 7 respondents did not answer this question. Overall, more than 84% of the respondents have had involvement in a project in a role of a project manager.

Table 29 shows the details:

<table>
<thead>
<tr>
<th>Number of Projects as PM</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>38</td>
<td>30.9</td>
<td>32.8</td>
</tr>
<tr>
<td>&gt;10</td>
<td>35</td>
<td>28.5</td>
<td>30.2</td>
</tr>
<tr>
<td>&lt;5</td>
<td>31</td>
<td>25.2</td>
<td>26.7</td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>9.8</td>
<td>10.3</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>94.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 29 – Respondents’ Project Management Experience
5.3.3.2 Project Owner Experience

It was a very different situation with the respondents’ experience in a role of project owner. Only around 38% of the respondents have had experience in a project owner role. Table 30 shows the details:

<table>
<thead>
<tr>
<th>Number of Projects as Project Owner</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>30</td>
<td>24.4</td>
<td>39.0</td>
</tr>
<tr>
<td>&lt;5</td>
<td>27</td>
<td>22.0</td>
<td>35.1</td>
</tr>
<tr>
<td>&gt;10</td>
<td>16</td>
<td>13.0</td>
<td>20.8</td>
</tr>
<tr>
<td>&lt;10</td>
<td>4</td>
<td>3.3</td>
<td>5.2</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>62.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>46</td>
<td>37.4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 30 – Respondents’ Project Owner Experience

5.3.3.3 Project Sponsor Experience

The project sponsor role was even less covered by the respondents. Less than 30% of the respondents have had some level of experience in the project sponsor role.

However, the majority of those who did have project sponsor experience (24 respondents) performed a project sponsor role in more than ten projects, which gives a strong confidence in their project sponsor qualification and experience. Table 31 has the details:

<table>
<thead>
<tr>
<th>Number of Projects as Project Sponsor</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>49</td>
<td>39.8</td>
<td>57.6</td>
</tr>
<tr>
<td>&gt;10</td>
<td>24</td>
<td>19.5</td>
<td>28.2</td>
</tr>
<tr>
<td>&lt;5</td>
<td>8</td>
<td>6.5</td>
<td>9.4</td>
</tr>
<tr>
<td>&lt;10</td>
<td>4</td>
<td>3.3</td>
<td>4.7</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>69.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>38</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 31 – Respondents’ Project Sponsor Experience
5.3.3.4 Project Participant Experience

The question on project participation (in a non-management role) only received 95 answers, with 91 respondents stating that they participated in projects in a non-management role. 28 respondents (22.8%) did not answer this question. Since all questions on project-related experience were combined for all roles, it is possible that respondents gave preference to the part related to their management-related role on projects.

Table 32 has the details:

<table>
<thead>
<tr>
<th>Number of Projects as Project Participant</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10</td>
<td>75</td>
<td>61.0</td>
<td>78.9</td>
</tr>
<tr>
<td>&lt;10</td>
<td>16</td>
<td>13.0</td>
<td>16.8</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>3.3</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>95</strong></td>
<td><strong>77.2</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Missing</td>
<td>28</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 32 – Respondents’ Project Participant Experience

5.3.3.5 Respondent’s Role and Project Experience (Cross-Reference)

Table 33 shows the project participation in various project roles, cross-referenced with the respondents current organisational roles. This is valuable when analysing individual
answers to later project-related questions, helping to link the findings with the respondents experience and the background.

Many respondents performed various project and organisational roles over the time of their careers, so they were in a good position to provide insight based on multiple roles and experiences.

<table>
<thead>
<tr>
<th>PROJECT ROLE</th>
<th>Respondent Current Organisational Role</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Owner</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Number of Projects as PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>&lt;5</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>&lt;10</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>&gt;10</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Total as PM</td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>Number of Projects as Project Owner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>&lt;5</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>&lt;10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&gt;10</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Total as Project Owner</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Number of Projects as Project Sponsor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>&lt;5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>&lt;10</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>&gt;10</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Total as Project Sponsor</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>Number of Projects as Project Participant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>&lt;10</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>&gt;10</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Total as Project Participant</td>
<td>12</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 33 – Respondents’ Project Experience (Per Role)
5.4 About Organisations

After analysing the background of the respondents, their business environment was also analysed, to further build a picture of the survey sample and the relevance to the research question and the validity of responses.

The following elements were analysed in terms of respondents organisations:
- Industry
- Organisational size
- Strategy approach
- IT function position
- Project activity level
- Project office position

5.4.1 Industry

The respondents’ organisations are distributed across 7 different industries: banking and finance, consultancy, education, IT, construction, insurance and legal. The majority of respondents came from banking and finance (68.3%), followed by consultancy (9.8%) and education (9.8%). Table 34 shows responses on the industry areas in more detail:

<table>
<thead>
<tr>
<th>Industry</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking and finance</td>
<td>84</td>
<td>68.3</td>
</tr>
<tr>
<td>Consultancy</td>
<td>12</td>
<td>9.8</td>
</tr>
<tr>
<td>Education</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>Information Technology</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>Construction</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Insurance</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Legal</td>
<td>3</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 34 - Survey Respondents’ Industry
Since most of the survey respondents originate from banking and finance, their responses and related survey analysis results are mostly relevant to those industries. Any general relevance to other industries or disciplines (not sufficiently covered by the respondents of this survey) would need to be investigated through a different tool, which would cover information related to those industries and disciplines.

5.4.2 Organisation Size

Out of 123 respondents, the responses were received for all outlined categories, with the majority (43.9%) of respondents operating in medium-size (100-500 employees) companies and 33.3% in large companies (500-1000 employees). Only 6.5% of the respondents operate in small companies, while only 3.3% work in a global companies (with over 5000 employees).

The company that was analysed as part of the case study falls into the category of 500-1000 employees. The survey sample spreads across this organisational size category and the bordering categories, which helps determine if the findings that are applicable to the analysed company are size-related or equally applicable to larger or smaller organisations.

Table 35 shows the details:

<table>
<thead>
<tr>
<th>Organisation Size</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-500 employees</td>
<td>54</td>
<td>43.9</td>
</tr>
<tr>
<td>500-1000 employees</td>
<td>41</td>
<td>33.3</td>
</tr>
<tr>
<td>1500-5000 employees</td>
<td>16</td>
<td>13.0</td>
</tr>
<tr>
<td>&lt;100 employees</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>&gt;5000 employees</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 35 – Survey Respondents Organisation Size

5.4.3 Strategy Approach

The majority of organisations in which the survey respondents currently operate seem to
practice some level of formal strategising (overall more than 96% of the survey sample). More than 56% of respondents declared that their organisations support a combined business and technical strategy. For 29.3% of respondents, the organisations have separate business and technology strategies.

For a small number of respondents this question prompted additional comments within their response, such as: “There used to be formal strategy for each Business Unit and Technology. Haven't seen anything in the last 8-9 months.”, or “Business drives IT, but nothing is communicated”, or “nothing formal, but there is obviously some direction”, etc.

From the additional comments given for this question, it can be concluded that some organisations do not fully communicate their strategy direction, or keep the staff updated on changes and progress. This can be related to confidentiality, or just types or levels of communication utilised within strategy teams.

Table 36 shows the details on the strategy approach adopted by respondents organisations:

<table>
<thead>
<tr>
<th>Strategy Approach</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined business and technical strategy exists</td>
<td>69</td>
<td>56.1</td>
</tr>
<tr>
<td>Separate business and technology strategies exist</td>
<td>36</td>
<td>29.3</td>
</tr>
<tr>
<td>Other22</td>
<td>7</td>
<td>5.7</td>
</tr>
<tr>
<td>Only business strategy exists</td>
<td>7</td>
<td>5.7</td>
</tr>
<tr>
<td>No formal strategy exists of any kind</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 36 – Survey Respondents’ Strategy Approach

22 The responses covered comments such as: “There used to be formal strategy for each business unit, but I haven't seen anything in the last 8-9 months” and “Business drives technology”, “Strategy is constantly referred to, but not really clear how it is structured”.

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5.4.4 IT Function Position

The survey respondents were asked to state the structural position of the IT function within their organisations. For the majority of the respondents (82.1%) the IT function operates as a separate division, while for the rest it operates as part of the business or other (i.e. operations) division (Table 37).

<table>
<thead>
<tr>
<th>IT Function Position Within Organisation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a separate division</td>
<td>101</td>
<td>82.1</td>
</tr>
<tr>
<td>As part of business (other) division</td>
<td>22</td>
<td>17.9</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 37 – Survey Respondents’ Organisation IT Function Position

The company analysed in the case study also has a similar model as the majority of the respondents’ organisations, where IT function operates as a separate division within the organisation.

5.4.5 Project Activity

The respondents were asked to rate the level of project activity within their organisations, by assessing the proportion of the overall organisational efforts and resources directed to project tasks and activities.

In terms of the efforts spent on project tasks within respondents organisations, the majority of the respondents (44.5%) stated very strong project activity, and 42.9% reported strong project activity.

The respondents’ organisations project activity is relevant to the research topic and the usefulness of the overall survey results. With organisations that have a low project activity it is harder to investigate the non-foreseen long-term impacts than it is with the organisation that has stronger project activity.

The sample shows that a large majority of respondents’ organisations are very active in
terms of projects, which gives more reliability to the survey responses and further evaluation of the case study findings. Table 38 shows the full details on the organisational project activity:

<table>
<thead>
<tr>
<th>Organisation Project Activity</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very strong project activity</td>
<td>53</td>
<td>43.1</td>
<td>44.5</td>
</tr>
<tr>
<td>Strong project activity</td>
<td>51</td>
<td>41.5</td>
<td>42.9</td>
</tr>
<tr>
<td>Moderate project activity</td>
<td>15</td>
<td>12.2</td>
<td>12.6</td>
</tr>
<tr>
<td>Minimum project activity</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>119</strong></td>
<td><strong>96.7</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td><strong>Missing</strong></td>
<td><strong>4</strong></td>
<td><strong>3.3</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 38 – Survey Respondents’ Organisation Project Activity

### 5.4.6 Project Office Function Position

The survey respondents were asked to state the position of the project office within their organisations. For a majority of respondents, the project office was positioned within the business division while for a smaller number of respondents the project office was part of the technology division or a separate entity.

It is interesting that 13% of the respondents gave an alternate answer, such as: “a separate group reporting to the Operations executive”, or “as part of the Operations division”, or “managed separately in each business area”, “no formal positioning, it is part of Operations”, etc.

Since a few answers specified the “operations” division as a separate entity outside the business division, it has been observed that many respondents see business operations function as a separate entity, and not as part of the overall business division.

Based on the high frequency of the responses relating to the “operations” division, it is felt that an additional option (Operations Division) could have been added to this question to further clarify the exact positioning of the project office within organisations.
Without this additional option it is assumed that the answer: “As part of business division” includes responses that would have been given to business operations as a separate division.

Table 39 shows the details of the responses:

<table>
<thead>
<tr>
<th>Project Office Position Within Organisation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>As part of business division</td>
<td>61</td>
<td>49.6</td>
</tr>
<tr>
<td>As part of technology division</td>
<td>24</td>
<td>19.5</td>
</tr>
<tr>
<td>As a separate division</td>
<td>22</td>
<td>17.9</td>
</tr>
<tr>
<td>Other(^23)</td>
<td>16</td>
<td>13.0</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 39 – Survey Respondents’ Organisation Project Office Position

Based on the data presented so far, it can be concluded that the survey population consists of 123 valid respondents, with diverse project and organisational roles, equipped to provide qualified contribution to this research.

\(^{23}\) Some responses include:

- Operations division
- Separate department reporting to operations executive
- Spread across the business and technology
- No formal project office
5.5 About Projects

After examining the respondents’ backgrounds in terms of role, experience and their current organisation, the research can proceed to the analysis of project-related questions, that could help provide additional information to earlier statements and findings resulting from the case study.

The following areas of project activity were covered in this set of survey questions:

- Project process: project initiation and success evaluation
- Project process and strategy alignment
- Prioritisation, project impacts and their management

This third and final part of the survey questions is the most important element of the questionnaire aimed to extend the case study findings.

As previously observed in the case study, various roles within an organisation might have different views of the project process and the elements influencing unforeseen impacts within projects. Therefore, the survey results are analysed with regards to the role of the respondents, with the aim of providing a more detailed picture of their answers, relevant to their background. This is highly relevant to the research in cases where political elements might play a role in the responses given by respondents.

Since respondents often provide answers that are influenced by their role and position within organisation, with the survey sample that has a good coverage across a number of different roles and positions, it gives a good representation of a similar inputs and influences within organisation, concerning projects.

5.5.1 Project Process (Initiation and Success Evaluation)

The case study indicated that the ambiguity elements at the early stages of the project process are often the first of the factors responsible for the creation of the unforeseen impacts that occur later in project. Therefore, the initiation process is an important factor
contributing to the overall setup of the project environment, setting the parameters in terms of ambiguity and clarity for the important stage of project creation and management.

The survey respondents were asked about their organisation and the way projects are initiated within their project process. The majority of responses indicated that the projects are initiated through business, either resulting from a business strategy, individual business needs or combined business initiatives. As expected, only a small percentage of responses indicated IT-initiated projects or other ways of initiation.

The Company (the organisation observed in the case study) also falls under the same category in terms of project initiation. The non-business initiated projects are usually related to technical upgrades and enhancements in terms of technology performance and accuracy, rather than business functionality.

Table 40 has the details on initiation:

<table>
<thead>
<tr>
<th>Role</th>
<th>Project Initiation Areas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Strategy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual Business Needs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Combined Business Initiatives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IT initiated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count 12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>% 9.8%</td>
<td>9.8%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count 16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>% 13.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count 4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% 3.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count 5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>% 4.1%</td>
<td>4.1%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count 4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% 3.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Other</td>
<td>Count 4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% 3.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Total</td>
<td>Count 45</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>% 36.6%</td>
<td>36.6%</td>
</tr>
</tbody>
</table>

Table 40 – Survey: Project Initiation
Survey findings indicated that the project initiation process could benefit from the previous project experience, to assist with the appropriate definition of assumptions and the degree of ambiguity, which could help with the overall high-level planning and estimating during the initial stages of the project.

When asked about the use of the post-implementation process review on future projects, only 13% of respondents said that their organisations always use previous lessons for future projects, while more than 15% of the respondents claimed that their organisations do not. Over 71% of the respondents’ organisations occasionally use the post-implementation process to assist in future planning efforts.

When analysed across the roles of the respondents, it is interesting that the majority of project managers who responded to the survey only occasionally use the official review documentation and lessons from previous projects to assist them in their new assignments. Only 18% if the project managers within the survey sample said they regularly use post-implementation reviews from previous projects.

The responses from IT-related roles are even more alarming, where none of the respondents believed their organisations to always use the lessons from previous projects.

The survey results are in line with the findings of the case study, where project evaluation was regarded as a formality, rather than a tool for the improvement of the future projects and the overall effectiveness of project process within organisation.

Table 41 gives full details on the use of the lessons and experience from previous projects:
As this research focuses on projects that were officially declared successful, it was interesting to see how various respondents see success factors in terms of projects within their organisation and roles.

When asked about the success factors (cost, time, quality, revenue and profit), the results were quite predictable and in line with the findings of the case study.

Business owners and senior managers do not show a strong preference, while project managers gave the most value to the cost of the project as the success factor. The respondents originating from the IT area gave higher value to the elements of quality, almost completely ignoring revenue and profit elements.

This clearly shows different aspects of the evaluation of success when it comes to

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24 PIR – post-implementation review
projects. As per earlier observations and the case study, it is obvious that project managers are more concerned about the budget and the schedule and less concerned about the quality of the product, which indicates that they are open to quick solutions to new requirements or issues that will benefit the cost and the schedule, even if that means lower quality. This was one of the elements highlighted as an important factor in creation of unforeseen and long-term impacts on projects, including unplanned post-project costs.

Table 42 shows the details on project success factors, as valued by various respondents, according to their roles:

<table>
<thead>
<tr>
<th>Role</th>
<th>Business Owner</th>
<th>Project Manager</th>
<th>IT Director/Senior Manager</th>
<th>IT Manager</th>
<th>IT Professional</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>12</td>
<td>47</td>
<td>4</td>
<td>20</td>
<td>8</td>
<td>7</td>
<td>98</td>
</tr>
<tr>
<td>Time</td>
<td>12</td>
<td>31</td>
<td>4</td>
<td>20</td>
<td>8</td>
<td>4</td>
<td>79</td>
</tr>
<tr>
<td>Quality</td>
<td>12</td>
<td>22</td>
<td>4</td>
<td>4</td>
<td>12</td>
<td>7</td>
<td>61</td>
</tr>
<tr>
<td>Revenue</td>
<td>12</td>
<td>35</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Profit</td>
<td>8</td>
<td>15</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>31</td>
</tr>
</tbody>
</table>

Table 42 – Survey: Project Success Factors

Based on their success criteria for projects, the respondents were asked to state how many of the projects they worked on were declared successful. The survey sample provided a good spread across all categories, which further confirmed the respondents’ qualification and ability to provide valuable answers to the research question. This information is relevant, since the research question is concentrated around improving the management and long-term impacts of the projects that are classified as successful. The respondents that have worked on successful projects are more qualified to provide information relevant to this research, since their responses (for example: what could have been done better) would be drawn from their experience with projects that were declared successful.

In particular, more than 46% of the respondents declared that over 50% of their projects were declared successful, and almost 40% stated that 10-50% of their projects were
successful. Table 43 shows the details of successful project experience within the survey sample, summarised by role:

<table>
<thead>
<tr>
<th>Role</th>
<th>Successful Projects Experience</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 10%</td>
<td>Less than 50%</td>
</tr>
<tr>
<td><strong>Business Owner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
<td>6.5%</td>
</tr>
<tr>
<td><strong>Project Manager</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>%</td>
<td>5.7%</td>
<td>13.0%</td>
</tr>
<tr>
<td><strong>IT Director/ Senior Manager</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>IT Manager</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>%</td>
<td>5.7%</td>
<td>7.3%</td>
</tr>
<tr>
<td><strong>IT Professional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>%</td>
<td>2.4%</td>
<td>9.8%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td>49</td>
</tr>
<tr>
<td>%</td>
<td>13.8%</td>
<td>39.8%</td>
</tr>
</tbody>
</table>

Table 43 – Survey: Successful Projects

After establishing the level of experience with successful projects within the survey sample, the research can now proceed to further examination of those successful projects and their characteristics, in the hope of providing further validation of the previous survey findings and research question.

When asked to state if the projects they were involved in had scope changes before the end of project lifecycle, more than 96% of respondents answered “yes”. Almost 75% of the respondents stated that many or all of their projects had scope changes. Scope changes introduce additional requirements and changes to the original solution, which are directly related to the factors that might create impacts that were not originally planned or foreseen. Scope changes were identified as one of the major factors for cost increase and timeline extensions for the Project analysed in the case study.
The details (summarised per respondents roles) are represented in table 44:

<table>
<thead>
<tr>
<th>Role</th>
<th>How many had scope changes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Some</td>
</tr>
<tr>
<td><strong>Business Owner</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Project Manager</strong></td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>IT Director/Senior Manager</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>IT Manager</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>IT Professional</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Table 44 – Survey: Project Scope Changes (per role)

This information is then further cross-referenced with the responses about the degree of success with projects (Table 45), in an attempt to establish whether or not a direct link exists between the scope changes and the degree of project success. The results showed that scope changes occur on both successful and unsuccessful projects, and are not the factor that necessarily determines if the project will be successful or not.

A possible reason for this opinion is that most scope changes could be managed within project management processes. This way the negative impact of scope changes on the overall success of the project can be effectively reduced through a formal change management component of the adopted project process. This observation is in line with the case study findings that the scope changes to the analysed project did not impact on the final outcome of the project, but rather on the original timeline and the budget.
<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
<th>None</th>
<th>Some</th>
<th>Many</th>
<th>All</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>4</td>
<td>23.5%</td>
<td>-</td>
<td>17.6%</td>
<td>.0%</td>
<td>41.2%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>0</td>
<td>-</td>
<td>17.6%</td>
<td>23.5%</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>IT Professional</td>
<td>0</td>
<td>.0%</td>
<td>-</td>
<td>17.6%</td>
<td>.0%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>23.5%</td>
<td>-</td>
<td>52.9%</td>
<td>23.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Less than 50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Owner</td>
<td>-</td>
<td>-</td>
<td>8.2%</td>
<td>.0%</td>
<td>16.3%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>-</td>
<td>8.2%</td>
<td>24.5%</td>
<td>.0%</td>
<td>32.7%</td>
<td>32.7%</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>-</td>
<td>.0%</td>
<td>8.2%</td>
<td>.0%</td>
<td>8.2%</td>
<td>8.2%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>-</td>
<td>.0%</td>
<td>8.2%</td>
<td>10.2%</td>
<td>18.4%</td>
<td>18.4%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>-</td>
<td>.0%</td>
<td>16.3%</td>
<td>8.2%</td>
<td>24.5%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>8.2%</td>
<td>-</td>
<td>57.1%</td>
<td>34.7%</td>
<td>100%</td>
</tr>
<tr>
<td>More than 50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Owner</td>
<td>-</td>
<td>7.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>7.0%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>-</td>
<td>21.1%</td>
<td>38.6%</td>
<td>14.0%</td>
<td>73.7%</td>
<td>73.7%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>-</td>
<td>.0%</td>
<td>7.0%</td>
<td>.0%</td>
<td>7.0%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>12.3%</td>
<td>.0%</td>
<td>.0%</td>
<td>12.3%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>40.4%</td>
<td>45.6%</td>
<td>14.0%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 45 – Survey: Project Scope Changes (per role and number of projects)

However, when asked about the unforeseen impacts created by a successful project, 100% of respondents agreed that every project created unforeseen impacts on organisations. Over 23% of the respondents stated that all of their successful projects had
negative unplanned impacts. Table 46 shows the details:

<table>
<thead>
<tr>
<th>Role</th>
<th>How many had unplanned impacts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Some</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>.0%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>34.1%</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>8.9%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>3.3%</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>5.7%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>-</td>
</tr>
<tr>
<td>%</td>
<td>-</td>
<td>52.0%</td>
</tr>
</tbody>
</table>

Table 46 – Survey: Project Unplanned Impacts (per role)

While all respondents agreed that all projects created certain unplanned impacts, it was necessary to establish the degree of importance of these impacts. Only 2.4% of respondents stated that the impact was not important, while over 53% said it was somewhat important and almost 44% stated it was highly important.

Table 47 shows the details:
<table>
<thead>
<tr>
<th>Role</th>
<th>Impact importance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unimportant</td>
<td>Somewhat important</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count: 0 0 12</td>
<td>%: 0% 9.8% 9.8%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count: 0 42 23</td>
<td>%: 0% 34.1% 18.7%</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>Count: 0 0 4</td>
<td>%: 0% 3.3% 3.3%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count: 0 12 8</td>
<td>%: 0% 9.8% 6.5%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count: 0 8 7</td>
<td>%: 0% 6.5% 5.7%</td>
</tr>
<tr>
<td>Other</td>
<td>Count: 3 4 0</td>
<td>%: 2.4% 3.3% 0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count: 3 66 54</td>
<td>%: 2.4% 53.7% 43.9%</td>
</tr>
</tbody>
</table>

Table 47 – Survey: Impact Importance (per role)

This result was consistent across the survey sample. The next set of results (Table 48) show how this reflects on the industrial background of participants. The three respondents that did not see the importance of unforeseen impacts were legal professionals. Their response can be expected, since legal professionals often have only limited engagement in the overall project, especially post-project activities, unless they are related to legal matters. Although the table shows consistency across respondents’ backgrounds, any generalisation of these results to other industries would need to come from a research sample containing sufficient representation from all industries.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Impact importance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unimportant</td>
<td>Somewhat important</td>
</tr>
<tr>
<td>Banking and finance</td>
<td>Count: 0 46 38</td>
<td>%: .0% 37.4% 30.9%</td>
</tr>
<tr>
<td>Construction</td>
<td>Count: 0 4 0</td>
<td>%: .0% 3.3% 0%</td>
</tr>
</tbody>
</table>
The nature of impacts is also analysed, to establish the main areas of concern, as seen by the respondents (Table 49):

<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
<th>Impact on IT infrastructure</th>
<th>Impact on future maintenance costs</th>
<th>Impact on business processes</th>
<th>Impact on people</th>
<th>Impact on strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Owner</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Project Manager</td>
<td>38</td>
<td>30</td>
<td>47</td>
<td>58</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IT Manager</td>
<td>12</td>
<td>9</td>
<td>17</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IT Professional</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>15</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>81</td>
<td>69</td>
<td>95</td>
<td>112</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Table 49 – Survey: Nature of Unplanned Impacts

The data indicated that the respondents believe that the impacts are present in all areas suggested in this question: impact on IT infrastructure, future maintenance costs, business processes, people and strategy.

---

25 Selection of multiple answers was allowed for this question
The impacts were equally distributed across various categories, with the exception of strategy, which received the least votes.

The reason behind the high score around people factors can be attributed to the fact that a large proportion of respondents worked closely with project teams and therefore relied on people factors in order to deliver successful projects.

These results confirmed the findings from the case study, where the same elements were identified as impacted areas.

After looking at the degree of impact and its importance, the analysis is directed towards the contributing factors that influence those impacts. The respondents were asked to state the level of influence of each factor, identified in the earlier stages of research and through the case study.

The following factors were identified and measured in terms of their influence on the unplanned and unforeseen impacts created by projects:

- Overlapping projects and lack of impact analysis (moderate to strong influence)
- Requirements/ circumstances changes (moderate influence)
- Cost management approach (strong influence)
- Internal politics and people factors (strong to moderate influence)
- Lack of thorough planning (moderate to strong influence)
- Change in project environment (minimal to moderate influence)
- Lack of communication between various projects (strong influence)
- Lack of skills (moderate to strong influence)
- Project/strategy process issues (minimal to moderate influence)

All previously identified factors are confirmed to have influence (with various degrees) on the creation of unforeseen and unplanned impacts by projects.
Although the results were fairly consistent across respondents, role-based consistency can also be observed, especially in areas of senior management and business owner.

Table 50 shows the details of responses, summarized across respondents’ roles.

<table>
<thead>
<tr>
<th>Influencing Factors</th>
<th>Level of Influence</th>
<th>Roles</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Business Owner</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Overlapping projects and lack of impact analysis</td>
<td>Major influence</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Strong influence</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Moderate influence</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Minimal influence</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>Requirement s/ circumstances changes</td>
<td>Major influence</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Strong influence</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Moderate influence</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Minimal influence</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>Cost management</td>
<td>Major influence</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Strong influence</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Moderate influence</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Minimal influence</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>Internal politics or people factors</td>
<td>Major influence</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Strong influence</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Moderate influence</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Minimal influence</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>No influence</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>Lack of thorough planning</td>
<td>Major influence</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Influence Level</td>
<td>Strong Influence</td>
<td>Moderate Influence</td>
<td>Minimal Influence</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Strong</td>
<td>0</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Moderate</td>
<td>4</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Minimal</td>
<td>8</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>0</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Minimal</td>
<td>4</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Change in project environment</td>
<td>12</td>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>Strong</td>
<td>8</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>0</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Minimal</td>
<td>4</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Change in project environment</td>
<td>12</td>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>Major</td>
<td>8</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Strong</td>
<td>4</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>0</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Minimal</td>
<td>0</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Lack of communication between various projects</td>
<td>12</td>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>Major</td>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Strong</td>
<td>0</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>0</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Minimal</td>
<td>12</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Lack of skills</td>
<td>12</td>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>Major</td>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Strong</td>
<td>0</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>0</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Minimal</td>
<td>12</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Project/strategy process issues</td>
<td>12</td>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>Major</td>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Strong</td>
<td>0</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>8</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Minimal</td>
<td>4</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Project/strategy process issues</td>
<td>12</td>
<td>65</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 50 – Survey: Impact Influencing Factors

The responses outlined in the table show the different perspectives towards influencing project factors, according to respondents’ roles. It demonstrates how different roles perceive different influential factors within the course of the project execution. For example, senior management see high-level influencing factors such as political factors,
people and overlapping priorities as more important than those occurring on the lower level of project execution, such as skills and process issues.

The next question is related to the level of coordination and awareness within organisations in terms of the influence of these factors on projects and their impacts.

59% of the respondents stated that some awareness about the project’s impacts exists within their organisation, 37% stated regular awareness and 3% declared lack of any awareness about project impacts within their organisations. Table 51 shows the details across respondents roles:

<table>
<thead>
<tr>
<th>Role</th>
<th>Impact Awareness</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Some Awareness</td>
<td>Regular Awareness</td>
<td></td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count 0</td>
<td>12</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% .0%</td>
<td>9.8%</td>
<td>.0%</td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count 0</td>
<td>39</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% .0%</td>
<td>31.7%</td>
<td>21.1%</td>
<td></td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count 0</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% .0%</td>
<td>3.3%</td>
<td>.0%</td>
<td></td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count 4</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% 3.3%</td>
<td>6.5%</td>
<td>6.5%</td>
<td></td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count 0</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% .0%</td>
<td>5.7%</td>
<td>6.5%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Count 0</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% .0%</td>
<td>2.4%</td>
<td>3.3%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Count 4</td>
<td>73</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% 3.3%</td>
<td>59.3%</td>
<td>37.4%</td>
<td></td>
</tr>
</tbody>
</table>

Table 51 – Survey: Concurrent Projects Awareness and Coordination

5.5.2 Project Process and Strategy Alignment

The survey data evaluated so far helped set the scene in terms of respondents, their organisations, degree of qualification to provide valid opinions, as well as to identify the major areas of unforeseen and unplanned project impacts, their importance and
influencing factors.

The next part of the survey concentrates on the areas such as: project process effectiveness, project alignment with strategy and further evaluation of the unforeseen and unplanned project impacts.

The next part of the analysis is starting with the summary of the project processes adopted by respondents’ organisations, as well as the respondents’ assessment of the effectiveness of their project processes.

Similar to the case study organisation, the majority of survey respondents’ organisations (77%) adopted some form of a strict project process (either self-made, or PMBOK or Prince based methodology), with only 20% of respondents adopting a lighter process. 3% of the respondents stated no formal process in place for project management within their organisations. Table 52 shows the details:

<table>
<thead>
<tr>
<th>Adopted Project Process</th>
<th>Home-made strict PM process</th>
<th>PMBOK-based light project process</th>
<th>PMBOK-based strict project process</th>
<th>Prince-based light project process</th>
<th>Prince-based strict project process</th>
<th>No formal process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Owner</td>
<td>4</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Project Manager</td>
<td>19</td>
<td>4</td>
<td>8</td>
<td>23</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>IT Manager</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>IT Professional</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>4</td>
<td>20</td>
<td>23</td>
<td>33</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>37%</td>
<td>3%</td>
<td>15%</td>
<td>17%</td>
<td>25%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Table 52 – Survey: Adopted Project Process

In terms of effectiveness, only 2.4% of the respondents assessed their project process as highly effective, while 3.3% declared their process as not effective at all. The majority
stated that their project processes are partially effective (63.4%) or effective (30.9%). Table 53 has all details:

<table>
<thead>
<tr>
<th>Role</th>
<th>Current Project Process Effectiveness</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Effective</td>
<td>Somewhat Effective</td>
</tr>
<tr>
<td><strong>Business Owner</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Project Manager</strong></td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>IT Director/Senior Manager</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>IT Manager</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>IT Professional</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Table 53 – Survey: Adopted Project Process Effectiveness (role-based)

The data was then cross-referenced against the adopted project process (Table 54), in an attempt to evaluate the effectiveness of various applied processes, but failed to show any particular process as more or less effective than the other. Although the survey did not cover in-depth questions related to validation and comparison of various methodologies through applied project processes, these questions help establish that effectiveness of applied processes is not necessarily related to the process nature or the methodology they are based on, but rather to the actual implementation of the adopted process. Any further evaluation or comparison of associated methodologies would need to be researched through a different study that would analyse in detail each process and its implementation.
<table>
<thead>
<tr>
<th>Process</th>
<th>Current Project Process Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not effective</td>
</tr>
<tr>
<td>Home-made light PM process</td>
<td>-</td>
</tr>
<tr>
<td>Home-made strict PM process</td>
<td>-</td>
</tr>
<tr>
<td>PMBOK-based light project process</td>
<td>-</td>
</tr>
<tr>
<td>PMBOK-based strict project process</td>
<td>-</td>
</tr>
<tr>
<td>Prince-based light project process</td>
<td>4</td>
</tr>
<tr>
<td>Prince-based strict project process</td>
<td>-</td>
</tr>
<tr>
<td>No formal process</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 54 – Survey: Adopted Project Process Effectiveness (process based)

In terms of the project process alignment with strategy, almost 66% of the respondents recognised some informal alignment within their process, while the rest stated an official, formal process that ensures alignment with strategy (Table 55). This indicates that the organisations have recognised the link between strategy and projects, as well as put some effort into the alignment between the two, either informally, or as part of their project process.

<table>
<thead>
<tr>
<th>Role</th>
<th>Alignment Between Projects and Strategy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Some alignment, but no official process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Official process that assures alignment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Business Owner</td>
<td>12</td>
<td>10.3%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>40</td>
<td>34.2%</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>4</td>
<td>3.4%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>13</td>
<td>11.1%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>8</td>
<td>6.8%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>.0%</td>
</tr>
<tr>
<td>Total26</td>
<td>77</td>
<td>65.8%</td>
</tr>
</tbody>
</table>

26 Only 117 respondents provided a valid answer to this question.
Only 6.8% of the respondents see their project process as fully strategy-oriented, while over 24% do not see any strategy orientation at all. The majority (almost 72%) see a reasonable orientation towards strategy in their project process (Table 56).

<table>
<thead>
<tr>
<th>Role</th>
<th>Strategy Oriented Project Process</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>Reasonably</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>6.8%</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>7.7%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>21.4%</td>
</tr>
</tbody>
</table>

This can be linked with the next question about having strategy alignment elements included as part of project evaluation, as presented in Table 57. The results are showing that the project process should include formal elements for strategic alignment evaluation in order to be strategy-oriented.
The next logical question is: should project success criteria include strategic alignment? Almost 89% of the respondents agree that it should (Table 58). This further confirms that with a mandatory alignment assessment as part of the overall project success evaluation criteria, strategy-aligned projects could become a reality in organisations, through more effective management of priorities and interdependencies between various concurrent projects in organisations.

<table>
<thead>
<tr>
<th>Role</th>
<th>Strategy Alignment in Project Evaluation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>Only to some extent</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>58</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>102</td>
</tr>
</tbody>
</table>

Table 57 – Survey: Strategy Alignment and Project Evaluation
Table 58 – Survey: Strategy Alignment and Project Success Criteria

Some of the respondents could not exclusively answer the question, so they provided additional comments, such as: “Depends on whether the project reaches the core business of the company and whether there is a strategy at all.”, or: “This shouldn't be necessary as part of the success criteria. The project objectives should be aligned with organisational strategy and if the objectives don't align with strategy the project shouldn't be approved.”

The latter comment suggests that the strategy and project process should be there to ensure that only strategy-aligned projects are actioned. This would imply the need for centralised project coordination within organisations. However, the case study and survey data indicate that with the organisations that have a less centralised project office, it is often possible to have projects being executed in isolation without any alignment with the overall organisational strategy. Such a situation could lead to additional costs due to unrecognised interdependencies between projects and inappropriate prioritisation of resources and time.
A more specific question was asked: should there be mandatory checkpoints in the process that will cover the alignment element. The results were very similar to the previous question, with over 89% of respondents in favour of mandatory checkpoints. Table 59 has the results:

<table>
<thead>
<tr>
<th>Role</th>
<th>Project Process and Alignment Checkpoints</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Other</td>
<td>No</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.4%</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Table 59 – Survey: Mandatory Alignment Checkpoints and Project Process

5.5.3 Prioritisation, Interdependencies, Impacts Management

This part of the survey concentrates on prioritisation process and the management of interdependencies between projects and related priorities, related to unplanned and unforeseen impacts created during projects.

When asked about the unplanned impacts created by projects and whether or not they should be included in the evaluation of projects, the majority of respondents agreed (almost 88%) that it should. Less than 9% of respondents did not support the view that unplanned impacts and interdependencies should be part of the success criteria for a
Some of the respondents provided additional comments stating that, unless there are clear interdependencies and serious impacts created by projects that are causing issues, the energy should not be spent on another step in the process, when the impacts were not predictable in the first place. Others commented that project success should not be reduced if there were impacts out of project control that are not related to project goals and objectives.

Respondents were also asked the question if the correlation and interdependency between the projects should be included as mandatory elements in the project process. The results (Table 61) were strongly in favour of project process including a mandatory correlation element.
Table 61 – Survey: Mandatory Correlation and Project Process

In addition, some respondents further commented that, while the correlation should be part of the process, it might not always be mandatory, and should be addressed on a case-by-case basis, to avoid additional overhead to the project.

Other comments were related to the interdependency between projects and the need for that to be lifted above the success evaluation, but rather addressed at a higher level during the project, since such impacts and interdependencies need to be managed in real time, rather than just being evaluated at the end. This comment is in line with earlier comment that strategy alignment is ensured thorough the prioritisation and approval process. However, the case study and survey data supports the view that such a process is not as effective as it could be if the process formally includes alignment and impact evaluation.

After the recognition of the importance of the unplanned impacts created by projects, as well as the overwhelming support among survey participants for the development of measures and methods to better manage those impacts, it is now time to concentrate on
the management responsibility.

The respondents were allowed to select multiple roles responsible for the impacts, to allow for more accurate answers and were strongly divided in their opinion as to whom should be responsible for the management of the unplanned impacts created by projects.

The results are presented in Table 62:

<table>
<thead>
<tr>
<th>Role</th>
<th>Impact Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project Manager</td>
</tr>
<tr>
<td>Business Owner</td>
<td>4</td>
</tr>
<tr>
<td>Project Manager</td>
<td>36</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>4</td>
</tr>
<tr>
<td>IT Manager</td>
<td>9</td>
</tr>
<tr>
<td>IT Professional</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
</tr>
</tbody>
</table>

Table 62 – Survey: Responsibility for Unplanned Impacts

These results indicate that one of the causes for the current problem could be with responsibility when it comes to unforeseen and unplanned impacts created by projects, since without clear responsibility there is no clear accountability. If there is no clear demarcation and definition between various roles when it comes to responsibility for unplanned impacts, it is therefore that much harder to manage it effectively and successfully incorporate it into the project and success evaluation process.

Since project managers are ultimately responsible for the application of project process on their projects, and if the alignment and unforeseen impacts management measures are officially included in the project process, a direct question was asked if the project manager’s role should be to become responsible for both the alignment and the
unforeseen impacts. The respondents were clearly divided in their opinion (Table 63). This further supports the view that a responsibility for alignment and impact needs to be defined and incorporated into relevant roles within project process.

<table>
<thead>
<tr>
<th>Role</th>
<th>PM Responsibility for Alignment and Impacts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Business Owner</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Project Manager</td>
<td>42</td>
<td>19</td>
</tr>
<tr>
<td>%</td>
<td>36.2%</td>
<td>16.4%</td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>.0%</td>
<td>3.4%</td>
</tr>
<tr>
<td>%</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>IT Manager</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>%</td>
<td>3.4%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Count</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>IT Professional</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>%</td>
<td>3.4%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Count</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>66</td>
</tr>
<tr>
<td>%</td>
<td>43.1%</td>
<td>56.9%</td>
</tr>
</tbody>
</table>

Table 63 – Survey: Project Manager Responsibility for Alignment and Impacts

Earlier in the text (Chapters 1-3) the importance of the unforeseen impacts was established. Now, the research is looking into the financial element of those impacts.

The respondents were asked to estimate the level of financial impact that unplanned and unforeseen project impacts have on their organisations. The results showed that only 3.3% of the respondents organisations are not financially impacted, less than 6% estimated only a low impact, while the rest estimated either moderate, high or very high impact. Taking into consideration the overall budget assigned to IT projects and infrastructure support within the financial industry (and other industries), this is highly
significant and is in line with the earlier results that supported the need for effective management of unforeseen impacts and the resulting financial burden on organisations. Table 64 has the details:

<table>
<thead>
<tr>
<th>Role</th>
<th>Financial Impact</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.3%</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Table 64 – Survey: Project Activity and Impact on Budget

Earlier analysis indicated that the post-project maintenance costs are one of the areas where unforeseen impacts are easily identifiable. The respondents were asked about the importance of those costs to their organisations. Only less than 6% did not see any importance, while more than 58% saw it as highly important and almost 36% as partially important (Table 65).
After establishing that post-project maintenance is important to the organisations, the logical question followed: how much planning is done to predict and manage these maintenance costs? A large majority of respondents agreed that not enough planning takes place around the post-project area. Only 27.5% of the respondents believed that the planning for post-project costs within their organisations was sufficient. That leaves a large majority of respondents who believe that more should be done to manage post-project costs and project impacts. Table 66 has the details:
So, where should these costs be covered from? Should project budget cater for post-project costs or should the impacted areas carry the costs as part of their maintenance budgets? The majority of respondents (65%) agreed that the costs should be included in the overall project costs. Table 67 has the details:

<table>
<thead>
<tr>
<th>Role</th>
<th>Post-Project Impact Costs Coverage</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Other</td>
<td>Business</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>6.8%</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.0%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>0</td>
</tr>
</tbody>
</table>
Some respondents added further comments. One suggested that the initial costs should indeed be covered by projects, but the ongoing costs after implementation should become part of the departmental maintenance budget. This poses a question of whether the increase in the maintenance budget should be planned and approved as part of project planning.

Another respondent suggested that this question should never be taken as “black and white” and should be addressed on a case-by-case basis, depending on each impacted area and the reasons behind the impact. They gave an example where an impacted technical area might make a big decision to upgrade impacted systems as part of the project even if that was not specifically necessary for the project. In such a case, it would be expected that the costs be covered by the impacted department that made the decision to do more work than required by the project.

This latter comment is very much linked with the next question, which is related to technical and business decisions related to multi-systems and multi-business impact.

When asked who should take the responsibility for multi-area impact solution decisions, the respondents were strongly divided (Table 68).
Table 68 – Survey: Multiple Systems Impact Responsibility

By observing the data, it can be seen that the majority of respondents thought that their role should not be responsible for multi-area impact decisions. This shows that organisations may not have clear procedures when it comes to multi-area impact, which opens the door for more unforeseen and unplanned impact, and therefore higher overall project and post-project costs.

A few additional comments were provided to this question. A couple of the respondents suggested that a team effort is required for such decisions and that it would be wrong to give this responsibility only to one particular role within the organisation. They further added that management of each impacted area should share in this responsibility for the overall benefit of the organisation.

This raises a question on how much the impacted teams are really involved in project activities and planning, before decisions are made that impact their respective areas.

The survey participants were divided on this question (Table 69). More than half the respondents saw the impacted teams participation as active, while the rest saw it only as minimal. This result is in line with the case study findings, where impacted teams were involved very late or had only minimal participation in project decisions and communication about technical solutions that might impact them. As per case study findings, more proactive communication and cooperation among all impacted parties can
significantly reduce the overall negative impact, saving time and money.

<table>
<thead>
<tr>
<th>Role</th>
<th>Impacted Team Participation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimal</td>
<td>Active</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>9.8%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>19.5%</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3.3%</td>
</tr>
<tr>
<td>IT Manager</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4.1%</td>
</tr>
<tr>
<td>IT Professional</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>5.7%</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>42.3%</td>
</tr>
</tbody>
</table>

Table 69 – Survey: Project Team Participation

The survey participants were asked about the benefits to their organisations if they had a chance to go back and re-do the same projects again, this time armed with all the knowledge about unforeseen impacts and the ability to predict and effectively manage them. They were asked to select the areas where benefits would have been most significant. All suggested areas (time, cost, people, business strategy and IT strategy) were selected by the majority of respondents. Table 70 has the details:

<table>
<thead>
<tr>
<th>Role</th>
<th>Benefit Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Business Owner</td>
<td>1</td>
</tr>
<tr>
<td>Project Manager</td>
<td>3</td>
</tr>
<tr>
<td>IT Director/Senior Manager</td>
<td>2</td>
</tr>
<tr>
<td>IT Manager</td>
<td>2</td>
</tr>
<tr>
<td>IT Professional</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 70 – Survey: Changed Decisions Benefits
The respondents had very consistent views in terms of the benefit areas if they had another chance to manage the same projects (but with the information and the ability to manage unforeseen and unplanned impacts). When asked how the effective management of unforeseen and unplanned impacts would have improved the overall cost picture of their projects, more than 46% of the respondents stated the improvement would be more than 30%, while 35% estimated the improvement of 10-30% of the overall project costs. This is not insignificant for any organisation.

<table>
<thead>
<tr>
<th>Role</th>
<th>Cost Improvement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Up to 10%</td>
<td>10-30%</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Count</td>
<td>18</td>
</tr>
<tr>
<td>%</td>
<td>14.6%</td>
<td>19.5%</td>
</tr>
<tr>
<td>IT Director/ Senior Manager</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td>%</td>
<td>.0%</td>
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<td>%</td>
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Table 71 – Survey: Cost Picture Improvement

The respondents were encouraged to provide additional comments at the end of the survey that can further benefit this research. There were four comments in total:

“If the unforeseen impacts are more effectively managed and planned as part of project planning and execution, then some projects might not even proceed if the overall impacts and related costs are discovered to be too high. That approach would assist with more effective management of the overall organisational resources and at the end, more benefits to the business.” (business owner)
“Business and IT strategy would be better placed if Project Management understanding were more accepted and understood in these areas. Alignment of not only project management but allowing business and IT to also align and reducing the usual gap between business and IT.” (IT manager)

“Good management of user expectations, good user training and guidance increase the chance that the project is regarded as successful. Users who don't understand the delivered product will not blame themselves for not understanding but the producer for a wrong delivery. Predicting the negative impacts (including sub-optimal solutions) should be communicated early, so that business units can understand it and take on full responsibility for related decisions.” (IT professional)

“The area of unplanned and unforeseen impacts is still unexplored and can potentially bring important benefits if the organisations invested time and resources into improving this side of project management. They added that the key would be in defining the responsibility and relevant processes to enable proper assessment of all (or at least the majority) of the impacts, before making solution decisions.“ (IT senior manager)
5.6 Survey Findings Summary

The sample of 123 survey respondents consists of project managers, business owners, IT managers, IT professionals, legal practitioners and senior managers. The majority of the respondents performed various project and organisational roles throughout their career and are well qualified to contribute to this research with their views, knowledge and experience.

The information collected about respondents’ age, experience and roles forms a qualified base for further analysis of survey data related to project practices and the subject of this research. The information about respondents organisations helps determine the environment in which the respondents operate and therefore better understand and relate to their answers.

The respondents organisations covered seven different industries, with an overwhelming majority (68.3%) operating within the financial industry. The majority of organisations are medium or large corporations, with clearly established corporate structure, processes and strategy. The company analysed as part of the case study also fits this description, which further assists with the validation of the case study findings.

The majority of respondents’ organisations have strong (or very strong) project activity, established project office function and defined IT function within organisation, which gives a reasonable degree of comfort that the responses given in this survey can be relied upon.

The information on respondents’ individual experience, together with the information about their organisations will help further analyse the remaining, project-specific part of the survey.

The survey analysis found that projects in respondents’ organisations are mainly initiated either as a result of business initiatives, individual business needs or business strategy.
Only rarely projects are initiated by IT elements. This showed that respondents’ organisations have a fairly established process for projects initiation.

In terms of project success evaluation, organisations are mainly focused on project goals and deliverables, rather than strategic alignment or overall impact on the organisation. The post implementation review (PIR) is utilised as a step in the project process, but not as a tool for utilisation of earlier experiences for more effective projects in the future. PIR as tool for reducing the unplanned impacts on future projects is seen as underutilised.

There is little evidence that scope changes are a major element of influence that determine the degree of project success. Although scope changes are an element that can impact on project deliverables, time, schedule and cost and the effective project process around scope management enables project parameters (time, schedule, cost, deliverables) to change to accommodate scope changes, therefore changing the impacted elements that determine project success.

The data from the case study, observation and survey indicate that the majority of projects create some unforeseen and unplanned impacts on the environment, infrastructure and the overall organisational environment, maintenance costs, business processes and people. Based on the survey data, most of those impacts are very important to the organisations and respondents, but are not adequately addressed within adopted project processes.

There are various factors that create unplanned and unforeseen impacts on organisations, such as interdependencies between projects, scope changes, cost management, internal politics, issues with planning, communication, skills and strategy.

While awareness about the unforeseen and unplanned impacts created by projects generally exists within organisations, there are no formal processes to address the issue, either as part of the project process or strategy activities. There is definite need for improvement in this area.
The theoretical sources and practical examples reviewed in the literature review indicate that there is not one process or methodology for project management that can deliver certain project success and minimal impacts on organisations. The case study and survey analysis support the view that actual methodology is not what determines the success of the project, it is the actual implementation and compliance with the process that determines the level of project process effectiveness.

The effectiveness of adopted project processes is not considered to be overly high within surveyed organisations, especially in terms of ensuring project success, strategy alignment and management of unforeseen impacts.

Project processes can be improved by introducing effectiveness of strategy alignment, concurrent project and impact management as part of project success evaluation. One of the key elements in the improvement of project processes is to determine clear responsibilities around impact, correlations and alignment management. The survey results show that currently (although aware of the importance of strategy alignment, impact management and project interdependencies) organisations do not have a clear process to ensure these elements are seriously considered and effectively managed.

The respondents have opposing views about responsibility and accountability for unforeseen impacts, management of interdependencies and strategy alignment. What they have in common is that the majority of them believe that their role should not be responsible for management of these elements. This lack of agreement and clarity about responsibility and accountability can be seen as one of the reasons for the lack of progress in this area of project, operational and strategy management.

The survey provides evidence that unforeseen impacts and unplanned post-project are highly important to organisations, but not effectively managed. Those unplanned post-project impacts should be covered as part of project evaluation and, where possible, initiation. Since some of those unplanned costs can be very high and therefore could have
a serious impact on the decisions related to projects, they should be considered as part of projects and contribute to evaluation of the overall project goals, benefits and costs.

The survey also provided evidence that project teams and related experts impact are not sufficiently involved in decision making when multiple systems and business areas are involved in project and impacted by the solution. This results in additional costs, delays and the creation of unforeseen impacts across various systems and business areas, and the overall organisation.

The earlier case study findings were confirmed through the survey data that required systems development staff are not sufficiently involved in the early project stages, where project expectations are set and high-level solutions outlined and approved. Systems development and support teams often have only minimal involvement in the early stages of projects, which limits the ability to foresee and predict company-wide impacts on all systems and business areas. Those impacts are either discovered late or never, and handled in less efficient and effective ways than they would have been handled had they been discovered earlier in the project.

The survey data shows that improvement to the overall project cost picture would be significant if unforeseen impacts on organisations were more effectively managed.
5.7 Conclusion

This chapter analysed the survey results and linked them to the case study findings and the research question.

The following is the high-level summary of the survey findings in relation to the research statements:

1. **(RS#1) The confirmation of impacts and their relevance:**
   Unforeseen and unplanned costs and effects created by projects have a strong impact on organisational infrastructure, financial position, technical and business environment.
   Almost every project creates a degree of unforeseen impacts which can vary in size and significance to organisations.

   The estimate provided by the survey respondents indicated that this problem has high importance and that improvements in this area could bring significant savings on project investments. A large number of respondents indicated savings of up to 30% and more savings to the overall costs of projects if these impacts were effectively managed.

2. **(RS#2) The readiness to address the issue:**
   Organisations are aware of the problem and keen on improving management of unforeseen impacts and associated post-project costs. There is no outlined process to ensure responsibility and accountability for post-project costs and responsibility over project solution decisions that impact various technical and business areas of organisations, so the efforts to control and effectively manage such impacts are largely informal and therefore less effective.

   Organisations can see the benefit in including these impacts under the project management process umbrella and treating it as another project element. This
indicates the need to work on improvements to the project management processes (and therefore project management methodology) to include the management of those so far unforeseen and unplanned impacts created by projects through a formal set of methods and clearly defined responsibilities and accountability.

3. **(RS#3) The impact factors:**

The following factors are found to influence the creation of unforeseen and unplanned project impacts:

- Cost management approach (strong influence)
- Lack of communication between various projects (strong influence)
- Internal politics and people factors (strong to moderate influence)
- Overlapping projects and lack of impact analysis (moderate to strong influence)
- Lack of thorough planning (moderate to strong influence)
- Lack of skills (moderate to strong influence)
- Project/strategy process issues (minimal to moderate influence)
- Change in project environment (minimal to moderate influence)

The valuation of the above factors varied from role to role, which proved the lack of consistency across an organisation when it comes to management and responsibility over unforeseen and unplanned impacts created by projects.

4. **(RS#4) The cross-industry relevance:**

Although this study concentrates specifically on the information technology projects within the Australian financial industry, the coverage of survey participants across other industries provided some level of cross-industry validation. The problem is evident equally across all industries covered by the survey sample, with the exception of legal practice, where issues did not have equal importance or degree of impact as was the case with all other industries present within the survey sample. Since this survey sample cannot be seen as a full representation of wider industry application,
further research would need to be conducted to evaluate and determine the exact level of relevance beyond the Australian financial industry.

5. **(RS#5) The actions:**

The following are suggested actions, identified through the survey results:

- Modify adopted project processes and project management methodologies to include a formal consideration and effective management of post-project and other unforeseen and unplanned impacts on the organisational environment, and ultimately, costs.
- Include evaluation of solutions that include multiple business and technical areas in early stages of project planning and evaluation.
- Incorporate formal alignment with strategy and effective management of interdependencies through adopted project processes.
- Establish clear roles, responsibilities and accountabilities around unforeseen and unplanned impacts created by projects.
- Include unforeseen and unplanned impact assessment as part of the overall project success evaluation.
- Incorporate mandatory use of post-implementation reviews in project planning.

The above findings support the original research statements and the case study findings.

While the survey covered only a small sample of respondents and has clear limitations in terms of generalisation and extension of findings onto other industries and disciplines, it was useful to obtain some more information outside the case study organisation and compare the results.

The next chapter is the final chapter of this research, summarising the main findings, observations and suggestions for further study.
Chapter 6 – Conclusion

Figure 26 - Chapter 6 - Conclusion
6.1 Introduction

The previous chapters reviewed the available literature, justified the research methodology and then analysed data collected via a case study and survey, searching for the answers to the research questions:

- What are the links between successfully completed IT projects and the ongoing IT and business infrastructure, and how do they negatively impact the long-term organisational performance within the Australian financial industry?
- Can those impacts be predicted and managed as part of the overall project management process, with the aim of reducing overall organisational costs?

Data analysis sought to establish if the unforeseen and unplanned project impacts do exist on a noticeable scale within the industry and if they are considered as important to project teams and organisations as this research suspected. It has been found that these impacts do exist as a known and are an important issue within organisations across various industries, however, the problem is not formally managed or controlled.

The case study and survey data helped identify factors that contribute to the creation of unplanned and unforeseen impacts as a result of projects, so that those factors can be better understood and therefore more effectively managed in order to reduce the severity and cost of unforeseen and unplanned impacts.

By investigating and highlighting the issues of unforeseen and unplanned impacts created by projects, this study also looked at establishing improvements to project management controls and measures that will assist with effective management of those impacts.

In this final chapter, the main findings of this study will be reviewed and linked with the research question and related statements, as well as the suggestions derived from this research to assist with the next steps towards improvements of project management methodology and associated processes to more effectively manage project impacts and ultimately reduce (if not eliminate) unforeseen and unplanned impact created by projects.
6.2 The Main Findings

All five research statements were investigated through this study and the key findings are discussed in this section:

1. (RS#1) Problem confirmation.
2. (RS#2) Willingness to address the issue.
3. (RS#3) Impact factors.
4. (RS#4) Cross-Industry Relevance.
5. (RS#5) Actions.

6.2.1 Research Statement #1: Problem confirmation

Statement: There are unforeseen and unplanned impacts created by projects that are highly relevant to organisations and successful project management.

Both the case study and survey confirmed that the problem of unplanned and unforeseen impacts created by project exists. Although this was expected, it was surprising to see the extent of this problem in terms of costs.

The cost of the project observed earlier in the Case Study showed an even more excessive increase than indicated by the survey results. The costs of this project increased by more than 50%, from the original estimates of AU$8M to a little over AU$12M. The interview participants confirmed that the analysed project was a good representative of the overall project management practices, including the approach to project cost estimates and actuals.

According to survey results, the monetary side of those impacts on budgets can be significant, with some estimates exceeding 30% of the overall project costs.

The survey results also indicate that Australian organisations are aware of those problems, but so far their efforts are concentrated around better cost management in terms of the budget assigned to projects, allowing for some level of control over the overall project...
spending. The costs that are not immediately tangible, especially long-term costs related to post-project maintenance, training, design inefficiency and roll-on effect on other projects are not formally addressed and still remain open to further improvements.

6.2.2 Research Statement #2: Willingness to address the issue.

Statement: Organisations are willing to address this problem.

The research concludes that companies, especially financial organisations, are highly motivated to reduce their overall technology investment and operational costs. Any improvement in the area of project and maintenance costs is welcomed. The participants in the case study and the survey clearly indicated that their organisations are very keen on finding the way and formalising processes that could assist them in their continuous efforts to reduce costs and improve efficiency and effectiveness of their technology investments.

The research findings indicate that the current project processes adopted by organisations are not focused on or directed towards effective management of long-term and unforeseen impacts created by projects. The majority of project processes and success evaluations are directed towards delivering projects to set objectives, budget allowances and timelines. Further changes to project and strategy processes are required in order to create formal methods to minimise unforeseen and unplanned project impacts.

The participants of the case study and the survey demonstrated a strong interest and motivation to address the problem, which is the first step in any road towards improvement.

The case study respondents were of the opinion that the costs of more up-front analysis would be lower than the cost of long-term operational impact, however this might not be applicable to every project and every organisation.

However, regardless of the up-front costs being higher or lower than the related
unplanned impacts and associated costs, it is appropriate to properly identify all project-related costs and assign them to the related area of origin, instead of having them pushed out to becoming long-term operational costs so that the overall costs of a project are visible to senior management.

6.2.3 Research Statement #3: Impact factors

*Statement:* There are number of discoverable and manageable factors that influence the existence and degree of unplanned and unforeseen impacts created by a project. By clearly identifying these factors the research can come closer to effectively managing them, therefore reducing the overall impact created by projects.

The early stages of the research identified the following areas where unplanned and unforeseen impacts created by projects are manifested in:

- Impact on post-project maintenance and change management
- Impact on technology
- Impact on core business
- Impact on people
- Impact on long-term costs

The case study and survey analysis confirmed the existence of project-created, unplanned impacts in each of those areas, with specific factors that contribute to those impacts. Some of the highlighted factors are:

- Cost management approach
- Lack of communication between various projects
- Internal politics and people factors
- Overlapping projects and lack of impact analysis
- Lack of thorough planning
- Lack of skills
• Project/strategy process issues
• Change in project environment

These factors were identified as important to the group of people who contributed to this research through their participation in the case study and the survey.

This list does not contain all possible factors that contribute to the unplanned impacts introduced by projects. Although there could be many other factors that cause long-term impacts with projects, the study indicated that the effective management of those highlighted here could help minimise the unforeseen and unplanned impacts created by projects, and therefore reduce unnecessary costs and improve the overall financial picture.

The study determined that the chosen project management methodology was not a factor in the degree of project success, but rather the implementation of the methodology within the adopted project process. Therefore, it can be concluded that there is no one project methodology that will guarantee project success. It is the appropriate application of the chosen methodology and developed project process within organisations that influence project success.

The study also showed that unplanned and unforeseen impacts created by projects can be seen as one of the direct indicators of the effectiveness of the adopted project process and its application within an organisation.

6.2.4 Research Statement #4: Cross-Industry Relevance

Statement: This problem is not only relevant to the observed financial industry. The patterns and impacts are applicable to other industries where IT projects are conducted.

The survey results were mainly received from the respondents working in finance and banking industry. While it did not represent the views of a cross section of the industry, within the responses received from the survey from other industries it showed the same pattern of unforeseen and unplanned impacts created by IT projects could apply to industries other than finance. This seems to indicate that the actions and improvements
resulting from the suggestions of this study could bring benefits beyond financial organisations in the areas of project management impact. This needs to be further explored by sending out a survey to managers of other industries as well. It was anticipated that the membership of AIPM would elicit responses across industries as the majority members of the AIPM belong to defence and construction. Perhaps surveying members of industry specific professional organisations would be required in further studies.

While the study indicates that the mentioned factors are common to IT projects across various organisations, it does not prove that they are applicable to all types of projects across all organisations and industries. This study concentrates on IT project specifically and their use within the financial industry of Australia. The responses received from both the case study and the survey show patterns consistent with the original assumptions with regards to cost, but they cannot be confidently applied to a wider environment due to the number and limited industrial and organisational origin of participants.

Further study would be required to determine a more accurate level of cross-industry relevance of the unforeseen impacts created by IT projects.

6.2.5 Research Statement #5: Actions

Statement: By improving project and strategy processes within organisations, the overall project, post-project and maintenance costs can be reduced and more effective use of the available resources could be made, maximising project benefits for organisations.

The following is a summary of suggested actions identified throughout this study:

- Modify adopted project processes and project management methodologies to include a formal consideration and effective management of post-project and other unforeseen and unplanned impacts on the organisational environment, and ultimately, costs.
- Include evaluation of solutions that include multiple business and technical areas in the early stages of project planning and evaluation.
• Develop a formal impact analysis process as part of the planning stages of project process and incorporate it into the overall adopted project management process

• Incorporate formal alignment with strategy and effective management of interdependencies through adopted project processes

• Establish clear roles, responsibilities and accountabilities around unforeseen and unplanned impacts created by projects.

• Include unforeseen and unplanned impact assessment as part of the overall project success evaluation.

• Incorporate mandatory use of post-implementation reviews in project planning and solutions evaluation for new projects.

• Where vendor management solutions are considered, develop a formal process to incorporate internal and external communication that is linked with both the impact analysis and the solution evaluation elements of the project process. While vendor-management actions were touched on during the case study (due to vendor involvement in the analysed project), further vendor-specific research would be required to develop detailed actions around this topic.

These actions will now be translated into suggestions, assigned to relevant areas and responsibilities within organisations.
6.3 The Suggestions

The suggestions resulting from this research are organised under the following four management areas:

- Strategy and Senior Management Suggestions
- Business Management Suggestions
- Systems Development Suggestions
- Project Management Suggestions

The four suggestions form an organisational strategy alignment framework, concentrating on vendor management, strategic alignment and effective management of project impacts. The following diagram shows the logical flow of the suggestions within this framework:

![Diagram of Strategy Alignment Framework]

Figure 27 – Suggestions: Strategy Alignment Framework

6.3.1 Strategy and Senior Management Suggestions

The strategy alignment framework starts with senior management actions.

Looking into the organisation from the case study and the environment it operates in as an example, various objectives (motivations) and related responsibilities within organisations and their surrounding community can be recognised (Table 72).
The case study findings indicate that it can be a challenge to perform successfully in an environment where multiple motivations and goals are present. Often these motivations and goals could be in conflict as well. It is even more challenging ensuring constant alignment with strategy goals and projects. The area of responsibility to provide direction and set expectations in terms of performance on organisational goals sits with senior management.

It should be noted that the interview responses highlighted in the case study chapter were predominantly of operational and tactical nature as they were linked to the project lifecycle steps.

The strategy-specific questions were not specifically highlighted in the case study chapter, however, together with the observation data, literature and documentation review, they provided sufficient data to analyse strategic aspect of this research.

The first step towards the improvement and effective management of project impacts is a formal decision about readiness and commitment by the senior and strategic management of an organisation to make changes to their current processes and organisational dynamics.

Once this decision is made, a formal direction should be developed, outlining improvement goals and objectives, and then clearly communicated to all areas of the organisation.
The following are suggestions in terms of strategic and senior management, resulting from this study:

- Vendor management strategy directions
- Strategy alignment directions
- Roles and responsibilities

The research findings indicate that, by providing a clear direction for an appropriate framework for vendor management and strategy alignment, organisations can translate these goals into relevant roles and responsibilities, creating conditions for accountability and increasing the chances that the strategy will be achieved.

6.3.1.1 Vendor management strategy directions

*Suggestion #1: Create a comprehensive vendor management policy applicable to the entire organisation.*

The case study demonstrated unforeseen project impacts related to a vendor-provided solution to a large project within a financial organisation. The study highlighted the need for a stronger vendor-management process, namely solution evaluation, integration into the existing infrastructure and vendor’s understanding of the organisational dynamics, processes and business logic.

The case study also indicated that the vendor management approach within an organisation should be decided at the strategy level, providing high-level guidance for more detailed implementation at operational and project levels. This approach should be formalised and translated into clear guidelines in terms of vendor selection, negotiation, technical integration with the existing environment and alternatives (for example: exit strategy).

The project example from the case study demonstrated that the management approach within organisations need to recognise and consider the differences between the vendor and organisation’s motivation when it comes to projects. This is particularly important
for organisations that historically built their business-critical solutions internally, as was the case with the organisation from the case study.

With internal development of technical and business solutions, the technical teams that provide solutions have the same common goals, objectives and motivations as the business teams that initiated projects: the prosperity of their organisation. When it comes to vendor objectives, they might differ from their client’s objectives and motivations, therefore client organisations need to be aware of possible discrepancies and manage them accordingly. In some cases, partnership with a vendor might be more appropriate than a contract approach or internal development. It is important that each case is evaluated according to the elements relevant to the organisation and project solution, keeping organisational long-term interests in focus.

It can be concluded that it is essential to ensure that the interests of the organisation are fully addressed in any projects or initiatives that involve external resources or vendor solutions, taking into account the long-term and holistic aspect of organisational interests, not only goals of a specific project. This relates to legal coverage, solution evaluation and support.

6.3.1.2 Strategy alignment directions

*Suggestion #2: Provide directions on mandatory continuous alignment with strategy.*

The case study showed an example of a project that was positioned in line with strategy and was assigned the highest priority among active projects due to its strategic importance.

The strategy alignment was assumed by the attention given to the project and the objectives associated with it, as well as by the strategic element in those objectives.

However, the case study also showed that the alignment with strategy was discussed and tested only at the senior management level – at the project initiation and the initial high level solution discussion, prior to the decision to choose one of the proposed solutions.
The later decisions related to additional requirements (and specifically integration elements) did not show any signs of alignment with either business or technical strategy. The case study demonstrated that the analysed project created the most significant unforeseen and unplanned impacts on the infrastructure and the overall organisation during the systems development phase of the project, where detailed decisions that became part of the overall solution were not tested against any existing strategies or unplanned impacts.

Therefore, it is the suggestion of this study that organisations create clear strategy alignment directions, which will cover the entire duration of projects, providing a framework applicable to various areas within organisations, on how to ensure strategy alignment.

Such a framework should contain specific guidelines for the ongoing strategy alignment, including checkpoints and associated roles and responsibilities across various areas within an organisation. The framework and the guidelines would then be used for further expansion and integration with business, technical and project processes within organisation, providing low-level instructions on how to ensure continuous strategy alignment within organisation, applicable to all aspects of organisational activity, especially projects and technical development.

6.3.1.3 Roles and responsibilities

*Suggestion #3: Define clear roles and responsibilities for tasks related to the strategic alignment framework.*

The case study and survey data indicate that there is no clarity around roles and responsibilities that can easily be linked to unplanned impacts created by projects. Without clear roles and responsibilities, there is no accountability. In a busy multi-project environment any undefined and unassigned tasks have a low chance of being picked up and completed, unless someone is responsible and accountable for them.

By clearly defining roles and responsibilities related to the mandatory strategy alignment, vendor management, solution evaluation and impact analysis, there is a greater chance that a set of definite tasks will be created covering elements that can assist with the overall reduction of the unplanned and unforeseen impacts created by projects.
The survey showed that respondents could not agree on the direct responsibility for those impacts, since they have not been defined within their organisations. The only opinion all respondents had in common when answering this question was that they believed it was someone else’s responsibility, not theirs. This indicates the need for clarification of the existing roles (and where appropriate, the new ones) that can be related to unplanned impacts created by projects.

The case study indicated the need for more clarified roles related to multi-area impact analysis and effective vendor management. The survey indicated the need for clarification of roles and responsibilities in relation to strategy alignment and multi-system solutions.

Once roles and responsibilities are assigned and clarified, the appropriate areas of organisations can further work on their processes to ensure full coverage of the assigned responsibilities and related tasks, working towards improvements in the areas of unplanned impacts and effective project and systems management.

6.3.2 Business Management Suggestions

Based on the research findings outlined through the suggested strategy alignment framework, the business management area should concentrate on the following elements:

- Business impact analysis approach
- Project success evaluation
- Effective communication

6.3.2.1 Business impact analysis approach

_Suggestion #4: Create a standardised business impact analysis process._

The case study demonstrated that some of the major unplanned project impacts were created due to lack of impact analysis and vendor’s business knowledge. The analysis of this project showed that many business processes were expected to fit into the solution without detailed evaluation. Since the vendor’s solution was to be customised to suit the business needs of the organisation, a clear direction in terms of impact analysis was
required.

The case study showed that the initial discovery process was rushed and the feedback from the majority of interviewees confirmed that the assumptions made during the high-level discovery phase were the major cause of later impacts that were not foreseen or planned for in advance.

Since delivery of a technical solution should be in line with business requirements, having a clear approach towards business impact analysis will uncover various essential elements that are applicable to the project solution, timeline and budget.

As demonstrated in the case study and confirmed through the survey results, business impact analysis is not usually formally included in project process. This level of impact analysis is assumed to be part of the business requirements gathering, which is expected to crystallise all related impacts. The reality shows that projects such as the one covered in the case study do not engage all business areas for impact analysis, but instead depend heavily on the style and preferences of trusted skilled individuals.

The suggestion of this study is for business areas to create a formal impact analysis approach, include it in their existing business and project processes, integrating it into the overall business and strategy alignment framework. By following a formally acknowledged and developed processes, relevant tasks and responsibilities would be standardised across various business areas, providing a set of guidelines and instructions on how to conduct comprehensive business impact analysis that will provide valuable information into all impacted areas of the business, ultimately reducing the degree of unplanned and unforeseen impacts with projects.

6.3.2.2 Project success evaluation

*Suggestion #5: Include unplanned and unforeseen impacts into the project success criteria.*

The case study and the survey results showed that project success criteria only takes into account elements such as project budget, objectives and schedule. Towards the end of the project those elements are often very different to the early stages of the project, where expectations are set and projects approved. Budgets are increased, objectives adjusted
and deadlines extended to the original assumptions set at the project’s initiation and approval stages.

While changes to those elements are covered with the adopted project processes, they often result from the unplanned and unforeseen impacts that appeared during the project and were in contradiction with the original assumptions and success criteria.

While the most of the interviewees from the case study and participants in the survey agreed that the main project success criteria should remain the same (objectives, budget, schedule), they also agreed that the overall project management and organisations would benefit if the degree and the effectiveness of management of unplanned and unforeseen impacts are considered as part of the project success evaluation criteria.

The survey findings indicate that including the review of unplanned impacts and associated costs in the project success criteria would increase the overall focus on the negative impacts created by projects. Evaluating these costs as part of the overall project budget components would put more emphasis on the big picture of the impacts created by projects within organisations. This could provide a stronger motivation for project managers, owners and teams to give more attention to unplanned impacts created by their projects, ultimately increasing the effectiveness of impact management and cost control around projects.

6.3.2.3 Effective business communication

*Suggestion #6: Develop formal business communication channels and guidelines for projects.*

The case study illustrated the importance of effective business communication, as well as the issues that arise when communication is limited to only primary business unit linked to projects. With many projects being executed at the same time, related to various business areas within the organisation (and also wider), it is essential to establish formal communication channels and associated responsibilities for impact and conflict management between concurrent project and business areas, in terms of priorities, resources, timing and required changes. Where appropriate, a program management approach should be incorporated in the process.
By establishing clear communication channels and related responsibilities early on, project teams will have a better chance to uncover many (if not all) impacted areas across the organisation and to therefore minimise unforeseen and unplanned impacts created by projects.

The case study and survey indicated that politics and different motivations within organisations can strongly impact on project success and the degree of long-term, unforeseen impacts on various areas within organisations. By establishing open and formal communication between various initiatives and the relevant business areas, and incorporating it into the overall project and business management processes, the impact of conflicting interests and associated politics would be much easier to manage.

The research recognises that clear roles and responsibilities for effective business communication are the key factor in ensuring early impact discovery and effective business and project management.

### 6.3.3 Systems Development Suggestions

Based on the research findings outlined through the suggested strategy alignment framework, the systems development area should concentrate on the following elements:

- Technical impact analysis approach
- Solutions evaluation
- Business and vendor communication

#### 6.3.3.1 Technical impact analysis approach

*Suggestion #7: Develop a comprehensive technical impact analysis process for projects.*

The case study illustrated a large technical project that created a significant impact on the existing infrastructure and external users. The project did not have a formal and comprehensive technical impact analysis performed. Instead, only a high-level assessment was conducted before the budget was proposed and accepted. Subsequent technical efforts uncovered various impacted areas that were not originally considered and had to be urgently addressed.
To prevent such situations, it is a suggestion of this study to develop a comprehensive technical impact analysis process within organisations that would be applicable to all technical infrastructure changes.

A defined, formal impact analysis process for technical projects would ensure involvement of all technical areas within organisations in the impact analysis, therefore enforcing the discussions that would uncover many more project impacts than is the case with the informal impact discovery process. The case study findings indicate that the analysed project would have benefited greatly if such analysis was performed as part of the applied project process.

The case study also indicated that, although the project process should enforce a formal impact analysis process, it is important that technology areas within organisations create their own, technical impact analysis process that will complement the project discovery and impact analysis, ensuring full coverage of all technical impacts within and outside projects.

This technical impact analysis should be applicable to non-project activities such as systems upgrades and enhancements, as well as systems and data changes to accommodate business requirements not covered by projects.

6.3.3.2 Solutions evaluation

*Suggestion #8: Develop a mandatory, standardised process for solution evaluation and continuous alignment with technology strategy.*

The case study indicated that the solution evaluation was performed without a formal process by a small group of people closely linked to the business and technical area related to the project. The project solution proved to be far more complex than originally anticipated and involved various integration points that required additional efforts and solutions to be added so that the project could be successful.

It is a suggestion of this study that technical areas of organisations should participate in a formal solution evaluation process that covers not only initial investigations of proposed project solutions, but also the ongoing changes to accepted and approved solutions. Such an ongoing solution evaluation process would ensure coverage and monitoring of any
deviations from the original solution, and control or even prevent unforeseen and unplanned technical impacts on various areas within organisations.

The organisation from the case study does have a formal project solution evaluation process, but that only covers high-level solution design at the project initiation stage. The case study data showed that further modifications to the solution or additional technical elements that arise throughout projects are not formally evaluated. The study also showed that the initial investigation and solution approval was in line with business and technical goals. But, subsequent changes (especially with the integration within the existing infrastructure) proved to be the main source of the unforeseen and unplanned impacts that added significantly to the overall project and maintenance costs.

Survey and case study participants agreed that in the organisation such as the company from the case study, where the project office is situated outside the technology area and project managers are not involved in the ongoing technology infrastructure or production operations, it is that much more important to ensure a formal and ongoing solution evaluation, to ensure full coverage and alignment with the technology strategy for all elements of the final project solution.

Clear roles and responsibilities around a formal ongoing solution evaluation process are the key to successful ongoing alignment with the technology strategy and overall technology and organisational cost effectiveness.

6.3.3.3 Effective technical communication

_Suggestion #9: Develop formal technical communication channels and guidelines for effective, continuous technical discussions on projects and other initiatives._

Similar to the Suggestion #6 (effective business communication), this research indicates that it is essential for organisations to create formal technical communication channels. These channels should cover strategic, operational and project communication, ensuring that all project solutions and other changes to the overall technology infrastructure are effectively communicated and aligned with the strategic goals and directions.

The case study and survey results touched on the ongoing conflict of interest between projects goals and the operational goals and directions. To more effectively manage this conflict, clear roles and responsibilities for formal communication are the key to the
successful and effective collaboration between business, project and development and support teams.

The research data also indicates that the technical communication channels need to be integrated with the business and project communication channels, formalising the overall organisational communication matrix.

In particular, the case study interviews highlighted that the suggestion for effective communication should not only cover only internal business-project-technical communication. It should be extended to external users and vendors, ensuring clear messages and accurate information are exchanged and a common understanding of the goals and objectives achieved.

### 6.3.4 Project Management Suggestions

Based on the research findings outlined through the suggested strategy alignment framework, the project management area should concentrate on the following elements:

- Project planning and impact analysis
- Solution evaluation
- Strategy alignment
- Project success evaluation
- Utilisation of past experiences
- Effective communication

#### 6.3.4.1 Project planning and impact analysis

_Suggestion #10: Incorporate formal, comprehensive impact analysis into the planning stage of project management process._

The project manager of the project covered by the case study indicated clearly that if they could go back and redo the project again, and change one thing, that they would most definitely insist on performing an additional, thorough discovery process, which would enable them to discover all impacts not known at the time of the high-level analysis. This statement was related to both business and technical impacts.
By early discovery of impacts and subsequent efforts required to manage those impacts, a clearer picture of the overall costs can be prepared to provide a more accurate indication of the project costs.

As it was the case with the project from the case study, many project solutions are selected and approved based on financial factors. The case study clearly showed that if the information about unforeseen impacts was available at the time of solution selection, the solution choice for this project would have been different. This indicates just how important comprehensive or adequate impact analysis can be for organisations.

A comprehensive impact analysis should not be perceived as detailed analysis. The project case study indicated that reasons for insufficient impact analysis on the analysed project were the expectations to produce a quick, high-level solution assessment only and that more detailed analysis would be performed as part of the delivery phase of the project. While it is true that the project process applied to this project indicated that detailed analysis should not be expected as part of the high-level analysis and solution design, a comprehensive high-level impact analysis that was adequate should be a mandatory element of this initial project step.

The case study analysis strongly suggested that a comprehensive, formal impact analysis process would, at a high level, ensure participation of all relevant business, technical and operational areas of the organisation and utilise resources and impact analysis processes of those areas to produce a credible, qualified impact assessment in the early stages of the project. Such an assessment and suggestions would ensure overall reduction of unplanned impacts and associated costs.

Based on the findings of this research, a suggestion is that a formalised impact analysis process should become a part of the formal project management process adopted by organisations.

6.3.4.2 Solution evaluation

Suggestion #11: Develop formal, comprehensive solution evaluation methods that will cover all impacted areas and evaluate every aspect of the solution against the related strategy points.
Similar to the previous suggestion (project planning and impact analysis), this study is recommending a formal process for solution evaluation within projects. In contrast to Suggestion #10, where the impact analysis is linked to the planning process, it is a finding of this research that the solution evaluation should cover not only the planning stage, but also the entire duration of project, ensuring alignment between the evolving solution and any new elements that are uncovered throughout the project.

The case study interviews suggested that a formal project solution evaluation should cover both business and technical evaluation, ensuring full engagement of all relevant business and technical areas that are discovered through the impact analysis process. The evaluation process should ensure alignment with business and technology strategy points for all elements of the proposed solutions, and all discovered impact and integration points.

The case study also indicated that in order to streamline this process, the project solution evaluation should link to the formal technical evaluation methods (Suggestion #8), utilising technical expertise and communication channels not always readily visible or available to project teams. Comprehensive evaluation does not mean detailed evaluation, but a wide high-level coverage of all impacted areas, enabling the visibility and communication of a proposed solution to all impacted and related areas within and outside the organisation.

With a comprehensive coverage of all integration and impact points, the proposed solutions can be further adjusted to ensure the most appropriate fit for the organisation, reducing in the process any unplanned or unforeseen impacts down the line.

6.3.4.3 Strategy alignment

*Suggestion #12: Develop formal procedures within the adopted project process that will continuously evaluate any project decisions against strategy objectives.*

The case study indicated that, during the project, the organisation went through modifications of their existing project process, resulting in closer monitoring of project objectives, priorities and alignment with strategy. This, however, limited the strategy alignment to only high-level project objectives, not to the low-level decisions that often
create deviations from strategy and create unplanned and unforeseen impacts.

It is a suggestion of this study that formal procedures are developed and incorporated into the project process, ensuring an ongoing coverage of all project decisions against strategy objectives of all impacted areas within organisation.

Specifically this relates to decisions impacting on business and technical processes and associated costs, that often result from the quick decisions to address unplanned tasks and issues arising during the project delivery phase. This was strongly evident with the project covered by the case study.

Both the case study and survey data indicated that the strategy alignment procedures incorporated into the adopted project process should also be brought into line with the overall organisational alignment directions and procedures covered by the relevant areas of impacts, such as business, operations or technical infrastructure.

6.3.4.4 Project success evaluation

_Suggestion #13: Expand the project success evaluation criteria to include elements related to performance against the strategic alignment framework, including vendor management (where appropriate), unplanned impacts, strategic alignment and effective communication._

Based on strategic direction to include unforeseen impacts in the overall project success evaluation criteria (Suggestion #5), the next suggestion of this study is to execute this high-level direction defined in the strategic alignment framework, and translate it into detailed success evaluation criteria, incorporating it into the adopted project process.

The case study and survey responses indicated that alignment with strategy, vendor management (where appropriate), the degree and results of the unplanned and unforeseen impacts created by projects and effective communication are elements that are highly relevant to project success and therefore should be included in the overall project success criteria.

This study found that by formally including these elements in the evaluation criteria for project success, an additional focus should be given to those areas throughout the project,
which should positively affect and reduce the unplanned and unforeseen impacts created by projects. While the stronger focus on those elements might require more effort and therefore could increase the overall costs of projects, the estimates of cost savings by effectively managing the unplanned impacts indicated in the survey give additional argument supporting this suggestion.

6.3.4.5 Utilisation of past experiences

_Suggestion #14_: Develop a formal process where lessons from past projects will be incorporated into future projects and initiatives.

This research showed that many organisations do utilise formal post-implementation reviews of completed projects. However, it was also discovered that project reviews are rarely used as a tool for future projects and lessons learning.

It is the suggestion of this study to formally introduce a mandatory review of past experience relevant to any new project, ensuring that mistakes from the past are not repeated and that lessons learned on past projects are fully utilised for improvements on further projects.

The research findings support the view that a formal mandatory review of past experiences would also contribute to training of project team members, identification of the most appropriate resources, and would act as a reminder for the experienced team members of their past lessons, assisting with planning of new projects.

This approach can also be valuable with vendor management, where experiences with the same vendor across various business and technical areas can be exchanged and utilised for more effective vendor management on future initiatives, as indicated in the case study.

This review should also include evaluation of impact-related unforeseen operational costs and their evaluation with regard to project decisions.

While there will be cases where a long-term cost increase is more appropriate than deep
analysis in the early stages of the project, it is useful to properly identify all project-related costs when they occur after implementation and assign them to the related area of origin, rather than to have them hidden in the operational costs and not to have an opportunity to effectively manage them in the future.

Generally, projects and lessons learned from projects should be regularly used for new initiatives, preventing the same issues from repeating themselves every time a similar situation arises. Financial organisations, especially banks, still enjoy some level of monopoly in the overall economic and social environment, so the mistakes and missed opportunities can still remain “under wraps”, as their consequences are still easily absorbed by the overall organisational power (Harris 2002). But, such companies should not rely on their advantage in the market - they should rather concentrate on ensuring valuable lessons from past experiences are effectively used for future project activities, therefore helping reduce significant long-term costs and increasing the overall value for their stakeholders.

6.3.4.6 Effective project communication

Suggestion #15: Develop communication standards for each stage of the project, along with clearly assigned responsibilities, relationships and appropriate channels.

The research data clearly highlighted the importance of effective communication on all levels. The case study illustrated that the majority of unplanned and unforeseen impacts could have been prevented or better managed with more effective communication throughout the analysed project.

It is the suggestion of this study that project processes across organisations adopt a formal approach to effective communication on projects. To implement this suggestion, it is necessary to assign appropriate roles and responsibilities for each level of communication related to projects. The case study and survey responses highlighted the lack of formal roles definitions in terms of communication and therefore associated responsibility for effective communication.

While project methodologies and project management processes (including the one
covered in the case study) cover elements such as a communication matrix for projects, the feedback from the case study and the survey indicated that this was not sufficient.

It is the suggestion of this research that more detailed attention should be given to defining all communication channels across the organisation for all stages of projects. While not all communication channels are expected to always be fully utilised through the project and during all project stages, it is essential that they are all defined and included in the evaluation of solutions and impact analysis. Once the solution evaluation and impact analysis are completed, then the communication channels can be reduced to include only relevant areas of organisations. This is in line with the areas of improvement highlighted in the case study.

The research data shows that appropriate identification and assignment of roles and responsibilities are essential for successful communication, which ultimately leads to more effective project and organisational management, cost reducing and more successful projects.

### 6.3.5 Suggestions Summary

All described suggestions are summarised in Table 73:

<table>
<thead>
<tr>
<th>Management Area</th>
<th>#</th>
<th>Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy and Senior Management</strong></td>
<td>#1</td>
<td>Create a comprehensive vendor management policy applicable to the entire organisation.</td>
</tr>
<tr>
<td></td>
<td>#2</td>
<td>Provide directions on mandatory continuous alignment with strategy.</td>
</tr>
<tr>
<td></td>
<td>#3</td>
<td>Define clear roles and responsibilities for tasks related to the strategic alignment framework.</td>
</tr>
<tr>
<td><strong>Business Management</strong></td>
<td>#4</td>
<td>Create a standardised business impact analysis process.</td>
</tr>
<tr>
<td></td>
<td>#5</td>
<td>Include unplanned and unforeseen impacts into the project success criteria.</td>
</tr>
<tr>
<td></td>
<td>#6</td>
<td>Develop formal business communication channels and guidelines for projects.</td>
</tr>
<tr>
<td><strong>Systems Development</strong></td>
<td>#7</td>
<td>Develop a comprehensive technical impact analysis process for projects.</td>
</tr>
<tr>
<td></td>
<td>#8</td>
<td>Develop a mandatory, standardised process for solution</td>
</tr>
<tr>
<td>Project Management</td>
<td>#9</td>
<td>Develop formal technical communication channels and guidelines for effective, continuous technical discussions on projects and other initiatives.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>#10</td>
<td>Incorporate formal, comprehensive impact analysis into the planning stage of project management process</td>
</tr>
<tr>
<td></td>
<td>#11</td>
<td>Develop a formal, comprehensive solution evaluation methods that will cover all impacted areas and evaluate every aspect of the solution against the related strategy points.</td>
</tr>
<tr>
<td></td>
<td>#12</td>
<td>Develop formal procedures within the adopted project process that will continuously evaluate any project decisions against strategy objectives.</td>
</tr>
<tr>
<td></td>
<td>#13</td>
<td>Expand the project success evaluation criteria to include elements related to performance against the strategic alignment framework, including vendor management (where appropriate), unplanned impacts, strategic alignment and effective communication.</td>
</tr>
<tr>
<td></td>
<td>#14</td>
<td>Develop a formal process where lessons from past projects will be incorporated into future projects and initiatives.</td>
</tr>
<tr>
<td></td>
<td>#15</td>
<td>Develop communication standards for each stage of project, along with clearly assigned responsibilities, relationships and appropriate channels.</td>
</tr>
</tbody>
</table>

Table 73 - Research Suggestions Summary
6.4 Study Limitations and Future Research

This objective of this study was to examine the existence and importance of the unplanned and unforeseen impacts created by projects, identify the main factors that cause those impacts and to provide suggestions for improvement and further research into this subject.

As any discrete research work, this study has certain limitations. This research analysed one project as part of the case study and interviewed 23 project participants. The survey covered responses from 123 professionals. The survey did not take into account the population of project managers but was initiated through a professional association with an expectation to acquire cross industry validation but the responses were received mainly from the banking and financial industry. Despite this limitation, the findings from the survey have been useful to extend the findings beyond the organisation where this case study was conducted. The scope of this research concentrated around the specific topic: the alignment between projects and strategy and impacts created by projects. The project management theory and practical application relates to numerous projects and project participants - this research is only a small contribution to the enormous body of knowledge that is project management.

This study drew the conclusions and addressed the research questions utilising a relatively small research sample (one project case study and a mini-survey). While the research respondents indicated that the phenomenon of the long-term impacts and the behaviours highlighted in the case study are a symptom of visible patterns within their organisations, the findings of this study are limited to the environment in which the research was conducted.

Another limitation of this study is that it concentrated on one specific industry sector: the Australian financial industry. While the issues discovered throughout this research might be applicable to other industries and disciplines, any assumptions on that topic would need to be further researched, preferably across multiple projects and environments.
The next research steps would be to expand on the suggestions resulting from this study and to evaluate possible formal additions to the overall project management methodology and body of knowledge. Further research should look into opportunities to formally incorporate some of the suggestions as universal enhancements to the overall project management discipline, while bridging the gap between project management and systems development and ensuring strategy alignment.

Although there are many avenues and opportunities for further research, the following three main paths are identified as closely linked to the results of this study:

- Development of formal methodology enhancements and associated tools to support effective management of unforeseen impacts created by projects
- Research into organisational readiness, commitment, interpretation and application of available tools and methodologies to effectively manage those impacts
- Further exploration of effective cooperation between project management and systems development management, with the goal of effective strategic alignment and effective management of project impacts on infrastructure.
- A comprehensive multi-industry survey to evaluate applicability of the findings of this study on other organisations and industries.

While this study concentrated on the identification of factors that cause unforeseen impacts and the paths that need to be taken towards their effective management, a detailed exploration of the recommended actions is a subject for further research opportunities.
6.5 Conclusion

This study concentrated on highlighting unplanned and unforeseen impacts and their importance to organisations, by identifying the areas of impacts, related factors and their influence on the overall organisational costs.

At the beginning of this study, the following objectives were outlined:

- **Objective 1**: Investigate and define long-term impacts created by IT projects within financial organisations in Australia
- **Objective 2**: Establish the link between project management processes and elements and long-term impacts on IT infrastructure and the overall organisational strategy
- **Objective 3**: Establish the importance of the effective management and prediction of long-term impacts by quantifying some of the main aspects of costs directly related to those impacts and identifying the factors that influence it.
- **Objective 4**: Develop a set of suggestions for further research that will help improve project processes and the overall project management methodology that will assist in managing long-term impacts created by IT projects and reduce overall IT-related costs within the Australian financial organisations (and wider)

All outlined objectives have been achieved, through the analysis of the available literature, case study and survey data.

As outlined in the Chapter 1, the intent of this research was to make contributions to the following areas:

- Project management theory
- Project management and systems development practice
- Project management, strategic and IT management

The study outlined a set of management suggestions, formulated through an
organisational strategy alignment framework and based on research findings. These suggestions, together with the review of literature, case study and survey analysis outlined in this study, represent the essence of the contributions intended by this research.

The study recommended some areas for future consideration and improvement, which should be further analysed and researched, resulting in new methods that could be incorporated into overall project management methodology, body of knowledge and related adopted management and project management processes within organisations.

The study also highlighted the limitations of the findings, assumptions and observations expressed in this research.

Further research should concentrate on evaluation of these suggestions and development of new management methods to ensure better strategic alignment and an overall reduction of unplanned and unforeseen impacts created by projects. The ultimate goal of this and further research on this topic is effective management of those impacts, resulting in overall cost reduction for companies through more efficient use of resources and more effective application of project solutions.
Appendix

The appendix contains the following:

- Detailed statistical data sourced from the Australian Bureau of Statistics
- Survey details
- Interview details:
  - Data collection communication
  - Interview roles
  - Interview questions
**Appendix 1 – ABS Data**

Australian Bureau of Statistics  
52590 2002-03 Australian National Accounts: Information and Communication Technology  
Satellite Account  
EMPLOYED PERSONS: COMPUTING PROFESSIONALS AND TECHNICIANS, By industry—2002–03

<table>
<thead>
<tr>
<th>Industry</th>
<th>Computing professionals and technicians</th>
<th>Total employed persons</th>
<th>ICT employment as a proportion of total employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>0.3</td>
<td>377.4</td>
<td>0.1</td>
</tr>
<tr>
<td>Mining</td>
<td>2.2</td>
<td>88.2</td>
<td>2.4</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>15.7</td>
<td>1114.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Electricity, gas and water supply</td>
<td>3.4</td>
<td>72.5</td>
<td>4.7</td>
</tr>
<tr>
<td>Construction</td>
<td>1.1</td>
<td>718.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>8.6</td>
<td>443.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Retail trade</td>
<td>6.9</td>
<td>1439.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Accommodation, cafes and restaurants</td>
<td>0.3</td>
<td>452.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Transport and storage</td>
<td>3.9</td>
<td>408.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Communication services</td>
<td>16.5</td>
<td>171.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>19.1</td>
<td>348.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Property and business services</td>
<td>115.2</td>
<td>1085.5</td>
<td>10.6</td>
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<tr>
<td>Government administration and defence</td>
<td>21.1</td>
<td>431.0</td>
<td>4.9</td>
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<tr>
<td>Education</td>
<td>11.6</td>
<td>668.2</td>
<td>1.7</td>
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<tr>
<td>Health and community services</td>
<td>4.4</td>
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<td>0.5</td>
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<td>Cultural and recreational services</td>
<td>2.1</td>
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<td>0.9</td>
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<tr>
<td>Personal and other services</td>
<td>2.1</td>
<td>380.7</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>234.7</strong></td>
<td><strong>9377.5</strong></td>
<td><strong>2.5</strong></td>
</tr>
</tbody>
</table>

Table 74 – Australian Computing Employment Statistics 2002-2003 (ABS)  
© Commonwealth of Australia, 2006
### 1. EMPLOYED PERSONS, ICT occupation groups—2000–01 to 2005–06(a)(b)

<table>
<thead>
<tr>
<th>Information and Communication Technology Employment</th>
<th>2001–02 '000</th>
<th>2002–03 '000</th>
<th>2003–04 '000</th>
<th>2004–05 '000</th>
<th>2005–06 '000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing professionals and technicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information technology managers</td>
<td>29.5</td>
<td>30.2</td>
<td>29.7</td>
<td>38.5</td>
<td>43.4</td>
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<tr>
<td>Computing professionals</td>
<td>163.2</td>
<td>174.8</td>
<td>174.6</td>
<td>153.0</td>
<td>162.0</td>
</tr>
<tr>
<td>Computing support technicians</td>
<td>29.4</td>
<td>29.7</td>
<td>30.7</td>
<td>42.0</td>
<td>41.3</td>
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<tr>
<td>Total</td>
<td>222.1</td>
<td>234.7</td>
<td>235.0</td>
<td>233.5</td>
<td>246.7</td>
</tr>
<tr>
<td>Electronic engineers/technicians and communication technicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical and electronics engineers</td>
<td>23.7</td>
<td>26.4</td>
<td>23.7</td>
<td>25.9</td>
<td>29.4</td>
</tr>
<tr>
<td>Electronic engineering associate professionals</td>
<td>15.5</td>
<td>14.5</td>
<td>15.1</td>
<td>18.9</td>
<td>11.5</td>
</tr>
<tr>
<td>Electronic and office equipment tradespersons</td>
<td>32.6</td>
<td>36.7</td>
<td>33.9</td>
<td>34.9</td>
<td>33.5</td>
</tr>
<tr>
<td>Communications tradespersons</td>
<td>20.7</td>
<td>24.5</td>
<td>24.7</td>
<td>21.0</td>
<td>23.9</td>
</tr>
<tr>
<td>Electrical and telecommunications trades assistants</td>
<td>*2.8</td>
<td>*2.9</td>
<td>*2.8</td>
<td>*2.2</td>
<td>*3.3</td>
</tr>
<tr>
<td>Total</td>
<td>95.3</td>
<td>105.0</td>
<td>100.2</td>
<td>102.9</td>
<td>101.6</td>
</tr>
<tr>
<td>Total ICT workers</td>
<td>317.4</td>
<td>339.7</td>
<td>335.2</td>
<td>336.3</td>
<td>348.2</td>
</tr>
<tr>
<td>Total employed</td>
<td>9143.8</td>
<td>9377.5</td>
<td>9528.0</td>
<td>9800.0</td>
<td>10042.1</td>
</tr>
<tr>
<td>Proportion of total employed that are ICT workers(%)</td>
<td>3.5</td>
<td>3.6</td>
<td>3.5</td>
<td>3.4</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Table 75 – Australian Labor Market Statistics 2006 (ABS)
<table>
<thead>
<tr>
<th>Industry</th>
<th>‘000</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Trade</td>
<td>1224.3</td>
<td>11%</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>1102.0</td>
<td>10%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1064.0</td>
<td>10%</td>
</tr>
<tr>
<td>Construction</td>
<td>988.1</td>
<td>9%</td>
</tr>
<tr>
<td>Education and Training</td>
<td>814.4</td>
<td>8%</td>
</tr>
<tr>
<td>Professional, Scientific and Technical Services</td>
<td>786.6</td>
<td>7%</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>707.5</td>
<td>7%</td>
</tr>
<tr>
<td>Public Administration and Safety</td>
<td>636.2</td>
<td>6%</td>
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Table 76 – Australian Computing Employment Statistics 2008 (ABS)
5206.0 Australian National Accounts: National Income, Expenditure and Product

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<th>Contribution (Dec08) Mil</th>
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Table 77 – Australian National Income, Expenditure and Product Statistics 2008 (ABS)
### Investment in Computer Hardware and Software, by Industry—Current Prices

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Table 78 – Australian Investment in Hardware and Software (ABS)

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### Appendix 2 - Survey Details

**Survey Data**

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<th>How many had unplanned impacts</th>
<th>Total</th>
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<td></td>
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<td>Many</td>
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<td>%</td>
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<td>%</td>
<td>73.7%</td>
<td>19.3%</td>
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Table 79 – Survey: Project Unplanned Impacts (per role and number of projects)
Survey Questions

1. About You

1. Which one of the following best describes your role:
   - [ ] Business Owner
   - [ ] Project Manager
   - [ ] IT Director/Senior Manager
   - [ ] IT Manager
   - [ ] IT Professional
   - [ ] Other (please specify)

2. Which of the following best describes your age?
   - [ ] Under 30
   - [ ] 30-35
   - [ ] 35-45
   - [ ] Over 45

3. How many years of professional experience do you have?
   - [ ] Less than 5 years
   - [ ] 5-10 years
   - [ ] 10-20 years
   - [ ] Over 20 years

4. What does a word “IT project” mean to you? Do you see IT projects as cost or as revenue source?
   - [ ] A cost
   - [ ] A revenue
   - [ ] Other (please specify)

5. What is your involvement in the overall business strategy of the organisation?
   - [ ] No involvement/influence
   - [ ] Minimal involvement/influence
   - [ ] Moderate involvement/influence
   - [ ] Active involvement/influence
   - [ ] Strong involvement/influence

6. What is your involvement in the overall IT strategy of the organisation?
   - [ ] No involvement/influence
   - [ ] Minimal involvement/influence
   - [ ] Moderate involvement/influence
   - [ ] Active involvement/influence
   - [ ] Strong involvement/influence

7. What is the level of your involvement in the overall IT project management process in your current organisation?
   - [ ] None
   - [ ] Minimal
   - [ ] Active
   - [ ] Leading
   - [ ] Other (please specify)

8. How many IT projects and in which capacity have you been responsible for in your career so far?
   - [ ] None
   - [ ] <5
   - [ ] <10
   - [ ] >10
   - [ ] As a project manager
   - [ ] As a project owner
   - [ ] As a project sponsor
   - [ ] As a project participants
   - [ ] Other (please specify)

2. About Your Organisation

9. Which of the following best describes the activity of your organisation?
   - [ ] Accounting
   - [ ] Banking & Finance
   - [ ] Aviation
   - [ ] Construction
Consultancy  □  Marketing  □
Customer Service  □  Media  □
Defence  □  Military  □
Distribution  □  Production & Operations  □
Education  □  Public Sector  □
Electronics  □  Recruitment  □
Engineering  □  Retail  □
Graduate Health  □  Sales  □
Human Resources  □  Scientific  □
Information Technology  □  Secretarial & Administration  □
Insurance  □  Telecommunications  □
Legal  □  Training  □
Logistics & Transport  □  Travel & Hospitality  □
Management & Executive  □  Other (please specify)  □
Manufacturing  □

10. What is the size of your organisation?
□ <100 employees
□ 100-500 employees
□ 500-1500 employees
□ 1500-5000 employees
□ >5000 employees

11. How is strategy addressed within your organisation in terms of business and technology?
□ Only business strategy exists
□ Only technology strategy exists
□ Separate business and technology strategies exist
□ Combined business and technology strategies exist
□ No formal strategy exists of any kind
□ Other (please specify)

12. How is the IT function positioned within your organisation?
□ As a separate division
□ As part of business division
□ As part of financial division
□ Other (please specify)

13. How is the Project Office (Project Management) function positioned within your organisation?
□ As part of business division
□ As part of technology division
□ As a separate division
□ Other (please specify)

14. What is the level of project activity within your organisation?
□ No projects (operational activities only)
□ Minimal project activity
□ Medium project activity
□ Strong project activity
□ Very strong project activity

15. What are the usual durations of projects in your organisation?

<table>
<thead>
<tr>
<th>Duration</th>
<th>Some</th>
<th>Mostly</th>
<th>All</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 months in duration</td>
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<tr>
<td>3-6 months in duration</td>
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<tr>
<td>6-12 months in duration</td>
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<tr>
<td>&gt;12 months in duration</td>
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<tr>
<td>&gt;24 months in duration</td>
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</tbody>
</table>

16. What are the usual budget ranges of projects in your organisation?

<table>
<thead>
<tr>
<th>Budget Range</th>
<th>Some</th>
<th>Mostly</th>
<th>All</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$100,000</td>
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<tr>
<td>$100,000-$500,000</td>
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<tr>
<td>$500,000-$1,000,000</td>
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<td></td>
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<tr>
<td>$1,000,000-$3,000,000</td>
<td></td>
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</tbody>
</table>
3. About Projects

17. How are projects initiated in your area?
   □ Originating from business strategy
   □ Originating from individual business needs
   □ Originating from combined business units initiatives
   □ IT initiated
   □ Other (please specify)

18. What are the main factors used for project success assessment within your organisation?
   □ Cost
   □ Time
   □ Quality
   □ Revenue
   □ Profit
   □ Other (please specify)

19. Do you review PIRs (post-implementation-reviews) of previous related projects before starting a new project?
   □ Never
   □ Sometimes
   □ Always

20. How many projects you have been involved in have been successful in regards to delivering to requirements, on time and on budget?
   □ None
   □ Less than 10%
   □ Less then 50%
   □ More than 50%

21. How many of those projects had changes to scope or technical solution that was not originally planned?
   □ None
   □ Some
   □ Many
   □ All

22. How many projects created unplanned impacts on environment, costs, business processes or people?
   □ None
   □ Some
   □ Many
   □ All

23. What was the nature of those impacts (select all that applies):
   □ Impact on IT infrastructure
   □ Impact on future maintenance costs
   □ Impact on business processes
   □ Impact on people
   □ Impact on strategy
   □ Other (please specify)

24. How important are those unplanned, long-term impacts on the organisation?
   □ Unimportant
   □ Somewhat important
   □ Highly important

25. To which extent do the following factors within projects create/influence unplanned long-term impacts?
   1 No influence, 2 Minimal influence, 3 Moderate influence, 4 Strong influence, 5 Major influence

Overlapping projects and lack of impact analysis
   □ 1 □ 2 □ 3 □ 4 □ 5

Requirements/circumstances changes
   □ 1 □ 2 □ 3 □ 4 □ 5
26. How much coordination and mutual awareness is present between the concurrent projects within your organisation?
- None
- Some – but only where the same people are involved in various projects
- Regularly
- Other (please specify)

27. Which project process is adopted by your organisation?
- Home-made light project management process
- Home-made strict project management process
- PMBOK-based light project process
- PMBOK-based strict project process
- PRINCE-based light project process
- PRINCE-based strict project process
- Other (please specify)

28. In your opinion, is the project process within your organisation effective?
- Not effective at all
- Somewhat effective
- Effective
- Highly effective

29. Is there a process within your organisation that ensures regular alignment between active projects and the overall strategy?
- No, not at all
- Not officially, but there is some alignment present due to organisational setup
- Yes, there is a process that ensures the alignment

30. How much strategy-oriented is project process within your organisation?
- Not at all
- Reasonably
- Fully

31. Is strategy alignment part of project evaluation?
- No, not at all
- To some extent
- Yes, fully

32. Should project success criteria include unplanned impacts created by projects?
- No
- Yes
- Other (please specify)

33. Should project success criteria include the assessment of the level of alignment with the strategy?
- No
- Yes
- Other (please specify)

34. Should project process include mandatory correlation with other projects?
- No
- Yes
- Other (please specify)

35. Should project process include mandatory checkpoints for strategy alignment and relevance?
- No
- Yes
36. Who should be responsible for the unplanned impacts on other projects, strategy or long-term costs?
- Project manager
- Project owner
- Programme manager
- Senior management
- Other (please specify)

37. Should project manager be made responsible for inter-projects alignment and long-term impact assessment as part of the project process?
- No
- Yes

38. Where do you place costs associated with the maintenance of products produced as project results?
- As part of project costs
- Outside project costs
- Other (please specify)

39. How important are the post-project (maintenance, etc) costs to you?
- Not at all important
- Somewhat important
- Highly important

40. How much are post-implementation costs discussed at planning stages of your projects?
- Not at all
- Not enough
- Enough
- Too much

41. How is your department’s budget impacted by project activity?
- No impact
- Low impact
- Moderate impact
- High impact
- Very high impact

42. Who decides on solutions involving multiple systems impact and how do you resolve possible conflicts?
- Initiating business units
- IT manager
- Project manager
- Designer/architect
- Senior management
- Other (please specify)

43. What is the level of participation of the IT support/maintenance teams at different stages of your projects?
- None
- Minimal
- Active
- Too much participation

44. Looking back at your successfully completed projects, if you could go back in time and change some decisions, what would be the main areas of benefits resulting from those changes?
- Time
- Cost
- People
- Business Strategy
- IT Strategy
- Other (please specify)

45. If you were to go back in time and change some of the decisions on your successful projects, how much would it improve their cost picture?
- Up to 10% of the overall cost
Between 10% and 30% of the overall cost
☐ More than 30% of the overall cost
☐ Other (please specify)

46. Is there anything you would like to add with regards to long-term organisational impacts created by projects, strategy alignment or project success criteria? __________________________
Appendix 3 – Interview Details

Data Collection Communication

Interview Invitation

Dear XY,

As you might already know, I am enrolled in a postgraduate course at UTS (Doctor of Project Management).

The official title of my research topic is “Towards a methodology to help predict and reduce the impact of IT projects on long term costs, corporate strategy and existing IT infrastructure”.

The research is concentrating on the links between successful project management practices and long-term impacts on organisational infrastructure. With my research, I am aiming to raise awareness and highlight the need for constant alignment between projects that run within the organisation and business/technology strategy.

As part of my research process, I am conducting a case study of couple of highly important successfully implemented IT projects that have been completed within financial industry, analysing the impacts on other areas of the organisation, especially long-term impacts on IT infrastructure environment, other projects and business/technology strategy.

The project I chose for my case study is the Project (name withheld).

You have been identified as a potential interviewee and a highly useful source of information for my case study.

Please let me know if you would be willing to participate in this and I will arrange the time to explain all the details and prepare you for the data collection.

Please note the following:
• The data collected during interviews and other research methods will be kept in strict confidence and will only be used for purposes of this research
• Project, organisation, individuals and any related data will not be identifiable in the final thesis or any published material
• The research is covered and approved by the UTS Human Research Ethics Committee (details available on request)
• The research topic and use of Company data has been approved by the Company (in October 2004 and in April 2006)

Thanks very much in advance!

Amela Peric.
Interview Confirmation

Dear XY,

Thank you very much again for agreeing to assist me with data collection for my research.

I am about to start scheduling interviews for the next couple of weeks, so I will look for the free time in your schedule and try to book you for one hour.

Please note the following:

- In total, I will require 2 hours of your time: one hour for preparation, one hour for the actual interview. I might need to come back to you again to clarify some data, but I do not expect this to be time consuming.
- The interview will be taped and converted into a sound file, which I will be using to extract the data for the research.
- The data collected during interviews and other research methods will be kept in strict confidence and will only be used for purposes of this research
- Project, organisation, individuals and any related data will not be identifiable in the final thesis or any published material
- The research is covered and approved by UTS Human Research Ethics Committee (details available on request)
- The research topic and use of Company data has been approved by the Company (in October 2004 and in April 2006)
- I will send the list of questions with the invitation for the meeting, so that you can prepare and have an idea of what is involved
- You will need to sign the form (required by UTS) or respond affirmatively to this request to indicate that you are willing participant of this research and happy to provide data

Please let me know if you are uncomfortable being recorded - I will in that case take notes instead of sound recording.

You assistance is highly appreciated.

Thank you very much in advance!

Amela Peric.
Interviewee Roles

<table>
<thead>
<tr>
<th>Interviewee Role</th>
<th>Relation to Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business analyst</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Business manager</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Business user</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Corporate lawyer</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Developer / team member</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Development manager</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Impacted party – business</td>
<td>Indirectly impacted, no hands-on involvement</td>
</tr>
<tr>
<td>Impacted party – technical (IT manager)</td>
<td>Indirectly impacted, no hands-on involvement</td>
</tr>
<tr>
<td>Project manager and deputy project manager</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Senior business analyst and business analysis manager</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Senior business manager</td>
<td>Not involved in project</td>
</tr>
<tr>
<td>Senior IT manager</td>
<td>Not involved in project</td>
</tr>
<tr>
<td>Test analyst</td>
<td>Hands-on involvement in project</td>
</tr>
<tr>
<td>Test manager</td>
<td>Hands-on involvement in project</td>
</tr>
</tbody>
</table>

Interview Questions – Business Analyst

<table>
<thead>
<tr>
<th>Sub-Area</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
</tr>
<tr>
<td>Alignment</td>
<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
</tr>
<tr>
<td>Alignment</td>
<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
</tr>
<tr>
<td>Alignment</td>
<td>4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?</td>
</tr>
<tr>
<td>Alignment</td>
<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
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<tr>
<td>Alignment</td>
<td>6. What can be done within the project planning to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
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<tr>
<td>Alignment</td>
<td>7. What can be done within the project execution to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
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<td>Alignment</td>
<td>10. What can be done within the strategy process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Interview Questions – Business Manager</td>
<td></td>
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<tr>
<td>----------------------------------------</td>
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<tr>
<td><strong>Alignment</strong></td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
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<td><strong>Alignment</strong></td>
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<tr>
<td><strong>Alignment</strong></td>
<td>11. What can be done within the business-as-usual process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>12. What was your role in this project?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>13. What do you consider the main criteria for project success?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>14. Is your definition of project success criteria identical to the organisational criteria for project success?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>15. How can the level of success be evaluated and when?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>16. Who should give a verdict of success to a project? Why?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>17. What was the highest/lowest point of the project?</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>18. What has changed as a results of this project? (business/IT infrastructure/customers/people)</td>
</tr>
<tr>
<td><strong>Project Success</strong></td>
<td>19. Does this project represent the way the projects are implemented in this organisation? Why?</td>
</tr>
</tbody>
</table>

**Business Analysis**

106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?

**Development and testing**

107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?
<table>
<thead>
<tr>
<th>Domain</th>
<th>Question</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Success</td>
<td>20. If you could go back in time, what would you like to see differently done or addressed with this project and at which stages and how?</td>
<td></td>
</tr>
<tr>
<td>Project Success</td>
<td>21. During project, was there any evaluation against possible changes to the rationale or business strategy that could impact project benefits or success criteria? Was anything put in place to ensure alignment of project plan with any other projects or strategy initiatives?</td>
<td></td>
</tr>
<tr>
<td>Initiation</td>
<td>24. What was the link to business strategy, if any?</td>
<td></td>
</tr>
<tr>
<td>Project Plan Development</td>
<td>27. How much was an overall organisational strategy (both business and technical) incorporated in the project planning? How?</td>
<td></td>
</tr>
<tr>
<td>Project Plan Development</td>
<td>32. How often was the plan evaluated with regards to strategy and other projects within the organisational environment?</td>
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</tr>
<tr>
<td>Project Plan Development</td>
<td>33. Was there anything within the plan that impacted or changed the way business/IT operates?</td>
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</tr>
<tr>
<td>Project Plan Execution</td>
<td>34. What could have been done better in planning stage to ensure better alignment with strategy?</td>
<td></td>
</tr>
<tr>
<td>Overall Change Control</td>
<td>38. Was there an alignment between this and other projects with regards to plan changes, as well as the related business processes? Was this evaluated with regards to costs?</td>
<td></td>
</tr>
<tr>
<td>Scope Planning, Definition, Verification, Change Control</td>
<td>42. How much did project scope rely on business or technical strategy?</td>
<td></td>
</tr>
<tr>
<td>Scope Planning, Definition, Verification, Change Control</td>
<td>46. How did the change in scope affect project plan and associated alignment to strategies and business processes, as well as to other projects?</td>
<td></td>
</tr>
<tr>
<td>Activity Definition, Sequencing, Estimating, Scheduling</td>
<td>51. How did the changes to schedule impact business and technology strategy? How did it impact other projects?</td>
<td></td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>59. Were the additional costs evaluated/justified against business/technology strategy?</td>
<td></td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>62. What are long-term costs associated to this project and are they included in the original business case? How where they estimated?</td>
<td></td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>65. What are impacts resulting from “cutting corners” on the environment and strategy?</td>
<td></td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>66. Was quality compromised in any way? How, why?</td>
<td></td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>67. What was planned with regards to quality maintenance and ongoing support after the project? What is the cost of the ongoing quality control and was it included in project costs?</td>
<td></td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>68. What is the difference between the planned and actual (post-implementation) maintenance cost?</td>
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</tr>
<tr>
<td>Staff Acquisition</td>
<td>78. How did the choice of project team impact on business and technology strategy?</td>
<td></td>
</tr>
<tr>
<td>Team Development</td>
<td>81. How much were people who have responsibility for various areas of strategy development within company participate in project activities?</td>
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</tr>
<tr>
<td>Team Development</td>
<td>82. Can you quantify any impacts that team-related issues or successes had on this project or long-term infrastructure and support?</td>
<td></td>
</tr>
<tr>
<td>Team Development</td>
<td>83. How important was the engagement? Can you quantify the impact of issues or successful engagement stories on the project and long-term costs?</td>
<td></td>
</tr>
<tr>
<td>Communications Planning, Information Distribution</td>
<td>88. How well informed were the business and technical impacted areas and how did changes in the project impact their long-term objectives?</td>
<td></td>
</tr>
<tr>
<td>Performance Reporting</td>
<td>92. What is the impact of the final outcome with regards to the original strategy pointers and how much did it remain in line with business interests and plans for the future?</td>
<td></td>
</tr>
<tr>
<td>Risk Identification, Qualification, Mitigation, Control</td>
<td>95. What did the risk management include and cover? Did the risk assessment include long-term impacts and alignment with strategy? How? How successfully?</td>
<td></td>
</tr>
<tr>
<td>Procurement, Solicitation, Source Selection, Contract Administration</td>
<td>103. What is the exit strategy process with regards to the selected vendor? What is associated risk? What is the long-term impact on IT costs?</td>
<td></td>
</tr>
</tbody>
</table>
## Interview Questions – Business User

<table>
<thead>
<tr>
<th>Sub-Area</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement, Solicitation, Source Selection, Contract Administration</td>
<td>105. How important was the procurement for this project, especially for the associated strategy and directions? Did anything change as a result of specific decisions during project with regards to strategic directions?</td>
</tr>
<tr>
<td>Business and Technical Analysis</td>
<td>106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?</td>
</tr>
<tr>
<td>Development and testing</td>
<td>107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?</td>
</tr>
<tr>
<td><strong>Alignment</strong></td>
<td></td>
</tr>
<tr>
<td>Alignment 1</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
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<tr>
<td>Alignment 2</td>
<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
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<tr>
<td>Alignment 3</td>
<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
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<tr>
<td>Alignment 4</td>
<td>4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?</td>
</tr>
<tr>
<td>Alignment 5</td>
<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
</tr>
<tr>
<td>Alignment 6</td>
<td>6. What can be done within the project planning to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Alignment 7</td>
<td>7. What can be done within the project execution to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Alignment 8</td>
<td>8. What can be done within the project communication to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Alignment 9</td>
<td>9. What can be done within the project closure to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Alignment 10</td>
<td>10. What can be done within the strategy process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Alignment 11</td>
<td>11. What can be done within the business-as-usual process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
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| **Procurement, Solicitation, Source Selection, Contract Administration** | 100. What were the main lessons learned on this project in terms of vendor management? |
| **Procurement, Solicitation, Source Selection, Contract Administration** | 101. What is the impact on long-term IT infrastructure and costs? Can you quantify any of them? |
| **Procurement, Solicitation, Source Selection, Contract Administration** | 102. What were the best and the worst experiences with regards to working with an external party? |
| **Procurement, Solicitation, Source Selection, Contract Administration** | 103. What is the exit strategy process with regards to the selected vendor? What is associated risk? What is the long-term impact on IT costs? |
| **Procurement, Solicitation, Source Selection, Contract Administration** | 104. How much of internal costs for interfaces was planned and how much of it resulted from the risk mitigation related to vendor management? |
| **Procurement, Solicitation, Source Selection, Contract Administration** | 105. How important was the procurement for this project, especially for the associated strategy and directions? Did anything change as a result of specific decisions during project with regards to strategic directions? |
| **Business and Technical Analysis** | 106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it? |

### Interview Questions – Developer / Team Members

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<td>Quality Planning, Assurance, Control</td>
<td>64. Can you give an example of “cutting corners” and give an idea of better ways to handle similar situations or predict them in advance?</td>
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<td>65. What are impacts resulting from “cutting corners” on the environment and strategy?</td>
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<td>Team Development</td>
<td>82. Can you quantify any impacts that team-related issues or successes had on this project or long-term infrastructure and support?</td>
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<td>88. How well informed were the business and technical impacted areas and how did changes in the project impact their long-term objectives?</td>
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<tr>
<td>Risk Identification, Qualification, Mitigation, Control</td>
<td>97. Can you quantify the risks that impacted design, people, budget and long-term arrangements with the IT infrastructure?</td>
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<td>106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?</td>
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<td>107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?</td>
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**Interview Questions – Impacted Party – Business**

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12. What was your role in this project?

13. What do you consider the main criteria for project success?

14. Is your definition of project success criteria identical to the organisational criteria for project success?

15. How can the level of success be evaluated and when?

16. Who should give a verdict of success to a project? Why?

17. What was the highest/lowest point of the project?

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21. During project, was there any evaluation against possible changes to the rationale or business strategy that could impact project benefits or success criteria? Was anything put in place to ensure alignment of project plan with any other projects or strategy initiatives?

22. How much was an overall organisational strategy (both business and technical) incorporated in the project planning? How?

23. Was there anything within the plan that impacted or changed the way business/IT operates?

24. How did the changes in plan impact other projects and initiatives?

25. How was the change managed, what were the impacts and how was it communicated to impacted areas? What could have been done better?

26. How much of the overall impacts and related costs were planned and executed in line with the original design/decisions?

27. How much did project scope rely on business or technical strategy?

28. Did other projects impact the scoping? Why and how?

29. Can you quantify any impacts on costs or the project in terms of changes in activities and schedule?
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<tr>
<th>Activity Definition, Sequencing, Estimating, Scheduling</th>
<th>49. What could have been done in terms of predicting the additional tasks and activities that occurred during the project? Would it in any way impact the decision to proceed or to terminate the project?</th>
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<td>Activity Definition, Sequencing, Estimating, Scheduling</td>
<td>51. How did the changes to schedule impact business and technology strategy? How did it impact other projects?</td>
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<td>Resource Planning</td>
<td>52. How much did resource planning impact on costs and the budget? Can you quantify the accuracy in the assessment of resources during planning stage, and compare it to the overall resource requirements during project implementation?</td>
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<td>55. How much did other projects get impacted by the changes in resourcing for this project?</td>
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<td>59. Were the additional costs evaluated/justified against business/technology strategy?</td>
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<td>73. Can you quantify (estimate) the monetary impact with regards to organisational planning on this project?</td>
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<td>74. How much did this project impact the overall structure of the organisation, individuals and teams? Why?</td>
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<td>78. How did the choice of project team impact on business and technology strategy?</td>
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<td>79. Were there any positive or negative impacts on long-term costs with regards to staff, resulting from this project?</td>
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<td>80. Can you quantify the impact of both successful and less successful staff decisions?</td>
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<td>83. How important was the engagement? Can you quantify the impact of issues or successful engagement stories on the project and long-term costs?</td>
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<td>86. Can you quantify the impact the communication practices on this project had on project success and the overall costs and deliverables?</td>
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<td>87. How much were other project/initiatives teams involved in this project and how much did the communication (or the lack of) impact on their activities?</td>
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<td>90. Can you quantify the impact of unplanned activities on the performance of the project?</td>
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<td>91. What were the main &quot;unplanned&quot; and &quot;unpredicted&quot; areas that impacted this project? Can their impacts be quantified?</td>
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<td>92. What is the impact of the final outcome with regards to the original strategy pointers and how much did it remain in line with business interests and plans for the future?</td>
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<td>95. What did the risk management include and cover? Did the risk assessment include long-term impacts and alignment with strategy? How? How successfully?</td>
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<td>28. What are the factors that were crucial to the success of the project? Were they considered as part of planning?</td>
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<td>32. How often was the plan evaluated with regards to strategy and other projects within the organisational environment?</td>
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<td>33. Was there anything within the plan that impacted or changed the way business/IT operates?</td>
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<td>44. Did other projects impact the scopeing? Why and how?</td>
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<td>48. Can you quantify any impacts on costs or the project in terms of changes in activities and schedule?</td>
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<td>49. What could have been done in terms of predicting the additional tasks and activities that occurred during the project? Would it in any way impact the decision to proceed or to terminate the project?</td>
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<td>50. How did the new tasks come about? What was the discovery process? Were they predicted during planning and what could have been done with regards to them being discovered earlier?</td>
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<td>52. How much did resource planning impact on costs and the budget? Can you quantify the accuracy in the assessment of resources during planning stage, and compare it to the overall resource requirements during project implementation?</td>
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<td>53. What could have been done differently and when, to assist with more accurate resource planning?</td>
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<td>77. What were the successful and less successful examples of staff acquisition with this project?</td>
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<td>79. Were there any positive or negative impacts on long-term costs with regards to staff, resulting from this project?</td>
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<td>84. Describe the approach to communication with this project? How was the information distributed?</td>
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<td>85. What are the main lessons learned in terms of communication? What could have been done better and how and when in terms of more effective communication with this project?</td>
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<td>86. Can you quantify the impact the communication practices on this project had on project success and the overall costs and deliverables?</td>
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<td>87. How much were other project/initiatives teams involved in this project and how much did the communication (or the lack of) impact on their activities?</td>
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<td>91. What were the main “unplanned” and “unpredicted” areas that impacted this project? Can their impacts be quantified?</td>
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<td>93. What is the final assessment with regards to success against objectives? Is the success assessment applicable to all project deliverables? Why?</td>
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<td>98. What would you do differently if you had another go with this project? Why? How would you decrease impact of the risks you mentioned?</td>
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<td>99. This project involved outsourcing of the main part of development to an external party. Can you describe process for vendor assessment and planning?</td>
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<td>103. What is the exit strategy process with regards to the selected vendor? What is associated risk? What is the long-term impact on IT costs?</td>
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<td>104. How much of internal costs for interfaces was planned and how much of it resulted from the risk mitigation related to vendor management?</td>
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<td>105. How important was the procurement for this project, especially for the associated strategy and directions? Did anything change as a result of specific decisions during project with regards to strategic directions?</td>
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<td>106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?</td>
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Development and testing

107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?

## Interview Questions – Senior Business Analyst and BA Manager

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<td>12. What was your role in this project?</td>
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<td>20. If you could go back in time, what would you like to see differently done or addressed with this project and at which stages and how?</td>
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<td>6. What can be done within the project planning to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
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<tr>
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<td>7. What can be done within the project execution to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
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<td>9. What can be done within the project closure to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
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<td>Alignment</td>
<td>11. What can be done within the business-as-usual process to ensure alignment between various projects and initiatives, as well as long-term impacts and strategic objectives?</td>
</tr>
<tr>
<td>Project Success</td>
<td>12. What was your role in this project?</td>
</tr>
<tr>
<td>Project Success</td>
<td>21. During project, was there any evaluation against possible changes to the rationale or business strategy that could impact project benefits or success criteria? Was anything put in place to ensure alignment of project plan with any other projects or strategy initiatives?</td>
</tr>
<tr>
<td>Section</td>
<td>Question</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Initiation</td>
<td>22. Why did this project start? Who initiated it and why? How was the solution/initiation decision made?</td>
</tr>
<tr>
<td>Initiation</td>
<td>23. What was the rationale for this particular approach for project initiation?</td>
</tr>
<tr>
<td>Initiation</td>
<td>24. What was the link to business strategy, if any?</td>
</tr>
<tr>
<td>Project Plan Development</td>
<td>27. How much was an overall organisational strategy (both business and technical) incorporated in the project planning? How?</td>
</tr>
<tr>
<td>Project Plan Development</td>
<td>32. How often was the plan evaluated with regards to strategy and other projects within the organisational environment?</td>
</tr>
<tr>
<td>Project Plan Development</td>
<td>33. Was there anything within the plan that impacted or changed the way business/IT operates?</td>
</tr>
<tr>
<td>Project Plan Execution</td>
<td>34. What could have been done better in planning stage to ensure better alignment with strategy?</td>
</tr>
<tr>
<td>Overall Change Control</td>
<td>37. How was the change managed, what were the impacts and how was it communicated to impacted areas? What could have been done better?</td>
</tr>
<tr>
<td>Overall Change Control</td>
<td>38. Was there an alignment between this and other projects with regards to plan changes, as well as the related business processes? Was this evaluated with regards to costs?</td>
</tr>
<tr>
<td>Overall Change Control</td>
<td>39. How much of the overall impacts and related costs were planned and executed in line with the original design/decisions?</td>
</tr>
<tr>
<td>Scope Planning, Definition, Verification, Change Control</td>
<td>42. How much did project scope rely on business or technical strategy?</td>
</tr>
<tr>
<td>Scope Planning, Definition, Verification, Change Control</td>
<td>44. Did other projects impact the scoping? Why and how?</td>
</tr>
<tr>
<td>Scope Planning, Definition, Verification, Change Control</td>
<td>46. How did the change in scope affect project plan and associated alignment to strategies and business processes, as well as to other projects?</td>
</tr>
<tr>
<td>Activity Definition, Sequencing, Estimating, Scheduling</td>
<td>51. How did the changes to schedule impact business and technology strategy? How did it impact other projects?</td>
</tr>
<tr>
<td>Resource Planning</td>
<td>52. How much did resource planning impact on costs and the budget? Can you quantify the accuracy in the assessment of resources during planning stage, and compare it to the overall resource requirements during project implementation?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>55. How much did other projects get impacted by the changes in resourcing for this project?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>57. What was the original contingency and what was it based on?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>58. What could have been done differently?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>59. Were the additional costs evaluated/justified against business/technology strategy?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>60. What are the areas within the infrastructure that needed changes after this project? Are there any new ongoing maintenance/infrastructure costs related to those changes? Were they planned originally and presented in the plan?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>61. How did the approval process handle additional costs?</td>
</tr>
<tr>
<td>Cost Estimating, Budgeting, Control</td>
<td>62. What are long-term costs associated to this project and are they included in the original business case? How where they estimated?</td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>64. Can you give an example of “cutting corners” and give an idea of better ways to handle similar situations or predict them in advance?</td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>65. What are impacts resulting from “cutting corners” on the environment and strategy?</td>
</tr>
<tr>
<td>Performance Reporting</td>
<td>90. Can you quantify the impact of unplanned activities on the performance of the project?</td>
</tr>
<tr>
<td>Performance Reporting</td>
<td>91. What were the main “unplanned” and “unpredicted” areas that impacted this project? Can their impacts be quantified?</td>
</tr>
<tr>
<td>Business and Technical Analysis</td>
<td>106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?</td>
</tr>
<tr>
<td>Development and testing</td>
<td>107. What can you say about your experiences relating to the development, testing and</td>
</tr>
</tbody>
</table>
## Interview Questions – Test Analyst

<table>
<thead>
<tr>
<th>Sub-Area</th>
<th>Question</th>
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</thead>
<tbody>
<tr>
<td>Alignment</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
</tr>
<tr>
<td></td>
<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
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<tr>
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<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
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<td>4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?</td>
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<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
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<td>Project Success</td>
<td>12. What was your role in this project?</td>
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<td></td>
<td>13. What do you consider the main criteria for project success?</td>
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<td></td>
<td>14. Is your definition of project success criteria identical to the organisational criteria for project success?</td>
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<td></td>
<td>15. How can the level of success be evaluated and when?</td>
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<td></td>
<td>16. Who should give a verdict of success to a project? Why?</td>
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<tr>
<td></td>
<td>17. What was the highest/lowest point of the project?</td>
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<tr>
<td></td>
<td>18. What has changed as a result of this project? (business/IT infrastructure/customers/people)</td>
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<td>19. Does this project represent the way the projects are implemented in this organisation? Why?</td>
</tr>
<tr>
<td>Business and</td>
<td>20. If you could go back in time, what would you like to see differently done or addressed with this project and at which stages and how?</td>
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<td>106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?</td>
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<td>Development and testing</td>
<td>107. What can you say about your experiences relating to the development, testing and acceptance phases during this project, especially in terms of unplanned impacts?</td>
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## Interview Questions – Test Manager

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<td>Quality Planning,</td>
<td>65. What are impacts resulting from “cutting corners” on the environment and strategy?</td>
</tr>
<tr>
<td>Assurance, Control</td>
<td>66. Was quality compromised in any way? How, why?</td>
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</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>67. What was planned with regards to quality maintenance and ongoing support after the project? What is the cost of the ongoing quality control and was it included in project costs?</td>
</tr>
<tr>
<td>Quality Planning, Assurance, Control</td>
<td>68. What is the difference between the planned and actual (post-implementation) maintenance cost?</td>
</tr>
<tr>
<td>Staff Acquisition</td>
<td>78. How did the choice of project team impact on business and technology strategy?</td>
</tr>
<tr>
<td>Team Development</td>
<td>81. How much were people who have responsibility for various areas of strategy development within company participate in project activities?</td>
</tr>
<tr>
<td>Communications Planning, Information Distribution</td>
<td>88. How well informed were the business and technical impacted areas and how did changes in the project impact their long-term objectives?</td>
</tr>
<tr>
<td>Performance Reporting</td>
<td>92. What is the impact of the final outcome with regards to the original strategy pointers and how much did it remain in line with business interests and plans for the future?</td>
</tr>
<tr>
<td>Risk Identification, Qualification, Mitigation, Control</td>
<td>95. What did the risk management include and cover? Did the risk assessment include long-term impacts and alignment with strategy? How? How successfully?</td>
</tr>
<tr>
<td>Procurement, Solicitation, Source Selection, Contract Administration</td>
<td>103. What is the exit strategy process with regards to the selected vendor? What is associated risk? What is the long-term impact on IT costs?</td>
</tr>
<tr>
<td>Procurement, Solicitation, Source Selection, Contract Administration</td>
<td>105. How important was the procurement for this project, especially for the associated strategy and directions? Did anything change as a result of specific decisions during project with regards to strategic directions?</td>
</tr>
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<td>106. How was the business and technical analysis conducted? Was it adequate? What could have been done to improve it?</td>
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</table>
# Appendix 3 – Interview Responses Spreadsheet Sample

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<tr>
<th>Interviewee</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BAM-BA Manager</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
</tr>
<tr>
<td>BAM(1)</td>
<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
</tr>
<tr>
<td>BM-Business Manager</td>
<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
</tr>
<tr>
<td>BM(1)</td>
<td>4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?</td>
</tr>
<tr>
<td>BM(1)</td>
<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
</tr>
<tr>
<td>BM(1)</td>
<td>Generally, projects are created as a result of strategy decisions. However, there is little or no coordination across all projects in terms of priority and relevance to strategy, once projects are in progress. Project process is there to ensure delivery of projects.</td>
</tr>
<tr>
<td>BM(1)</td>
<td>In theory, projects should be in line with strategy, but that is only in theory. Often strategy would change, but we would continue with projects anyway.</td>
</tr>
<tr>
<td>BM(1)</td>
<td>Project process is directed at delivering projects - there is no formal alignment with the strategy.</td>
</tr>
<tr>
<td>BM(1)</td>
<td>Project process is directed at delivering projects - there is no formal alignment with the strategy.</td>
</tr>
<tr>
<td>BU-Business user</td>
<td>Project process is directed at delivering projects - there is no formal alignment with the strategy.</td>
</tr>
<tr>
<td>BU(1)</td>
<td>Project manager and IT managers</td>
</tr>
<tr>
<td>BU(2)</td>
<td>Project manager and IT managers</td>
</tr>
<tr>
<td>BU(1)</td>
<td>Project manager and IT managers</td>
</tr>
<tr>
<td>BU(2)</td>
<td>Project manager and IT managers</td>
</tr>
<tr>
<td>BU(1)</td>
<td>Effective communication and formal process</td>
</tr>
<tr>
<td>BU(2)</td>
<td>Effective communication and formal process</td>
</tr>
<tr>
<td>BU(1)</td>
<td>It should be a formal process, linked with project management practices. Responsibility: project manager</td>
</tr>
<tr>
<td>BU(2)</td>
<td>It has to be agreed by both the business and technology, in order for this to work. Responsibility: either project manager or someone in technology</td>
</tr>
<tr>
<td>BU(1)</td>
<td>It is hard to say - perhaps ensuring that every step is checked against long-term impacts. Responsibility: project manager and IT</td>
</tr>
<tr>
<td>BU(2)</td>
<td>I am not sure how the process can be improved, but it should be responsibility of project manager and technology</td>
</tr>
<tr>
<td>Interviewee</td>
<td>Questions</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
<tr>
<td><strong>BU</strong> - Business user</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
</tr>
<tr>
<td><strong>CL</strong> - Corporate Lawyer</td>
<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
</tr>
<tr>
<td><strong>DM</strong> - Development Manager</td>
<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
</tr>
<tr>
<td><strong>DPM</strong> - Deputy Project Manager</td>
<td>4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?</td>
</tr>
<tr>
<td><strong>ITM</strong> - IT Manager</td>
<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>BU(3)</strong></td>
<td>Yes, I could give you a few examples of those impacts - I can also see strong benefits if we are to reduce those impacts. However, I do not see this organisation considering this very seriously, since our focus is on operational reliability and effectiveness of business and technical processes. Project process is directed at delivering projects - there is no formal alignment with the strategy. Project manager and IT managers</td>
</tr>
<tr>
<td><strong>CL(1)</strong></td>
<td>I do see impacts of projects being detrimental to the organisation in terms of costs and delays on future initiatives. I would say that the organisation should be concerned about it and invest some time into thinking about reducing or more effectively managing these impacts. From my perspective, I cannot see the current project process having anything to do with strategy - each project is managed individually and there isn’t much overall perspective with regards to strategic direction. Project owner and project manager</td>
</tr>
<tr>
<td><strong>DM(1)</strong></td>
<td>It is serious. With every project we implement, our operational costs go up, due to some unplanned impact caused by poor planning or shortcuts applied on projects to meet the deadline. Project process is there to deliver projects, it has nothing to do with the alignment with strategy. Project owner and project manager</td>
</tr>
<tr>
<td><strong>DPM(1)</strong></td>
<td>Not concerned. My focus is on project delivery and our team works to project requirements and timeframes outlined by the business. Project process is an effective tool to deliver projects - it is up to project/business ownership that alignment should be addressed - not the project process. Senior management and business owners. PMs are happy to follow any outlined process and communicate, but should not be solely responsible for alignment with the strategy. Effective communication and formal process</td>
</tr>
<tr>
<td><strong>ITM(1)</strong></td>
<td>Very serious. I am very concerned, since my team directly deals with the impacts created by projects. Project process is exactly that: process to manage projects - nothing to ensure strategy alignment. Project owner and project manager</td>
</tr>
<tr>
<td><strong>ITM(2)</strong></td>
<td>Yes, serious. In my role, I am highly interested in reducing the impacts created by projects, especially in the area of operational costs. Project process is there to deliver projects, it has nothing to do with the alignment with strategy. Project owner and project manager</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Questions</th>
<th>PM(1)</th>
<th>SBA(1)</th>
<th>SBM(1)</th>
<th>SBM(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-Project Manager</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
<td>Not concerned. All projects have the approval of the Group Executive who responsibility it is to define and disseminate the strategy</td>
<td>I see project resulting from strategy. Therefore, the results from the projects should be feeding back to strategy. It is relevant, but I am not that concerned.</td>
<td>Yes, I do see the relevance and importance in managing project impacts. But, I am more focused on delivery on the business strategy than on those impacts.</td>
<td>Yes, I understand the idea, and would love to see reduction in the long-term operational costs that result from project decisions. However, our focus is on delivery, especially in current highly competitive climate.</td>
</tr>
<tr>
<td></td>
<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
<td>The new project process is much more thorough and consistent, with frequent checkpoints by various committees. The process applicable during the initiation of the Project was much more loose and relaxed, leaving it up to PMs to ensure visibility with the business.</td>
<td>Project process as I see it in this organisation does not ensure any type of alignment. True, the projects are in line with strategy when they are created, but during project execution they are mostly oriented towards technical elements of the project, without mechanism for continuous alignment.</td>
<td>It is all in communication. Having a process does not mean it is always followed. The level of communication between technology, business and project managers is the key to alignment success.</td>
<td>Various committees related to project process do cover some level of alignment, however this is not formal.</td>
</tr>
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<td></td>
<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
<td>Senior management which also acts as controlling body over projects and business strategy.</td>
<td>It should be joined responsibility. PMs are far too busy to take this responsibility on. There is a difference between strategy, project and operational objectives. Once project is started, the primary focus is on project deliverables. Changes to scope are difficult as it is, additional changes in strategy would not help the project delivery.</td>
<td>Project manager and IT managers</td>
<td>Project manager</td>
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<td>4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?</td>
<td>Effective communication and formal process</td>
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<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
<td>Senior management should have the responsibility to ensure alignment of project goals with the strategy. Only that way we would be able to manage any potential impacts.</td>
<td>Communication is essential, but also some formal process would help to ensure the decisions are made according to priority. I think this is not working too bad, knowing there is no formal process to ensure alignment.</td>
<td>This should really be regulated within the project process. Technology and project managers should develop procedures that would ensure all points are covered when making technical decisions.</td>
<td>It's hard to say which part of the process could be improved to ensure we catch the issues early on. We in business give full confidence to the technology and the project manager, so we expect them to ensure any issues are addressed and long-term impacts minimized. I know this is not always realistic, but I see that the only way to manage impact is if you are on terrain - which is the case for project managers and technology.</td>
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<td>Interviewee</td>
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<td>SITM-Senior IT manager</td>
<td>1. How serious is the long-term impact of projects on strategy? How concerned are you about it?</td>
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<td>2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?</td>
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<td>3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?</td>
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<td>5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this?</td>
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<td>SITM(1)</td>
<td>Quite serious. This subject is highly relevant to our ongoing struggle to keep the operational costs down.</td>
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<td></td>
<td>No, there is no provision for any strategy alignment check with the project process</td>
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<td>It should be senior business mgmt. responsibility. Strategy goals should not be constantly changed – especially when looking into long-term projects that require time and commitment. Strategy should be long-term, and cover approved project interdependencies and commitment to implementation.</td>
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<td>This should be joint responsibility between business, technology and project managers</td>
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<td>SITM(2)</td>
<td>Yes, this is one of the favourite subjects for the IT teams and management - we often have issues with project decisions, since we are the ones picking up what's left of the project decisions.</td>
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<td>No, there is no provision for any strategy alignment check with the project process</td>
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<td>Project owner and project manager</td>
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<td>It is almost impossible to create a process that would ensure this. We can only hope for more effective communication between the project office, business and technology. Perhaps ensuring that any project decisions that affect the infrastructure are considered with technology representative, rather than taken on by project managers alone, as it might be the case sometimes.</td>
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<td>TA-Test Analyst TA(1)</td>
<td>Not concerned, really. Our focus is on testing. Projects are supposed to be coming from strategy, and project process is there to ensure delivery of projects, not necessarily to check on strategic alignment</td>
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<td>Project owner and project manager</td>
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<td>I have no suggestions on how to improve the process, but I believe it should be responsibility of project owners and their effective communication</td>
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<td>TA-Test Analyst TA(2)</td>
<td>I am aware of the issue, however my role is not impacted by this problem. I do know that this impacts development and support areas, though. No, I don't think that project process is designed to do that.</td>
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<td>Project owner and project manager</td>
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<td>Technology should suggest changes to the project process, where some checkpoints would be included, especially when important technical decisions are made. Although, I can think about the times where some decisions were not considered big, but had impact. Sorry, I do not have a suggestion.</td>
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<td>TM-Team member (contractor) TM(1)</td>
<td>I work as a contractor, so this subject is not of a high concern for me. However, I am aware of the issues in the operational areas, as well as increased costs after projects are implemented too quickly</td>
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<td>No, there is no provision for any strategy alignment check with the project process</td>
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<td>The key is in communication, but responsibility should be with the project owners and project managers, as they are fully involved in implementation of strategy decisions through projects</td>
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| TM-Team member      | 1. How serious is the long-term impact of projects on strategy? How concerned are you about it?  
2. In your opinion, how is the current project process effective with regards to ensuring constant alignment between strategy and project goals?  
3. Who should be responsible for ensuring that project goals remain in line with strategy objectives and that changes in project deliverables do not bring negative impacts on strategy and other initiatives?  
4. How can this organisation ensure that every project that is approved and running in isolation is aligned to all concurrent initiatives and the overall strategy?  
5. How can project process be improved to ensure long-term impacts on infrastructure and strategy objectives are foreseen and managed? Who should be responsible for this? |
| TM(2)               | I do not deal much with the strategy, but I do believe that the long-term project impacts are serious and should be reduced. No, there is no provision for any strategy alignment check with the project process. Project owner and project manager. Effective communication and formal process. Any technical decision should be checked across projects - wherever this is possible. Not sure how to incorporate this into project. Technology and project office should work together to finalise any agreed approach. |
| TM(3)               | I have no insight into strategy. No, there is no provision for any strategy alignment check with the project process. Project owner and project manager. Effective communication and formal process. I do not have suggestion on how to improve process, but I would expect this to be responsibly of the senior management and the project office. |
| TM(4)               | Yes, there are impacts that we see every day, which can be quite annoying - especially while on support. As for the strategy, can't really comment. No, there is no provision for any strategy alignment check with the project process. Project owner and project manager. Effective communication and formal process. Senior management should have full picture of what they are trying to achieve for a given period. They should work with the project managers to ensure there is no unplanned impacts and that all projects are in line with strategy. |
| TMG-Test Manager    | I can see the importance for the strategy, however I have no direct involvement in the org. strategy to comment in more detail. By default, projects are in line with strategy. The project process concentrates on project implementation, not on strategic matters. Project owner and project manager. Effective communication and formal process. There should be strict process to deal with deviations from project plans, especially when new projects emerge and dependencies increase. In my opinion, senior business management should ensure their priorities are in line and effectively covered by projects. |
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