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**Management Development Program,  
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***Knowledge Management for SMEs with Particular  
Emphasis on the Tourism Industry***

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Professor John Debenham, who provided the initial encouragement to research the subject.

## **Certificate**

I certify that this thesis has not already been submitted for any degree and is not being submitted as part of candidature for any other degree.

I also certify that the thesis has been written by me and that any help that I have received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

Michael Mannington

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## **Abstract**

Knowledge Management has captured the attention of management and IT vendors are hastily bringing products to market. The interest in Knowledge Management is understandable given the moves towards knowledge based economies and workplaces.

Large organisations have begun to understand the value of the knowledge held within their organisation. Nowadays, the value of an organisation may be based on its intellectual capital and this is demonstrated by organisations being sold for many times its worth in terms of hard assets. The concept of being able to store and use the 'knowledge' that is generated inside an organisation has obvious appeal. However, the management of this 'knowledge' and the ability to use it for an advantage requires careful planning and an understanding of knowledge inside the organisation and its workers. This process requires a mix of organisational, cultural and technology understanding.

Current research and vendor interest is focussing on large organisations. However, Small to Medium size Enterprises (SMEs) also have an explicit need to manage their intellectual capital. Research interest in large organisations is strong, but SMEs cannot always use the findings that are targeted to large organisations and will probably be unable to afford the specific Knowledge Management tools offered by vendors.

Nevertheless, SMEs can use the knowledge in their organisations to gain an advantage. In particular, the tourism industry has a significant knowledge component and Knowledge Management could provide substantial benefits. Many Knowledge Management principles apply to organisations irrespective of their size. How these can be implemented within a SME is the subject of this thesis.



## 1 Introduction

The purpose of this thesis was to investigate the opportunities that Knowledge Management may provide Small to Medium size Enterprises (SMEs). The study paid particular attention to the tourism industry where ninety percent of organisations fall into the SME category. Tourism is one of Australia's major export industries and the forthcoming Olympic Games will provide significant benefits to the Australian economy. Tourism is a knowledge intensive industry and Knowledge Management may have significant benefits.

This thesis was preceded by a Literature Review that identified a gap in research in Knowledge Management for SMEs and the tourism industry. The Literature Review therefore investigated how the existing literature could be adapted for use by SMEs.

In investigating the opportunities for using Knowledge Management by SMEs, two themes emerge:

1. SMEs have a substantial need to use Knowledge Management and the tourism industry could benefit more than many other industries.
2. Many of the issues surrounding Knowledge Management for large organisations may also apply to SMEs, with the obvious tolerance for scale.

How the differences apply is discussed and compared. A framework that can be used by SMEs is presented which incorporates the current thinking on

Knowledge Management implementation but adapted to suit the capability of a SME to address the important cultural issues.

## **1.1 Definition of Knowledge Management**

To attempt to define Knowledge Management, knowledge in a commercial perspective, should first be defined.

### **1.1.1 Knowledge**

Commercial knowledge is now linked with the ability of an organisation to gain or possess a commercial advantage (Demarest, M., 1997). Knowledge can encompass a number of functions within the organisation that together contribute to knowledge. The functions also include support and structural functions such as culture, language and rules. (Nonaka, Takeuchi 1995). Davenport and Prusak 1998 describe knowledge as mix of experiences, values and contextual information that provides a framework for incorporating new experiences. This points to one of the important concepts, that knowledge can be expanded by the addition of new experiences. It also indicates that knowledge is not a single entity, but rather a collection of structured organisational elements and unstructured components.

A starting point to examine knowledge within an organisation could be the organisation's data. This data would represent numbers, words or figures that is organised in such a manner to produce useful results such as statistics. (Brooking, 1999). Data can be manipulated into information that can be defined as data presented in context. Knowledge occurs when this data and information provides understanding. It does not follow that data and information can be easily transformed into knowledge. Our understanding of knowledge is that it usually resides in a person's head (Hendriks and Vriens. 1998). However for knowledge to provide the competitive advantage as described by Demarest 1998, knowledge must also be part of the organisation.

There is no doubt that Knowledge Management is capturing the current imagination of business and IT. The origins of Knowledge Management as a management discipline are not easy to trace. This is partly due to the flexible boundaries that could be used to define the scope of Knowledge Management. Several large IT vendors see Knowledge Management as the next domain for selling management tools and could be seen as taking advantage of this flexibility by creating their own definitions. Others see Knowledge Management as no more than sophisticated document management. Some vendors are attaching the Knowledge Management label to existing tools to match the current interest being shown by organisations.

The current interest in Knowledge Management could be demonstrated by most major consulting firms having a Knowledge Management department or at least advertises the capability of consulting in this area. Major software vendors, Microsoft and IBM – Lotus both propose major Knowledge Management initiatives using their Knowledge Management tools and could be seen as taking advantage of the interest in Knowledge Management by possible purchasers who do not have a full understanding of the subject. It is to be demonstrated in this paper that Knowledge Management is not achieved by installing software and this will be somewhat in contradiction to some vendor's claims.

Knowledge Management is placed between a number of management and IT disciplines although it may contain parts of these disciplines. Some of these other disciplines such as Artificial Intelligence or Organisational Learning, pre-date Knowledge Management. This paper will highlight research that concludes that other disciplines such as 'learning' are core to Knowledge Management. From management come disciplines that include learning organisations, and knowledge workers. From IT comes Artificial Intelligence, Knowledge Acquisition, Expert Systems, data mining and workflow. None of these constitute Knowledge Management in a single entity.

### 1.1.2 Knowledge Management

In their widely quoted work, “The Knowledge Creating Company” (1995) . Nonaka and Takeuchi suggest that “*Making personal knowledge available to others is the central activity*”. The location of knowledge is proposed by Larry Prusack as “*In organisations, it becomes embedded not only in documents but also in processes, practices and norms*”

Knowledge Management can be described as having most of these components:

- **The identification of the organisation’s knowledge**

This will require an understanding of what knowledge is. There may be plenty of data and information that is easily identified. The data and information may be moving about the organisation. It is the data that will make a difference that will be information. (Davenport and Prusack, 1998 p3). People provide an organisation with the best methods of identifying knowledge that may be buried within an organisation (Davenport 1997). Knowledge can be ‘Explicit’, that is usually residing in reports etc, or ‘Tacit’ which is much harder to identify (Nonaka 1987) . Knowledge conversion can take place where explicit can be converted to tacit and from tacit to explicit. This is described by Nonaka and Takeuchi as ‘externalisation’ and ‘internalisation’ respectively.

- **The ability to capture and make this knowledge available**

Having identified what the organisation’s knowledge is and where it resides, it will be necessary to collect this knowledge. Explicit knowledge may be simple to capture as it may already be part of the organisations formal reporting process. Tacit knowledge may be much harder to capture and could be described as “know how” (Nonaka, Takeuchi 1995).

- **A system to control and distribute this knowledge**

For users within the organisation to be able to work with this knowledge, some form of tool or tools will be necessary. The functionality of these tools may depend on:

- Volume
- Structure (What form is the knowledge in e.g. paper, drawings, computer documents etc)
- Security Who can access or modify this knowledge
- Who can contribute knowledge

- **The capacity for people to add and enrich this knowledge**

The process of sharing knowledge and in the process creating tacit knowledge is call Socialisation (Nonaka and Takeuchi, 1995 p62). The process might be through “brainstorming” or workgroups. Knowledge can be transferred by a number of means, formally or informally such as on the job training. (Marshall, Prusack et al, 1996). This may be easier for SMEs to achieve who may have more flexibility than larger organisational structures.

- **The possibility of the organisation's experiences to be added to the stored knowledge**

Knowledge can develop to become more valuable. When experiences are added to existing knowledge, the knowledge itself becomes ‘expert’ (Davenport and Prusack 1998, p 7)

- **Knowledge to be used to meet organisations objectives.**

For a Knowledge Management system to be successful, it must meet a set of agreed business objectives. Setting objectives can only be done with an understanding of what a Knowledge Management system could achieve.

The value of knowledge can be recognised as a key resource in an organisation (Moody and Walsh, 1999)

These components cannot be achieved without the organisation being able to:

- **Understand the value of its intellectual capital**

This value can be expressed using a number of measures. Some organisations will measure quality or best practice performance.. Intellectual capital value is best applied to the organisation's core competencies, (Roos and Roos, 1997 p414).

- **Be a learning organisation**

David Garvin defines this as "A learning organisation is an organisation skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights". With this definition, Garvin implies that learning cannot take place without new ideas coming forward. (Garvin, 1998)

- **Have a sharing culture**

Without sharing there can be no Socialisation (Nonaka and Takeuchi, 1995 p62). This would prevent the conversion of knowledge from explicit to tacit and vice versa. Sharing knowledge is the basis for enhancing the value of the knowledge.

- **Have an organisational culture that encourages sharing and a reward structure which supports sharing**

Some organisations, legal firms for example, have the tradition of individuals competing with each other in terms of 'experience or knowledge'. This will mean a culture shift to rewards that support a different culture. Research organisations may have sharing as part of its culture.

- **Have senior level support**

Knowledge Management implementation will require some culture changes and this is best achieved by top level support.

- **Be able to demonstrate success and sustain the required culture.**

Culture changes must also have a strategy of sustaining the change for without this, old habits will resurface. This can be achieved by being able to demonstrate Knowledge Management as a success and encourage other parts of the organisation.

- **Use the appropriate Knowledge Management tools**

The selection of the tools to be used must be appropriate to support the other parts of the strategy. This will be dependent on the individual system. The system must have the capability to make users feel they want to contribute. (Boettger, 1999)

Knowledge Management in a simple form, could be seen as understanding the knowledge of an organisation and the ability to allow others to improve their own work by learning from this knowledge. This is an oversimplified description that any organisation can conceptualise and understand how it can lead to competitive advantage or substantial process improvement. However, this concept is not restricted to the large organisations that are currently leading the Knowledge Management uptake. The use and retention of knowledge, i.e. intellectual capital, apply to organisations of all sizes. The opportunities to use experiences as knowledge is as much an issue with SMEs as large organisations. Indeed as SMEs are also pushed to lower costs, the ability to retain knowledge becomes increasingly difficult if workers have less and less time to devote to non-core activities such as training. This paper will review literature that will assist the SME and tourism organisations to gain an understanding of the Knowledge Management possibilities for their organisations.



## **1.2 Definition of a Small to Medium size Enterprise**

The Department of Trade and Industry describe a SME as:

“A business enterprise with less than 500 employees” (Year Book Australia, 1997)

Definitions of SMEs / Tourism are: (ABS definitions)

- Size Small = less than 20 or in manufacturing less than 100
- Medium 20-500 employees
- ABS estimates 90% of business in Tourism are SMEs

Some characteristics of a SME as reported by The Department of Communications, Information Technology and the Arts (DICTA). (SMEs in Australia's IT&T, 1999) are:

- SMEs have a low proportion of staff in relation to its owners
- More attention is given to short term needs rather than long term organisational development.
- The SME is often pragmatic, results orientated, flexible and innovative.

Financing for SMEs has some unique features which are summarised in the Report by Marsden Jacob Associates for the National Investment Council, 1995:

- Small and medium sized enterprises (SMEs) generate around 40 percent of Australia's private sector output and account for about half of private employment. In recent years, they have contributed to more

than half of Australia's employment growth. Furthermore, the SME sector is a seed bed for innovation and the development of niche markets based on service and value.

- SMEs have more difficulty than their larger counterparts in obtaining finance, either debt or equity capital. Difficulties in obtaining capital are particularly apparent for businesses with high growth potential.
- Only around 10 percent of SMEs aspire to significant growth and only about 30 percent of these are willing to take external equity.

The Australian Governments (SMEs in Australia, 1999) view of SMEs is:

- An important sector for creating jobs
- Potentially a significant enabler to other industry sectors
- Differences in scale make SMEs 'hard to see'
- Many SMEs are not interested in talking to government

The number of SMEs in Australia is increased by 6.5% between 1995 and 1997 from 794,700 to 846,300 (Australian Bureau of Statistics Characteristics of Small Business, 1997)

### **1.3 Tourism in Australia**

Tourism is Australia's largest export (O'Dea 1997). Tourism comprises of some large players and a majority of SMEs. Large players include Australian airlines and major hotels, but the majority is small and regional operators and other tourism related operations.

Tourism provides 694,000 jobs directly and another 334,000 indirectly or 12.4% of total employment. (Office of National Tourism Fact Sheet, various).

In 1988, tourism generated export earnings of \$16.3 billion. This represents 14.2% of all Australian exports and 62.5% of all service industry exports. (ONT). Visitors to Australia is expected to reach 5.3 million in 2002 (Tourism Forecasting Council, June 1998)

Employees in tourism are heavily orientated towards salespersons and service workers. These groups have been part of a substantial growth in the increase of service workers throughout the Western economies during the last decade. (O'Dea, 1997)

Tourism-related industries include:

- Transport
- Accommodation
- Theme parks and attractions
- Entertainment and arts venues
- Museums and historical sites
- Cafes and restaurants

- Travel agents
- Retailers
- Duty free retailers

(Australian Service Sector Review, 1998)

#### **1.4 Hypothesis**

This thesis investigates the following thesis:

“Up to now, Knowledge Management has been seen as a potential management tool for large organisations. Small to Medium size Enterprises (SMEs), however, face interesting challenges in managing their knowledge but can also benefit by implementing Knowledge Management.”

### **1.5 Problem Statement**

The purpose of this research is to identify research on how SMEs can implement and use Knowledge Management and what problems may be associated with this:

- Knowledge Management is difficult to implement
- Cost for SMEs may be excessive
- No suitable tools
- Culture issues, can SMEs devote time and energy to this?
- Intellectual Capital is undervalued until it is lost
- Intellectual Capital moves to competitors or is lost
- Repeated training costs
- Lack of competitive advantage

### **1.6 Reasons for Research**

The research is to identify how Knowledge Management can contribute to SMEs and the tourism industry. Much research is coming from the academic and management area whilst a less significant interest is being shown by IT. The boundaries for Knowledge Management are not clearly defined, although for most researchers Knowledge Management has its base in Learning Organisations. Knowledge Management as a concept has practical appeal. To establish differences between SMEs and larger organisations in the application of Knowledge Management. The research is directed to identify those areas, which are applicable to SMEs and the tourism industry, and to enable these

organisations to take this research into developing their own businesses, for example:

- How do these differences impact on Knowledge Management
- Can SMEs work with the differences
- How does any organisation adapt to be able to use Knowledge Management
- How must a SME adapt to using Knowledge Management
- What would make a successful Knowledge Management implementation for a SME
- Benefits of Knowledge Management for SMEs

### **1.7 Research Methodology**

The research has been conducted by examining the current literature relating to Knowledge Management and in particular research relating to Knowledge Management for SMEs and the tourism industry.

Further research was carried out into the size, nature and economic value of the Tourism industry and possible relationships between knowledge and possible impacts on tourism



### **1.8 Scope and Assumptions**

The scope of this thesis is limited to the implementation and use of Knowledge Management for SMEs in the Tourism Industry in Australia. The literature review has revealed that this scope has been limited by the amount of research available. The scope has therefore been extended to incorporate research into larger organisations and the current research into Knowledge Management for any size organisation. The purpose of this work is to use this scope to contrast and compare existing research with possibilities that could be adapted by SMEs.

The assumption is made that SMEs are a wide and diverse group of organisations and some generalisations have been made when discussing SMEs.

### **1.9 Limitations**

The limitations to research are based on the limited amount of research that is directed at SMEs. In general, the research is aimed at large organisations or into theories which could be used by large organisations but where SMEs would have difficulty considering.

Research into Knowledge Management will include related disciplines such as Learning Organisations and also may include ancillary disciplines such as Artificial Intelligence. The amount of research from academia is now extensive but much of this work is not readily suitable for SMEs. The past two years has seen an increase in work from the 'big five' consultants and some of this can be adapted for SMEs. It is to be expected that there will be more case studies published soon, which will add to the amount of literature on commercially orientated studies.

For the purposes of this thesis, Knowledge Management does not include document management.

## 2 Current Knowledge Management practice

World Development Report, Knowledge For Development, 1997 suggests that it will be argued that knowledge is now as important—if not more important—as a factor of production than labour and capital. The reduced cost and increasing efficiency in information processing and telecommunications are speeding the creation and dissemination of knowledge. The report continues to conclude that we may be in the midst of a major paradigm shift in the way we process and disseminate information—a shift to an integrated global market for trade, finance, and knowledge. The interaction of knowledge, information and data and the technology that glues this together is also changing many of the everyday processes such as:

- Stockbrokers without dealers
- Banks without branches
- Retail stores without outlets
- Car dealers without lots or inventories
- Real estate sales with no agents
- Newspapers and magazines without paper
- Consultants being advised by clients to produce best outcomes
- Competitors who help competitors for mutual benefits

van der Spek and Spijkervet 1998, propose that the following sequence of events are the “key stones” to Knowledge Management.

1. Identify the knowledge assets the company has
2. Where is the knowledge asset and what is its use
3. How accessible is it and what form is it in
4. Can the company add value to this knowledge
5. What would be the effect of its use, what value will it add to the organisation
6. Specify what actions are necessary to achieve better use
7. How do you plan to use the asset
8. How to monitor actions
9. Review use of K to ensure added value
10. Did it increase value
11. Did it create new opportunities

It should be noted that the current Knowledge Management practices are almost entirely orientated to large organisations. How the current practices might be applied to SMEs is in the next section

Current state of Knowledge Management within organisations is defined by Delphi Consulting ,1998 in term of where organisation's knowledge is stored.

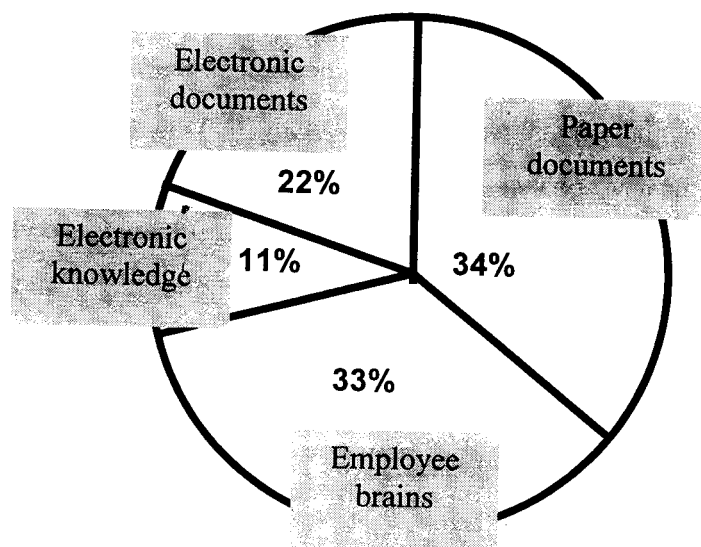


Figure 2-1 Knowledge within organisations

### 3 Knowledge Management for SMEs

The hypothesis states that SMEs can also benefit from Knowledge Management. To date, the Knowledge Management emphasis has been strongly slanted to large organisations. Why SMEs should consider Knowledge Management is discussed in this section.

#### 3.1 Why use Knowledge Management in a SME

SMEs can use Knowledge Management for tactical, or strategic purposes. The tactical purposes are reacting to internal processing needs such as the use and archiving of sales information. The use of Knowledge Management strategically could involve using sales information to create knowledge that would give the organisation a competitive advantage. For example:

<b>Tactical Use of Data</b>	<b>Strategic use of Data</b>
Customer data	Best practice
Industry data	Competition analysis  Long term market outlook
Operations reports	Discussion databases (lessons learnt)  Effective use of operations
Sales and market reports	Input to Strategic planning

The reasons for using Knowledge Management can be as varied as the makeup of SMEs themselves. Knowledge Management is an on-going process and it changes to meet current organisational needs. Drivers for Knowledge Management are not related to size, organisational structure or industry. How

and indeed if, Knowledge Management can be achieved, depends on a number of factors such as potential benefits, competitive forces, or the capacity to implement. Some of these drivers are discussed here.

### 3.1.1 Which SMEs can benefit from Knowledge Management

The structure and operations characteristics which could define whether SMEs could benefit from Knowledge Management can be:

**Where Organisational knowledge is contained in the heads of staff and:**

#### *1. Employees need to obtain information from other staff members*

Knowledge which is contained in employees' heads is 'tacit knowledge'. Knowledge can be transformed from explicit to tacit, tacit to explicit and tacit to tacit. (Nonaka and Takeuchi, 1995).

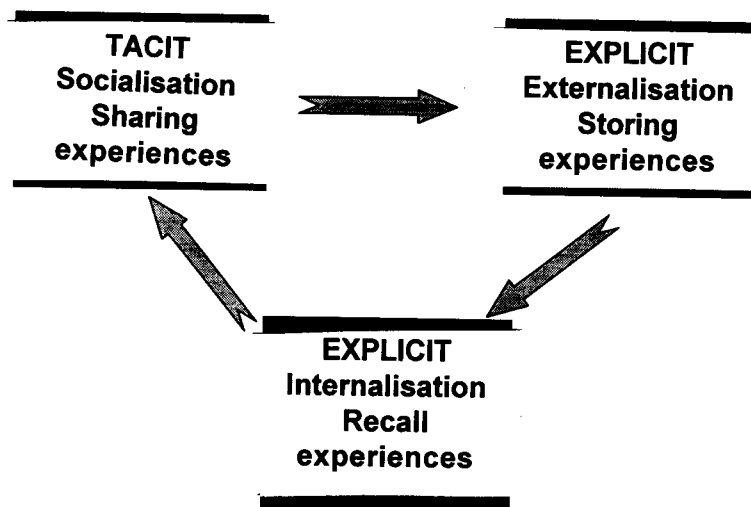


Figure 3-1 Knowledge transformations

Larger organisations may tend to concentrate on the explicit to tacit and tacit to explicit transformation as they may have

extensive amounts of explicit knowledge in the organisation. A third transformation is tacit to tacit, probably the most difficult to manage. Whilst all organisations may use tacit to tacit transformation, for SMEs this may be the most important. Without the ability to install suitable Knowledge Management tools, tacit to tacit may be the most effective means to transfer.

Tacit to tacit does allow for knowledge to be filtered and for the experience to be enhanced. Problems will occur when attempting to archive this knowledge or converting to explicit.

**2. *Employees want to share knowledge but have no means to achieve this.***

Knowledge Management tools may not be available to SMEs but there could still be methods to assist using simple ubiquitous tools. See section 6: Knowledge Management Tools for SMEs.

*"The best information environments will take advantage of the ability of IT to overcome geography but will also acknowledge that the highest bandwidth network of all is found between the water fountain and the coffee machine"*  
Davenport T, "Think Tank: The Virtual and the Physical"  
CIO Nov 15 1995

**3. *Where information needs to be shared***

This may arise when collaboration is required or when one person needs to hand over work to another.

**4. *The value of the organisation's knowledge is recognised.***

If SMEs create knowledge with a definable intellectual capital, then some form of Knowledge Management will be necessary. Knowledge Management should go beyond just being a repository for this valued asset, but also be able to share and enhance where appropriate.



5. *Organisations with high staff turnover particularly of staff who are 'experienced' and valuable.*

Knowledge Management is about being able to store tacit knowledge and make it available for further enhancement. An organisation which experiences loss of staff and a consequential loss of intellectual capital or experience has a need to protect this intellectual capital and certainly to prevent loss to a competitor. Organisations who do not fully value knowledge within their organisations, may be underestimating the extent of its own property. Experience gained by an employee belongs to the employee and where possible, should remain with the employee or at best, for the employee to 'keep a copy' of what is in an employee's head.

### 3.1.2 The Theory of Diminishing returns

Here are instances where SMEs will not be able to benefit from Knowledge Management. As Knowledge Management is not a single entity, this ability will depend on a number of factors. It must also be noted that the return may well diminish to the point where Knowledge Management is not an option due to the expense and effort required. Another simple example could be a business where the owner works in the business and may choose or have no need, to share knowledge of the business with anyone. For others, Knowledge Management may provide a variety of benefits but cost and effort prevent the opportunity.

The value of Knowledge Management to an SME can be represented by the following diagram:

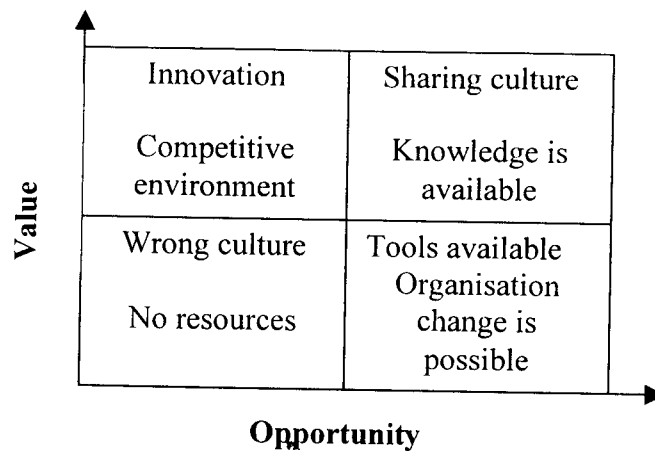


Figure 3-2 Opportunity to create Knowledge Management value

Specific instances where Knowledge Management may not be possible could be:

**1. Where Knowledge Management cannot be implemented**

This may occur in a variety of situations for example, Cultural environment makes it impossible, and the organisation is fully extending in survival mode. Organisational size may be a factor although it should be noted that some form of Knowledge Management is possible even with one-person organisations. Many organisations may incorrectly view themselves as being in the category

**2. Where knowledge does not provide strategic or tactical benefits.**

To arrive at this diagnosis, the value and use of knowledge should first be clearly understood. It could be argued that virtually all organisations could benefit from some degree of Knowledge

Management depending on how extended the definition of knowledge and Knowledge Management is. For example, a lawn mowing business may not have knowledge that could be used for strategic or tactical benefits. Should the business be expanded to be a franchise holder, then strategic knowledge opportunities may arise by using explicit and tacit knowledge to manage franchise holders. It may be that successful SMEs will determine for themselves when Knowledge Management will be appropriate.

**3. Organisational structure or culture cannot be changed**

Without the necessary culture (see section 3.2.3 Lack of management resources) it is unlikely that Knowledge Management will be successful. This may be the choice where the organisation's owners choose not to allow the enterprise to be open and sharing.

### **3.1.3 How do SMEs lose knowledge**

Many organisations fail to capture or retain the knowledge that may be available to them. This could occur through:

- 1. Loss of Staff**

Individual staff should not be the sole store of knowledge. (see section 3.1.1 Which SMEs can benefit from Knowledge Management).

- 2. Memory loss**

Through not using a system which identifies knowledge and allows for users to contribute and store knowledge. Loss can also occur when knowledge becomes out of date or can no longer be verified as correct or even having any value at all.

- 3. Data/Information loss**

Archive systems are inadequate.

- 4. Data is not purged or updated**

The major maintenance task is to keep the knowledge up to date and to throw away old or unwanted knowledge. Most systems provide user-friendly data entry but do not provide means of identifying and isolating data to be deleted. When designing systems, thought should be given to provide means to identify data for future purging or give users the option of a 'use by date'. This would be particularly important to the tourism industry where validity of dates and associated inventory and prices are crucial. Once a datasource contains invalid data that cannot be identified, user confidence in the knowledge is lost.

### **3.2 Why is Knowledge Management difficult to implement for SMEs**

There are a number of factors that may impede or indeed prevent SMEs from being able to use Knowledge Management. Some of these factors are directly related to some of the unique characteristics of SMEs.

#### **3.2.1 What is unique about SMEs**

Australian Electronic Business Network 1998, suggests some unique features as:

- SMEs vary greatly between countries and even within one country.
- SME owner managers and staff absorb messages most readily through descriptions of experiences similar to their own.
- SMEs want practical advice, not education or even training.
- SMEs are defined as compromising small enterprises (those which employ 20 people in service industries or 100 in manufacturing industries) and medium size enterprises which employ up to 500 people.
- Australian SMEs make up 96% of all enterprises in the private non-agricultural sector.
- SMEs account for more than 56% of private sector employment.
- The majority of SMEs are conservative non-risk takers.

“Australia’s ability to take advantage of emerging opportunities will depend on firms being innovative. Australia must adjust to the challenges of the

information age and seize new opportunities (DIST 1998 Getting Business Online)

Few SMEs are managed strategically. Many are under pressure from cash flow concerns and insufficient capital. There is a concern that many tourism operators have a slow adoption rate of IT (page26) and this may hinder uptake. (AEBN, Small Business Attitude to e-commerce, Department of Information Technology The Arts (DOCITA), p 9 1998)

### **3.2.2 Lack of tools**

Knowledge Management tools can be divided into two groups.

1. Specific Knowledge Management tools such as Perspecta, HyperKnowledge, Retrievalware or PC Docs Fulcrum.
2. Tools which could be adopted to Knowledge Management such as Lotus Notes or Microsoft Exchange.

The SME is unlikely to have either the budget or expertise to utilise specific Knowledge Management tools. This does not necessarily put the organisation at a disadvantage. However, the selected tool should not set the framework for a Knowledge Management installation irrespective of the size of the organisation.

One advantage of using an adopted tool could be that the organisation has already developed some in-house skills in using and adopting the tool to other specific purposes. Another major advantage could be that end users feel comfortable with the installed tool and therefore will not perceive Knowledge Management being yet another piece of software to be mastered.

### **3.2.3 Lack of management resources**

SMEs may not have the capacity to sustain specific internal support structures that would be part of a Knowledge Management implementation. In particular, the absence of a Human Resources department could be seen as a major impediment. Given the almost certain need for some degree of change management, such tasks must be undertaken by others, possibly by those lacking specific training. Areas that could need to be allocated to operational management could be cultural changes to make a learning and sharing organisation:

### **3.2.4 Reward schemes:**

Developing rewards for collecting and sharing knowledge

Developing promotional structures which incorporate learning and sharing

Users must see knowledge sharing as a win-win situation. Tangible rewards on their own will not provide sustainable results.

### **3.2.5 Selecting suitable tools**

Evaluation for suitability, scalability and deliverables

### **3.2.6 Formal management process is difficult to implement**

Tasks cannot be easily allocated in the organisation. The organisation may not have the capacity to allocated Knowledge Management tasks to a specifically created department. In most cases, SME employees may need to fill several different roles. The pressure to operate on a short-term focus may mean the SME will find it difficult to direct employees to focus on issues outside their immediate responsibilities.

### **3.2.7 Value of knowledge is not understood**

SMEs will almost certainly have some understanding of the value of knowledge. However they will probably not express it as 'knowledge', instead

choosing labels such as 'experience' and 'know-how'. This does not mean the knowledge is valued but under another label. Experience implies a duration that is necessary to acquire 'knowledge' whereas Knowledge Management has the ability to allow non-experienced staff use to knowledge to make informed decisions. It should be noted that SMEs are not alone and that organisations of any size often fail to value or convey to employees, the value of knowledge.

Dealing with tacit knowledge poses the largest challenge for any organisation and tacit knowledge can be as much as 80% of organisational knowledge (Grayson, C, O'Dell C, 1998). For SMEs there are limited ways to codify knowledge so this percentage may be higher.

### **3.2.8 Focus on Short time spans**

SMEs tend to be driven by short focused goals and influenced by immediate threats. It is also possible for SMEs to survive with minimum business plans and strategy planning. This can translate into the SME not understanding its current success or recognising possible future threats.

### **3.2.9 Knowledge tends to focus on sales information**

Many SMEs are successful due to marketing and sales efforts. Recording customer information may be a suitable subject to start a Knowledge Management project. Because of the focus on sales, it may be difficult to extend this into other important areas such as manufacturing or research. A good place to start is customer support where success can be easier to manage (Davenport, T., Klahr, P., 1998). Sales can provide examples that can be used to spread KM in the organisation. Sales can often be easily measured.

### **3.2.10 Difficult to determine ROI**

This is a problem shared by organisations of all sizes. However, if ROI cannot be determined, the SME may not take the risk of putting time and resources into a system. Most SMEs will require any new system to provide



substantially improved results rather than just an enhancement on present methods.

#### **3.2.11 Identifying knowledge as an asset**

Current accounting practices for SMEs do not encourage showing knowledge as assets in financial reporting. SME stakeholders such as bankers, are slow to acknowledge this organisational strength.

#### **3.2.12 No time to collect data**

Lack of resources will make it difficult to undertake tasks that have no immediate benefit to the organisation's processes. The SME may also lack support from an IT department which may be able to automate data collection.

#### **3.2.13 Information overload**

Volume of information becomes overwhelming resulting in de-motivation. Whilst a well-selected Knowledge Management system may overcome this, overload may be seen as the inhibitor to any solution.

#### **3.2.14 Case-Based Reasoning**

CBR is not a viable option for SMEs as it requires "authoring" of the case. This usually requires skills that are beyond or not available to SMEs (Davenport, T, Klahr, P, 1998). Techniques using an automated case generator that enables non-experts to create a case are at present, and for the foreseeable future, outside the reach of SMEs.

### 3.3 Differences Between Large Organisations in implementing and using Knowledge Management.

The location of knowledge in an organisation may differ depending on its structure. For example, a large organisation will have its knowledge central to the organisation with some individual members holding which contribute to the enterprise. SMEs may have individuals, for example owner /operators, who hold the majority of knowledge, Figure 1.

The exchange between the personal and enterprise knowledge may also be different where the SME may use personal contact and the larger organisation is able to use IT to provide this distribution (Marshall, C., Prusack, L., Shpilbetg, D., 1998)

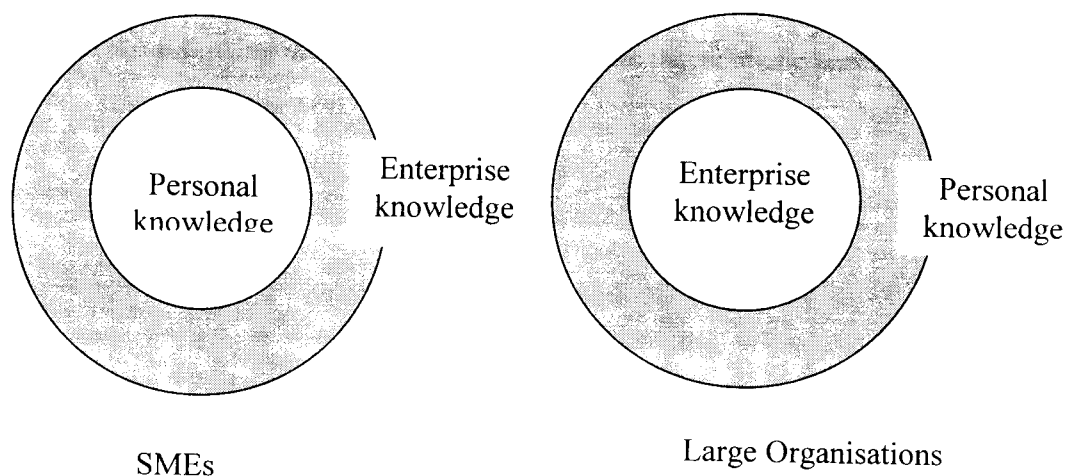


Figure 3-3 Knowledge in organisations

The differences between large organisations and SMEs will influence:

- The opportunities of using Knowledge Management
- Costs of Knowledge Management
- Implementation costs and strategies
- Selection and use of Knowledge Management tools
- ROI

These differences do not indicate that Knowledge Management for SMEs will preclude successful use of Knowledge Management or that SMEs do not have the same relative need for Knowledge Management to be part of their business strategy. It could be argued that there are more similarities between the two groups than difficulties and the ability to protect and enhance intellectual capital may be equally essential to the survival of both groups.

The following table indicates the differences that could be encountered when using the framework (section 3.5)

Framework Component	Large organisations	SMEs

<b>1. Identify the problem</b>	Have the resources to research, scope and analyse the problem and associated issues.	Problem is identified but root causes and associated issues are not clearly understood
<b>2. Identify the Solution</b>	Well researched investigating of the problem would lead to an effective solution	Insufficient time and resources to evaluate possible solutions
<b>3. Change Management Strategy</b>	Likely to be part of existing management methods.	Unstructured. Past history of change management may include skeletons. SMEs cannot usually dedicate resources to implement formal KM.
<b>4. Knowledge Management Tools</b>	IT departments have experience in evaluating information systems. Knowledge Management systems vendors focusing on large organisations	Little or no vendor interest in this market segment. Limited experience and capacity to evaluate adapting IS to new strategies.
<b>5. Evaluate the Outcome</b>	Part of existing management culture	Often ad hoc and anecdotal. Could be dependent on individual opinions.

Table 1 Differences between Large organisations and SMEs

### 3.3.1 Differences which place SMEs at an advantage

The introduction and use of Knowledge Management by SMEs can have a number of advantages over larger organisations.

3.3.1.1.1 SMEs move fast

By nature, for SMEs to survive, management must take immediate action when faced with a threat or opportunity. Senior management are often shareholders and board members and can make instant decisions. Competition in the SME arena can force SMEs to make quick decisions. The ability to make quick yet quality decisions could be enhanced through the use of a Knowledge Management system.

3.3.1.1.2 Hands on management

Management is personally involved with the success of the organisation and have a daily contact with all levels of the organisation.

3.3.1.1.3 Organisation politics

Exist at a different level and are less likely to hinder change.

3.3.1.1.4 Teams and locations

SMEs are often just one team and in a single location. This simple infrastructure assists information flow and security issues.

### **3.3.2 Differences which place large organisations at an advantage**

3.3.2.1.1 Intellectual capital is identified

Because IC can reside in thousands of employees, large organisations identify IC as a resource. Some larger organisations may choose to make key knowledge facilitators equity holders, or at least behave like equity holders, in an attempt to secure the opportunity. (Marshall, C, Prusack, L, Shpilbetg, D, 1998)

3.3.2.1.2 Vendors target large organisations

Vendors and the big consultants only have products or services for large organisations. This is unlikely to change in the near future due to the difference in opportunities for commercial rewards.

3.3.2.1.3 Appointment of a Chief knowledge Officer (CKO)

Many large organisations are now appointing a CKO. Their ability to focus on the multiple aspects of Knowledge Management will place any organisation at an advantage. A large-scale implementation could require, a line knowledge manager, a competency knowledge manager and a chief knowledge officer. The competency manager may relate to everyday activities whilst the CKO will be responsible for the enterprise wide issues,(Davis, M., 1998).

**Formal implementation of Knowledge Management.**

Large organisations can dedicate resources to implement formal KM. This will make it easier to implement major organisational changes that may be necessary. SMEs cannot usually dedicate resources to implement formal KM.

**Knowledge Management practice can provide reward for individuals**

SME will struggle to install a reward system to encourage knowledge collection and sharing. Most SMEs have difficulty instigating any form of incentive scheme based on measured criteria. Larger organisations can also use recruiting priorities, promotions and compensation policies. The ability of a large organisation to implement organisational politics can be a strategic move which is confined to those organisations that have the capacity to create this level of culture, (Drucker, P., 1998).

**Large organisations are less affected by staff turnover.**

SMEs have smaller teams or business units and consequently staff losses will have a greater effect. Given that individuals hold much tacit knowledge, this can place the SME at a disadvantage through the loss of this intellectual capital. This may make the case for Knowledge Management with SMEs more significant than with larger organisations.

### **Skill sets are dispersed**

Skills are frequently dispersed throughout the organisation and supported by training programs. SMEs tend to have skills concentrated in a few individuals.

### **Succession plans**

SMEs are unlikely to have succession plans in place. This will hinder knowledge transfer (Section 1.1.1). It may also hinder implementing and sustaining the cultural issues that are necessary by the lack of continuity.

It should be noted that SMEs share with larger organisations the ability of successful management to manipulate culture.

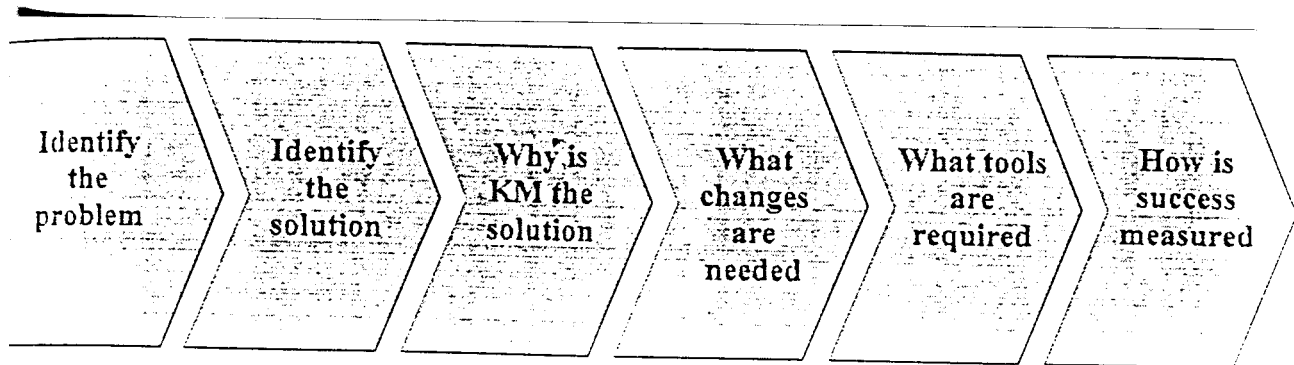
### **3.4 *Literature Review***

The literature Review undertaken as part of this thesis is in Appendix 1.



### 3.5 Framework for implementing Knowledge Management with SMEs

This framework is designed to include the basic steps that a SME will need to define the essential stages to plan for Knowledge Management implementation. The amount of time spent on each stage will be dependent on the individual circumstances. These stages are defined as:



These individual steps can be further defined as:

<b>1. Identify the problem</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
Defined problem	Clear understanding of the problem including all sub components	Consultation with all levels of employees
Scope of problem	Is the problem local or organisation wide	Consultation with all levels of employees

<b>2. Identify the Solution</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
Knowledge Management installed and producing measurable benefits	Clear understanding of the problem and the current options to produce the solution	Investigation of all inputs to the problem, their causes and possible changes. Investigation of current tools that suit the circumstances.
Solution aligns with business objectives	Clear understanding of possible Knowledge Management benefits and whether a business case can be justified.	Analysis of Knowledge Management capabilities and business objectives. Expertise in understanding organisational culture and its ability to adapt to a culture which supports Knowledge Management.

<b>3. Why is KM the solution</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
KM can be successfully implemented	Implementation plan	Careful planning so all necessary components are included in plan

<b>4. Change Management Strategy</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
Organisation is prepared and able to implement Knowledge Management	Learning organisation	Encourage learning throughout the organisation
	Sharing culture	Demonstrate the organisation rewards sharing
	Value knowledge	Leadership and rewards encourage the recognition of knowledge and its value to the organisation
	Knowledge can be located	Identify areas of tacit and explicit knowledge
	Individuals with specific knowledge can be identified	Plan to involve key contributors.

<b>5. Knowledge</b>		
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<b>Management Tools</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
Appropriate tools used to support Knowledge Management	Evaluation of available tools	Develop clear business objectives
		Evaluate if any existing tools could provide the desired outcome, i.e. Microsoft Exchange or Lotus Notes
	Implementation	Select small project where the chance of success is as high as possible. Consult with early adopters
		Manage expectation levels to make sure success can be demonstrated.

<b>6. Evaluate the Outcome</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
ROI providing positive results	ROI plan in place	Install suitable ROI measurements. (see section 5: Can ROI be determined)

<b>7. What would it be if successfully implemented.</b>		
<b>Outcome</b>	<b>What is needed</b>	<b>How is this implemented</b>
Top management support	Seek top management that understands benefits	Educate top management on benefits and ROI
Sharing culture	Organisational change	Change management program

In a large organisation, it would be appropriate to undertake an Organisational Assessment (OA). For SMEs, a formal OA is possibly well beyond the available scope. It is however, still possible to use some of the elements and techniques that a formal OA might contain. For example, using OA models such as Weisbord Six Boxes Model (Weisbord, M. 1976) could be used to determine these variables:

<b>Performance Variable</b>	<b>What is to be determined</b>
Business strategy, goals and mission	Can Knowledge Management be aligned with business objectives.
Rewards	Can rewards systems be implemented or adapted to support Knowledge Management.
Relationships	Is the organisation a sharing organisation. How are conflicts resolved. What is the attitude to change.
Structures	Will individuals benefit from Knowledge Management.

	<p>Is the environment sufficiently stable for Knowledge Management.</p> <p>Is this a team or individual organisation.</p>
Helpful mechanisms	<p>Does the organisation have a culture based on rules and procedures.</p> <p>Are rule easily changed.</p>
Leadership	<p>Are leaders aware of the problem.</p> <p>Are leaders aware of the solution.</p> <p>Are leaders aware of what is required to reach a solution.</p> <p>Are leaders capable of implementing the solution.</p> <p>What is required to implement the required changes.</p>

### **3.6 What would make a successful KM implementation for a SME**

It will be necessary to monitor progress of the Knowledge Management implementation and to be able to demonstrate success as part of the on-going Knowledge Management strategy.

A successful implementation will require a holistic approach to Knowledge Management, (van der Spek, R., and Spijkervet, 1998). This will not imply that the whole organisation will be included, indeed it will be preferable to use a pilot.

Measures of success can be divided into two areas, first relating directly to knowledge and secondly to the organisational environment to support the process.

These key indicators will give a status check on the knowledge process success to date:

- Knowledge can be re-used
- Knowledge is retained
- Knowledge is enhanced
- Knowledge is available to all
- ROI can be demonstrated
- Competitive advantage enhanced
- Retention of intellectual capital
- Knowledge is secured within the organisation

The organisational environment can be judged by:

- Ability to link to economic performance or industry value
- Clear and demonstrable commitment from the most senior management
- Promote value of knowledge in the organisation
- Clarify what knowledge is important to the organisation
- Look to try and include as many winners as possible

Organisations that are successful are not afraid of failure. A degree of perseverance will be necessary as results may take more time than the timetable had allowed, (Brooking, 1999).



## **4 Using Knowledge Management in the Tourism Industry**

The tourism industry is a major economic contributor to Australia. Details are in Appendix 3.

### **4.1.1 Why tourism is knowledge intensive**

The tourism industry creates and uses large amounts of data, information and ultimately knowledge. Data can be in the form of timetables, schedules, rates and charges etc. When planning and purchasing holidays, having access to this data is essential. However this raw data will not be sufficient to construct a holiday plan (itinerary). This will require tacit knowledge to incorporate the individual requirements that change the collection of travel items into a desirable travel experience. This function has traditionally been performed by a travel agent that would rely on 'knowledge' to be able to translate the prospective traveller's desires into an experience. This is achieved by knowing where to go, what products to use (hotels, airlines etc) and, most importantly, how to assemble the items and then add value with additional suggestion, perhaps where to shop or what to see etc. This combination of explicit and tacit knowledge can be represented by:

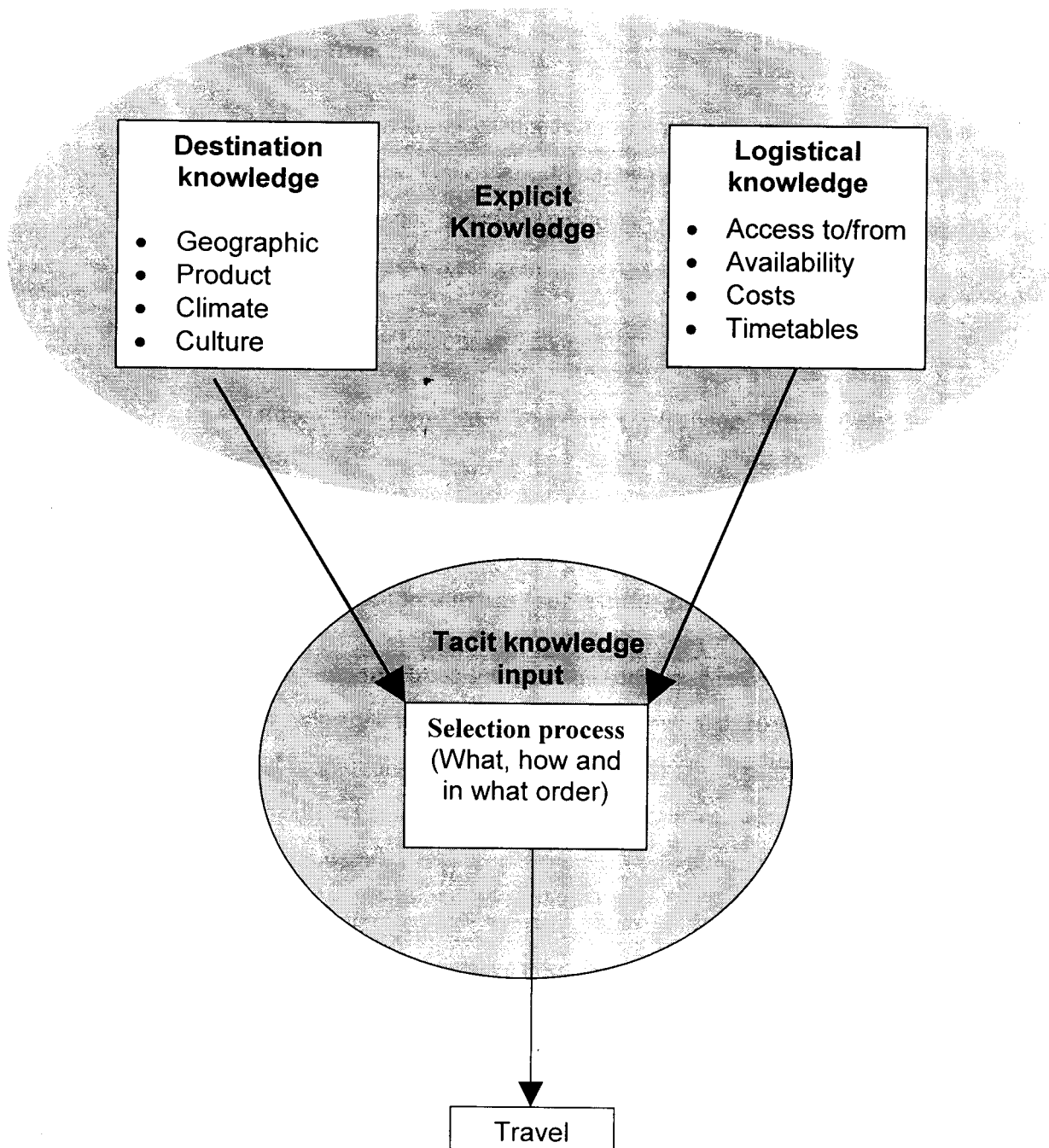


Figure 4-1 Knowledge in the tourism industry

#### **4.1.2 Challenges in the industry**

##### **Competition from internet**

The world wide technology change is impacting on the tourism industry and substantial changes will take place driven by the convergence of computing, telecommunications and consumer products. (Australian Tourist Commission, 1997). These changes will result in:

- Consumer behaviour will change
- Information provided to consumers will change in nature and quantity
- IT will proliferate, particularly in travel agents

##### **World wide interest in tourism / substantial government support**

The worldwide competition for tourism is intense. Many countries see tourism as a major industry and source of foreign revenue and are prepared to send substantial promotional dollars to attract tourism. For example, the USA spends \$1 billion per annum promoting their tourism business. (Australian Tourist Commission, 1997)

##### **Shorter time frames / therefore need information sooner**

There is a trend for shorter duration holidays but with increased frequency. Such 'short breaks' are often taken at short notice.

### **Increasing need for innovation**

The tourism demand is changing and tourism products must adapt to new consumer demands. Tourism products can be perishable and an unfilled place in a hotel or aircraft cannot be recovered. (Inkpen 1994)

### **Reduction in staff who hold the knowledge**

In line with many organisations, staff reductions are the result of organisations coming under cost pressures. As tourism is a knowledge intensive business, this loss can have a significant impact. (Sheldon, 1997)

### **Knowledge takes time to acquire. (Macintosh, 1997)**

Tourism knowledge is an amalgam of explicit and tacit knowledge in combination to provide the mixture of experience with facts such as timetables. This can take time to accumulate particularly if some of this tacit (experiential) knowledge must be gained by actually experiencing the tourism product. This is known in the industry as site inspections.

#### **4.1.3 Why knowledge is important to tourism**

Tourism is an intangible discretionary purchase. The purchase of tourism is dependent on a number of influences and certainly not just on price or availability.

The link between destination knowledge and 'spend', the amount spent in that destination is described by Arch Woodside, June 1997. His findings are based on customer knowledge of a destination (Prince Edward Island) gained from information provided in the form of informational tourist guides. This is then

compared with the increased visitation to the island. This linkage is particularly important when considering the potential to increase visitation and the subsequent economic benefits. An example of this could be marketing Australia in Europe where the Commission has a large advertising expenditure. Here the Australian Tourist Commission handled 187,000 calls from consumers and travel agents in Europe in 1998. The possibility of increasing the conversion on this number of inquiries is of obvious interest.

#### **4.2 Case Study: Implementing Knowledge Management for a SME in the Tourism Industry**

This case study shows the experiences of an SME introducing Knowledge Management for the first time. The case provides a background to how and why Knowledge Management was first proposed by the IT department. It shows that IT had already experienced using technology to establish what it considered to be “Knowledge Management”. Although this had some success in its own small department, when extended to the business units, it was a failure because it was not proper Knowledge Management. This failure was the driver for the IT department to investigate Knowledge Management discipline and took on the champion role of Knowledge Management within the organisation.

The case describes how the Knowledge Management system was proposed to the CEO and why this proposal was successful. The implementation process uses the framework described in section 3.5 and provides some practical examples of how the framework can be used by a SME.

It would not be normal practice to have a Knowledge Management implementation driven by the IT department. However, it is likely that SMEs will not have the resources to undertake an implementation in the same way that a larger organisation will approach the task. It should be noted that the IT department, in the first instance through its own experience, understood that Knowledge Management is not just a technology issue. The IT director was also a company director with direct access to the CEO and was able to argue for the required organisational support.

The important lessons that were learnt from the initial pilot implementation are discussed along with more complex issues that are undertaken in the next steps.

The case study is appendix 2.

*Due to commercial confidentiality, the case study conducted during the research has been submitted for examination but was removed from this bound thesis.*

## 5 Can ROI be determined

Despite the current interest in Knowledge Management, industry sources such as Information Week August 1999, report only a modest rise in spending.

Knowledge Management is becoming a budget priority. Only 5% of IT managers say spending on knowledge-management systems will decline in the next 12 months, while 68% say it will increase. Of those, however, 51% say the increase will be fairly modest, while 17% say spending will rise significantly.

Most organisations don't expect to achieve much of a payback on their investment. Only 27% expect more than a token ROI. The largest number of those surveyed, 42%, say it's impossible for them to measure the return on investment in Knowledge Management.

For SMEs, ROI may be even more difficult to determine in financial terms. Whatever measures are used, these should relate to the business objectives. For example, if Knowledge Management is attempting to address a staff turnover issue, then the time taken for replacement staff to be effective could be a meaningful measure.

Measures for the tourism industry could be related to the time taken to respond to a client request for the construction of an itinerary, the quality of the response and the conversion into sold business.



## 6 Knowledge Management Tools for SMEs

This section examines means of using Knowledge Management tools without embarking on the specific tools that are solely aimed at Knowledge Management. Such tools are at this stage, beyond the capacity of SMEs both in cost, complexity of implementation and maintenance. The SME must therefore look to tools which may already be part of the IT architecture and the examples of this are Microsoft Office Lotus Notes or just email. The individual SME may find other tools that may be applicable.

It is important to remember that tools can only support Knowledge Management and are not the Knowledge Management process themselves. It is also important to note that by suggesting SMEs use document management tools, it does not imply that Knowledge Management can be viewed as document management. Whichever tool is used, it will be important that it is scalable so that the whole organisation may participate.

The object of the tool will be to address the issue of making knowledge available and these four parameters need to be in place:

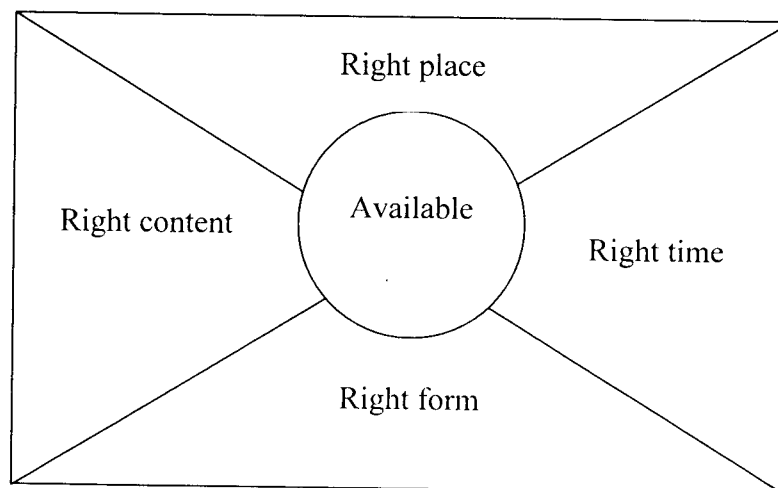


Figure 6-1 Knowledge availability

The different tools that could be used between a SME with no Knowledge Management and a SME or large organisation using Knowledge Management could be:

	<b>Knowledge Management Technologies</b>	
	<b>SME</b>	<b>Large Organisation</b>
<b>No Knowledge Management</b>		
Telephone / Messages	Voice mail / Email	Video Conferencing
Technical specifications	Knowledge base	AI/Expert system
Free format documents	Hypertext documents Lotus Notes	Advanced Knowledge systems Intelligent agents
Procedure manuals	Hypertext documents Lotus Notes databases Microsoft Office document management	Expert systems

Tools should be able to address the Knowledge Management problems identified in the business plan via the framework (see section 3.5: Framework for implementing Knowledge Management with SMEs)

For example, these could be:

<b>Issue</b>	<b>Solution</b>	<b>Supporting Technology</b>
<i><b>Innovation</b></i>	Brainstorming	Discussion databases Chat Email
<i><b>Innovation</b></i>	Networking	Email Chat
<i><b>Operational productivity</b></i>	Re-use of experiences	Knowledge base Collaboration tools
<i><b>Competency</b></i>	Induction for new employees	FAQ database
<i><b>Competency</b></i>	On the job training	Intranet, On line help
<i><b>Competency</b></i>	Organisational procedures (how things are done around here)	Intranet On line manuals FAQ database

Figure 6-2 Issues and supporting technologies

Explicit knowledge can be held in Intranets, Email, Microsoft Office or Lotus Notes. Both the Microsoft Site Server and Lotus Domino products can produce web pages for use in an Intranet. Both provide navigation facilities and both can control what information is returned to the user based on user's rights. The Site Server Commerce Edition (ver 3 onwards), has the ability to push information to users, conduct transactions and track and analyse the specific behaviour of users. Lotus has Team Room and Learning Space products that may have applications with larger SMEs or where customer involvement may be necessary.

How capable the tools need to be and what level of effectiveness will depend on individual needs and what tools can be used. Some common required or desired capabilities are:

### **Search**

Provide facility to search based on key words and preferably context. Searches should be able to be conducted across multiple documents and locations. Both Microsoft Office and Lotus Notes provide search capabilities that will satisfy most SME needs.

### **Mining**

Simple techniques for extracting data and returning it to a document. This can be achieved in Lotus Notes and Microsoft Office by using the data query facility through ODBC connections to most data sources.

### **Document management**

The Microsoft Office suite includes document management and Lotus Notes has a template to manage Office documents.

### **Collaborate**

Discussion databases are a major part of Notes. Document flow and approval can be adapted to achieve an effective Knowledge Management environment.

The use of these capabilities should therefore:

- Enable employees to quickly find knowledge they need
- Advise interested users of knowledge that is of interest to them
- Share information with colleagues
- Identify co-workers who may have the required knowledge
- Deliver unstructured knowledge

## 7 Future of Knowledge Management

Many consultants are currently talking about Knowledge Management. In fact, Knowledge Management could be labelled as the new management flavour. Individual SMEs are too small to be clients of the major consulting firms and it is more likely vendors will find the first sales opportunities. How long it takes for SMEs to be part of this will depend on what tools can be used by SMEs so that vendors can directly target this market. The large vendors and consultants set the agenda and progressive SMEs will take and adapt the ideas. The ideas that will evolve are:

### **Knowledge Management will become the entry level for organisations**

Knowledge Management becomes part of every large organisation's structure. This does not guarantee that Knowledge Management will be effectively implemented and used. For example, for some, Knowledge Management may not progress further than document management. The challenge for SMEs will be to use their existing infrastructure to stay competitive.

### **Knowledge Management will become more than a competition differentiator.**

The development of the knowledge economy will result in eighty percent of American workers becoming knowledge workers, (Tapscott, 1997). The use of knowledge will be much broader than just for competitive purposes. Potential tourism purchasers are already encouraged to obtain information from many web sites. If this can provide added value through knowledge it will be at an advantage.

**Future focus will be on knowledge creation**

The value in Knowledge Management will be seen in the ability to create new knowledge rather than the maintenance of existing knowledge. This maintenance will be easier due to improved tools and a better understanding of the organisational environment required by Knowledge Management. SMEs and particular in tourism will be flooded with information and the ability to transform this into valuable knowledge is already a challenge.

**The conversion of Knowledge will be recognised as fundamental to an organisation**

With the collection of knowledge being easier, the next challenge will be to extend the value of this knowledge through conversion. (Nonaka and Takeuchi, 1995). This may be easier for a SME to adapt due to the smaller number of people involved and lack of organisational politics as described by Thomas Davenport in Information Politics, 1992.

**Technology tools will develop but only as a support mechanism to the Knowledge Management process**

The continuing expansion in the amount of available information will lead to information overload. The ability to filter this information and extract knowledge will be part of all organisations strategy. This situation already exists for SMEs who are unable to afford the current collection of dedicated Knowledge Management tools.

**Knowledge will be recognised by its financial asset value to an organisation**

Stakeholders such as share holders, banks etc., will want to account for the knowledge and intellectual capital as assets of the organisation. This will provide some new challenges for financiers who have been trained to account for hard assets. Establishing a valuation for this asset will become the subject of debate. Currently the market is deciding on its own values for start up Internet companies for example, with their value running many times more than their asset values. This will be of particular interest to the SME and their relationships with lenders.

Intermediaries who traded in knowledge will need to re-position their organisations. This has particular relevance for the tourism industry where intermediaries have been part of the industry for many decades.

New opportunities will be created for new intermediaries who can create new knowledge for others to use. This will result in knowledge being sold or traded. (Delphi on Knowledge Management, 1997) The Delphi Group, Boston 1997

Opportunities may exist for SMEs where collaboration in engineering already exists. For example in the defence industry the Australian Small Business Defence Network (NSW) was established with the primary mission of assisting SME businesses to capture a greater share of the Department of Defence business. There may well be a case for Knowledge Management amongst this group.



### **7.1.1 The future of Knowledge Management in the Tourism Industry**

The industry is undergoing a number of changes through new technologies.

The industry will continue to be knowledge intensive and technology changes may well make knowledge more important. The Internet may be used to push travel information out to potential users but without tacit knowledge, the full value of the information is not achieved.

There is an opportunity for tourism operators to share or push knowledge to customers within the industry, for example in a wholesaler / agent relationship. In this case, the wholesaler would create knowledge that would enhance its product or service. This would then be pushed to travel agents. This is making the assumption that agents will have some means of managing or at least using, the knowledge provided to them. There are already examples where the wholesaler provides its agents with technology and training to sell its products. This could be extended to include knowledge management. As this would be in the wholesaler's interest, the Knowledge Management component may be presented as specific to the product and not be presented to the agent as a separate tool.

On a larger scale, countries including Australia, are constructing 'national databases.'<sup>1</sup> These databases will contain a vast amount of data that will be accessible through portals. There could be opportunities to add value to this data and this would be a role for a new breed of intermediaries. It is uncertain how the current travel agents fit this model, without these agents being able to compete by providing their knowledge input within the new communications environment.

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<sup>1</sup> National Tourism Database, a joint venture between the Australian states, The Australian Tourist Commission and the Australian Tourism Industry.

## **7.2 Future Research Recommendations**

This study has identified some areas that can be applied to SMEs, not only in the tourism areas, but also for SMEs in general. These could include:

- Develop methods which will assist SMEs understand the value of knowledge to their organisation and how to measure the value of intellectual capital.
- Develop strategies to enable small organisations to create a culture that will be suitable to introduce and sustain Knowledge Management.
- Investigate the use of Knowledge Management tools that are suitable for SMEs
- Research how ROI could be established.
- Research how Knowledge Management can be implemented using the large amount of data within the tourism industry.

## 8 Conclusion

There is no doubt the Knowledge Management is currently attracting the attention of academics, vendors and management. The term “Knowledge Management” is widely used and there is no current consensus on the scope or boundaries of subject.

There are many components that are essential or contribute to Knowledge Management. The understanding of knowledge, organisational learning, culture, change management and tools are just some of the disciplines. The make up of the Knowledge Management to be utilised will depend on individual circumstances. This rules out Knowledge Management being able to be implemented as a single tool.

To implement a Knowledge Management system will require a broad understanding of business issues and the capacity to work with some of the major components of an organisation. Many organisations will need to undergo some extent of change management to create the environment for Knowledge Management. There are some basic organisational cultures which must be in place for Knowledge Management to succeed and these relate to the ability to acquire and share knowledge. The use of the framework suggested in this paper could provide the basis for implementation. Tools are probably necessary but are in most cases seen as an enabler to the system.

Just as many large organisations now see Knowledge Management as an essential part of their organisations, SMEs and the tourism industry have many

opportunities to make Knowledge Management part of their future direction. The lack of funds to purchase tools or capacity to dedicate resources should not be seen as a barrier. The particular demands and opportunities of the tourism industry are extensive. This knowledge-based industry with its economic importance to Australia has a real opportunity to take advantage of Knowledge Management.

## **9 Appendix 1 Literature Review**

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# 1 Introduction

## 1.1 The purpose of this literature review.

The purpose of the document is to provide a literature review for the topic:

*“Knowledge Management for the Small to Medium Size Enterprises  
(SMEs) with particular emphasis on the Tourism Industry”*

The review attempts to cover the major publications that will provide an essential background to the topic. The review also covers the limited literature that is specific to SMEs or tourism.

## 1.2 How the literature could be used by SMEs

The works being reviewed have been selected as being relevant to SMEs and fall into two groups, First, any works which specifically focus on SMEs and second, works which provide in-depth studies of the topic. It is suggested that SMEs should carefully examine these works in order to understand the major concepts of Knowledge Management and so be able to relate these to their own organisations, irrespective of size.

In addition, the following works could be seen as essential reading for the understanding of Knowledge Management. These selected works are easy to read and cover most of the fundamental concepts of Knowledge Management and could be seen as essential for SMEs:

- ◆ Nonaka and Takeuchi, (1995), “The Knowledge Creating Company”
- ◆ Davenport (1998), “Working Knowledge: How Organisations Manage What They Know”
- ◆ Brooking (1998), “Corporate Memory: Strategies for Knowledge Management”
- ◆ “The Harvard Business Review on Knowledge Management”, (1996)

Case studies are on large organisations and are included in the absence of SME studies.

### **1.3 Limitations to literature review**

Due to the current interest in the topic of Knowledge Management, there is a continuous number of papers being published. Figure 1 shows that the

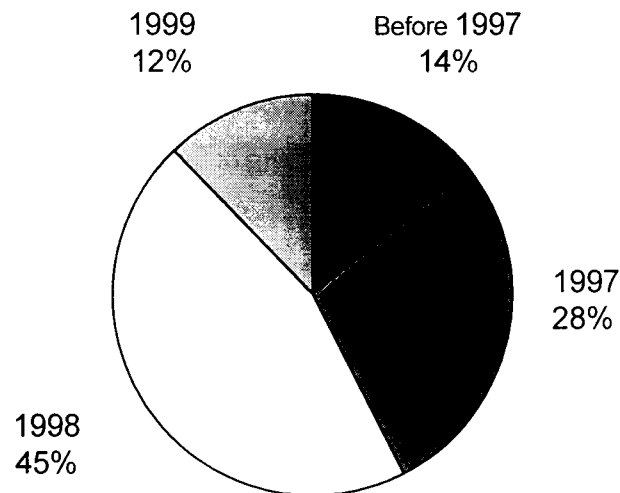


Figure 1 Published year of literature

majority of literature presented, is less than eighteen months old. This review is therefore only current as at its publication date. There is a need to be constantly updating the review and the Internet may provide the most suitable research method.

### **1.4 Scope of the literature review**

This review focuses on literature that is applicable to SMEs and the tourism industry. In total some eighty publications have been examined (see section 4. Annotations of Surveyed Literature)

The review takes the major schools of thought in Knowledge Management and discusses significant publications for each of these areas i.e.:

1. What is Knowledge Management
2. Organisational culture



3. Tools
4. Case studies
5. Knowledge Management for SMEs and the Tourism Industry
6. Future Knowledge Management issues

Due to the relative recent interest in the topic of Knowledge Management, most works have been published in journals and on the Internet. It could be expected that some of these works would be the basis of books in the future. Several substantial works are included, as they have provided insights to the topics that are relevant to SMEs. In a few cases, popular work has been referenced to give a viewpoint that may assist the non-academic practitioner.

The Review does not include articles which has as a main theme Document Flow, Work Flow, Knowledge Acquisition Systems, Learning Organisations, Expert Systems or Artificial Intelligence.

### **1.5 Gaps in literature review**

The research has found three publications that specifically covered SMEs or tourism. In addition, none of the other works reviewed, made reference to these groups. Requests to Knowledge Management Internet forums failed to discover specific publications although respondents remarked that such publications would be “very interesting”.

Given the number of SMEs and the importance of their contribution to employment and the economy, there appears to be an opportunity for research literature to be published to assist this important segment to understand the potential of Knowledge Management to their organisations.

## **2 Introduction to Knowledge Management**

There is no doubt that Knowledge Management is capturing the current imagination of business and IT. The origins of Knowledge Management as a management discipline are not easy to trace. This is partly due to the flexible boundaries that could be used to define the scope of Knowledge Management. Several large IT vendors see Knowledge Management as the next domain for selling management tools and could be seen as taking advantage of this flexibility by creating their own definitions.

The current interest in Knowledge Management could be demonstrated by most major consulting firms having a Knowledge Management department or at least advertises the capability of consulting in this area. Major software vendors, Microsoft and IBM – Lotus both propose major Knowledge Management initiatives using their Knowledge Management tools and could be seen as taking advantage of the interest in Knowledge Management by possible purchasers who do not have a full understanding of the subject. It is to be demonstrated in this paper that Knowledge Management is not achieved by installing software and this will be somewhat in contradiction to some vendor's claims.

Knowledge Management is placed between a number of management and IT disciplines although it may contain parts of these disciplines. Some of these other disciplines such as Artificial Intelligence or Organisational Learning, pre-date Knowledge Management. This paper will highlight research that concludes that other disciplines such as 'learning' are core to Knowledge Management. From management come disciplines that include learning organisations, and knowledge workers. From IT comes Artificial Intelligence, Knowledge Acquisition, Expert Systems, data mining and workflow. None of these constitute Knowledge Management in a single entity.

Knowledge Management can be described as having most of these components:

- ◆ The identification of the organisation's knowledge
- ◆ The ability to capture and make this knowledge available
- ◆ A system to control and distribute this knowledge
- ◆ The capacity for people to add and enrich this knowledge
- ◆ The possibility of the organisations experiences to be added to the stored knowledge
- ◆ Knowledge to be used to meet organisations objectives.

These components cannot be achieved without the organisation being able to:

- ◆ Understand the value of its intellectual capital
- ◆ Be a learning organisation
- ◆ Have a sharing culture
- ◆ Have an organisational culture which encourages sharing and a reward structure which supports sharing
- ◆ Have senior level support
- ◆ Be able to demonstrate success and sustain the required culture.
- ◆ Use the appropriate Knowledge Management tools.

Knowledge Management in a simple form, could be seen as understanding the knowledge of an organisation and the ability to allow others to improve their own work by learning from this knowledge. This is an oversimplified description that any organisation can conceptualise and understand how it can lead to competitive advantage or substantial process improvement.

However, this concept is not restricted to the large organisations that are currently leading the Knowledge Management uptake. The use and retention of knowledge, i.e. intellectual capital, apply to organisations of all sizes. The opportunities to use experiences as knowledge is as much an issue with SMEs as a large organisations. Indeed as SMEs are also pushed to lower costs, the ability to retain knowledge becomes increasingly difficult if workers have less and less time to devote to non-core activities such as training. This paper will review literature that will assist the SME and tourism organisations to gain an understanding of the Knowledge Management possibilities for their organisations.

### **3 Review of Knowledge Management Literature**

#### **3.1 What is Knowledge Management**

An understanding of Knowledge Management must first begin with the concepts of knowledge in today's organisations.

**Nonaka and Takeuchi (1995)** in their seminal work "The Knowledge Creating Company", explore the differences between the Western view of knowledge in organisations and the traditional Japanese view. Nonaka argues that Westerners only understand the value of knowledge in terms of viewing their organisations as "information processors" using explicit knowledge based on data held within their information systems. The book proposes that Japanese companies understand that knowledge is more than a simple process of manipulating this data to create knowledge. The process must involve a broader approach to the understanding of what an organisation values as knowledge. This opens to the concept of a holistic approach to knowledge, something in which Japanese companies excel. To understand this, Nonaka and Takeuchi describe the Japanese intellectual tradition. Here, the Japanese understanding of knowledge incorporates the teachings of Buddhism, Confucianism as well as some Western concepts. The most important characteristic of Japanese thinking is described as "oneness of humanity and nature". This focuses on objects in nature that are subtle and at the same time visual and concrete. A difference between Western and Japanese concept of knowledge is the Japanese tradition of "oneness of body and mind" with emphasis on "whole personality" where as the western understanding is that the knowledge is separated from philosophical development. The Japanese value the physical and personal experiences that create the wisdom that they consider to be knowledge.

Fundamental to the Japanese approach of creating new knowledge is the ability to use subjective insights of individual employees as opposed to processing data to develop knowledge. This is only possible with personal commitment by the workers. This makes the Japanese organisation a living entity and can acquire a life.

Nonaka and Takeuchi develop the concept of ‘Tacit and Implicit’ knowledge. This concept is often simplified and repeated in many of the contemporary publications on Knowledge Management. In “The Knowledge Creating Company”, Nonaka and Takeuchi describe the difference between tacit and explicit knowledge as having four patterns for creating knowledge. These are:

From Tacit to Tacit. Where one person shares tacit knowledge with another. This is learning through observations and imagination.

From Explicit to Explicit. Using knowledge mined from data to new knowledge. This does not necessarily increase the amount of knowledge.

From Tacit to Explicit. The understanding of tacit knowledge and the ability to transform this into explicit knowledge.

From Explicit to Tacit. The use of explicit knowledge and the conversion of this to tacit knowledge by adding personal experiences to enhance its value.

How the Japanese middle management are able to extract this tacit knowledge from workers and create explicit knowledge which can be used throughout the organisation, is one major theme of this important work.

**Liebowitz and Wilcox (1997)** continue to take this view by describing knowledge as insights, experiences and procedures. These may be considered to be true and in which case would guide the thoughts of others. They define data as information that has yet to be interpreted, information as data which has been assigned a meaning. Knowledge, they propose, is that which enable people to assign a meaning, thereby generating knowledge.

**Marquardt (1996)** proposes that knowledge has become more important for organisations than financial resources, market position, technology or any other company asset.

**Carayannis (1998)** suggests that individuals and organisations are often overwhelmed by the amount of information that they are required to process. Multiple studies indicate that just imposing technology on organisations will not aid the information overload

Why Knowledge Management is important is discussed by **McIntosh (1996)** in the Position Paper on Knowledge Management. For organisations to compete, they need to have access to quality information. As the rate of competition increases, so organisations need to use knowledge that must evolve and assimilate at a fast rate. The importance of using knowledge as competition is suggested by Senge (1994) that the only sustainable advantage may be in the rate that an organisation can learn.

### **3.2 What are the problems in Knowledge Management**

**Quintas et al, (1997)** suggests that problems arise if Knowledge Management attempts to define knowledge as 'thing', ie an object and that it could be easily managed by some subject i.e. a manager. It is incorrect to assume that knowledge culture is an "add-on" and can be manipulated.

**Delphi on Knowledge Management (1997)** research into the obstacles to Knowledge Management by organisations, identifies 53 percent perceive culture to be the major obstacle followed by immaturity of the technology with 20 percent. Only 9 percent saw cost as an obstacle and 3 percent the lack of need.

**Davenport (1997)** suggests that areas needing particular attention are:

- ◆ Link to industry value or economic performance
- ◆ Technical and organisational infrastructure

- ◆ Standard flexible knowledge structure
- ◆ Knowledge friendly culture
- ◆ Clear purpose and language
- ◆ Change in motivational practices
- ◆ Multiple channels for knowledge transfer
- ◆ Senior management support

**McIntosh (1997)** suggests that many tools are being used for knowledge engineering methods but these do not necessarily assist with the management of knowledge assets.

### **3.3 Culture**

The importance of culture to the success of Knowledge Management is provided by **GartnerGroup, (March 1999)** who quotes their clients reporting that cultural changes require 50 to 70 percent of the overall Knowledge Management implementation. Failure to change the culture, the Gartner reports says, accounts for at least 50 percent of Knowledge Management project failures. Changing to a sharing culture is required when:

Most employees advance their careers by keeping knowledge to themselves.

Most organisations operate in a culture that rewards competition and individual achievement.

**Davenport (1998)** describes how a “knowledge friendly” culture is one of the most difficult to create if it does not already exist. With the trend to downsizing in recent years, it is not surprising to find organisations having some difficulty in embracing a sharing culture.



However, if a successful culture can be established, then this will attract employees who wish to encourage this Knowledge Management culture.

Most projects need the support of senior management. This premise is constantly true in Knowledge Management projects. Senior management must promote Knowledge Management. Davenport continues that senior managers or Chief Knowledge Managers refer to their organisations as we are in the knowledge business” or “our intellectual capital is as at least as important as our financial capital”. Most projects will require some culture change, but this is almost certainly true in every case of implementing Knowledge Management. Also all projects benefit from alignment with the business objectives.

**Marquardt M (1966)** proposes that knowledge inside an organisation is best transferred by people because people have the capacity to make sure the knowledge has been transmitted. People can sometime ask “dumb” questions that may lead to new ways to approach an issue or problem solving.

People need to be informed about the critical knowledge needs of their organisation. They can therefore identify and connect knowledge to where it is needed.

**Brooking A (1999)** : “This is a key issue”. Culture is described as invisible and provides the framework for how the organisation will conduct itself. This will determine how the organisation will react to pressure situations, its relationship with its customers. It is in fact the manifestation of how this is done inside the organisation. It comprises of a number of components such as heroes, rituals and ceremonies, past successes, values and corporate myths. Brooking gives several examples and contrasts American examples with her own British experience.

Brooking highlights that difficulties will occur when introducing Knowledge Management in culture where sharing is absent. There are

illustrations of sharing such as sharing profits or equity. The example is given of HP, an organisation that is widely understood to be a family. The example is given of HP not cutting the workforce in difficult times but choosing to reduce working hours and keep the labour force, thus continuing a tradition for which the company is well-known.

The issue of empowerment is raised and the suggestion given that if organisations are unable to create and sustain a sharing culture then it will be because the employees are not 'empowered'.

**Prusak, L (1997):** expands on the theme of how organisations should encourage a sharing culture. He uses the examples of paying large financial rewards to traders. Here the recognition of revenue is made at the beginning of the transaction rather than at the end. Such practices he quotes came to public attention in the Nick Leeson rogue trading episode. The alternative, Prusak suggests, is demonstrated by Salomon Brothers who have tried to make their traders behave as if they were equity holders. However, this has resulted in some of their top staff being poached by other brokers. This does illustrate the difficulty of implementing the desired cultural change in times of short term thinking. This is in direct contrast to the Japanese perspective where long term planning is accepted and supported by cultural instincts (Nonaka and Takeuchi, 1995). To further underline the challenges western organisations face, De Long 1997, suggests that organisations enjoying high profitability particularly in financial markets, are unlikely to convince senior management, much less its employees that the testing implementation of knowledge sharing is worth the pain.

Another contrast to the Japanese organisational culture is the western handling of rewards. Whilst the Japanese have a natural team approach, western organisations promote individualism through rewards. Prusak proposes that the behaviour management values are a direct result of the reward system they introduce. Equity traders may only be rewarded depending on monitored profit, other organisations try to reward on knowledge. An example of this is where a consulting firm requires

consultants to document client experiences. Employees are then compensated on the amount of knowledge contributed to a central knowledge repository. By taking this action, management underpins a sharing culture. In contrast, van der Spek and Spijkervet (1997) suggest that many organisations reward without any evaluation of contribution or simply on the basis of individual results.

**De Long D (1997)** indicates that the required cultural changes should be incremental with a need to respect occupational defined values. For example layers may be encouraged to build their own knowledge base which will underpin their reputation. Other specialist skills such as loss adjusters may also be reluctant to share the benefits of experiences with others who are in competition with them.

This may have different effects in engineering organisations where knowledge sharing may be more part of an engineer's culture. Engineering sub-culture may be more entrepreneurial and encourage experimentation and support the sharing personal work experiences. As organisations are a mixture of different backgrounds, there is the need to amalgamate the different cultures.

The issue of intellectual capital is covered by De Long by exploring the "unspoken rules" relating to knowledge distribution between the individual and the organisation. He suggests that culture legitimised what belongs to the individual, who must share it and what belongs to the organisation. This proposal is not explored in the legal context which must be relevant when knowledge or Intellectual Capital is regarded as an asset (Davenport 1998).

**Neef (1997)** highlights the problem of legal attempts to protect knowledge and the possible effects on knowledge based economies such as the USA. Figures quoted by Dale indicate 8 percent of services and products are pirated. Many are then reverse-engineered and sent back into the competing market.

De Long makes the point that unless senior management understand the control that culture has on knowledge sharing it will be impossible for the necessary behavioural changes to be implemented.

### **3.4 Tools**

**Nonaka (1995)** contends that computers are just tools to facilitate Knowledge Management.

**De Long (1997)** states that supporting technologies must be supported by cultures which support the objectives of Knowledge Management. He illustrates the point by referring to a Lotus Notes implementation that failed because of the organisations rigid hierarchy that did not support the correct culture.

**Dataware Technologies (1998)** suggests that no one technology can provide a single solution as Knowledge Management is not just about technology.

**Angus J (1998)** uses the first two sections of this report to record his understanding of Knowledge Management. He summarises the Knowledge Management goals of knowledge gathering, organising, refining and distributing and uses these processes in discussing the tools examined in the report.

The five products tested are: Win-cite 5.0, Intraspect 1.5, ChannelMaster 2.0, BackWeb 4.0 and KnowledgeX 1.0.

The report does stress the need to understand the non-technical issues that must be addressed before the selection of a tool. In so doing, he demonstrates that his evaluation of products could be in line with accepted Knowledge Management thinking. This may contrast with vendor driven papers. Each product is described in some technical detail. More importantly, may be the author's description of the purpose that the tool can achieve. This will assist the evaluation of the tool providing it is supported by the understanding of Knowledge Management

**David O'Leary (1998)** provides an overview of some tools which may be used in the development of knowledge bases. In contrast to Angus J, 1998, no specific products are described. The general areas of databases and knowledge bases, search tools, theory-framework based models and visualisation tools are examined in relation to ontologies and Knowledge Management. This is preceded by an examination of the purpose of a knowledge base and how large consulting firms have implemented their own knowledge bases. O'Leary explains the importance of Knowledge Management ontologies that provide some structure to knowledge bases. These are described as definition of the scope of group discussions and in particular, the ability to make Internet searches effective. Ontology should also provide filter systems and provide the ability to reuse artifacts from archives. O'Leary does provide a set of "desirable ontology characteristics" that may assist in the selection of tools. These characteristics include cost-benefit, easily understandable, extensible, maintainable and universally understood.

**Kotnour and Proctor (1996)** describes what tools are required when organisations move to become 'virtual organisations'. A virtual organisation is described as 'an interconnected set of management systems'. These two connections are seen as a firstly conceptual, that is the framework required for Knowledge Management and secondly the IT tools to support that framework.

The paper refers to Nonaka (1994) and his four modes of organisational learning as socialisation, externalisation, internalisation and combination. This provides a clear foundation to Knowledge Management and the Learning Organisation. This is used for the basis of how workers will share knowledge in a virtual environment. The paper does rely on electronic communication being central to the management tools to make knowledge available. The authors do not expand on the need to manage information overflow through search tools and filters as described by David O'Leary (1998)

### **Survey of Knowledge Management Tools – Part I, January (1999)**

state that the burgeoning interest in knowledge management has tempted software vendors in many domains to re-badge their products as "knowledge management tools". Whether this is justifiable or not in any given case depends on what definition of knowledge management subscribed to, and how it is interpreted. This report states the writers are being non-judgemental in the selection of products. Instead, the ten tools reviewed are where vendors categorise them as knowledge management tools. The report briefly covers what spectrum of functions are included and so decide which, if any, are appropriate to the users own view of the knowledge management function. The report covers the following products:

Semiomap from Semio Corp..  
CBR Content Navigator, from Inference Corp  
Perspecta from Perspecta Inc.  
Thoughtflow from Vidya Technologies  
HyperKnowledge from HyperKnowledge  
SolutionSeries from Primus Inc.  
Retrievalware from Excalibur  
ConceptExplorer from Knowledge Discovery Systems  
Dataware III KMS from Dataware Technologies  
KA<sup>2</sup> Knowledge Agent from AppliedNet Ltd

**Delphi on Knowledge Management (1997)** provides a supplement reviewing several products including:

Blue Agent	Byte Quest	CompassWare	Data Fellows
Dataware	Digital Knowledge Assets	Excalibur	PC Docs / Fulcrum
Grasp	Inference	Information Access Systems	Intraspect
Knowledge Discovery Systems	KnowledgeX	Magnifi	Molloy Group
MultiCentric	Net Impact	Perspecta	Primus
SageWrae	Semio	Universal Systems	Verity
Vidya			

### 3.5 Case studies

In a case study of Knowledge Management at HP consulting, **Martiny (1998)** describes how HP Consulting started a Knowledge Management initiative in 1996 which is now integrated into its business strategy.

HP Consulting, part of the Hewlett-Packard organisation, is a 5,000 strong global consulting organisation. The key objectives of its KM initiative was to use intellectual capital to deliver more customer value without increasing consulting hours. A necessary by-product was the creation of a knowledge-sharing organisation where everyone was enthusiastic about sharing knowledge with colleagues. To achieve these objectives, HP realised that leadership would be a major issue and Jim Sherriff, HP Consulting General Manager was to fill this role. He held the belief that the organisation needed to believe that consultants should believe that they have the knowledge of the entire consultancy at their disposal.

Step one was to conduct an Organisational Assessment to measure the organisations ability to change. This assessment also involved the clients. The results showed the following key areas of challenge:

*Leadership commitment* – Over half of the interviewees expressed the importance of top level commitment.

*Prevent 're-invention of the wheel'*, – most saw this as a daily occurrence.

*Practicality* – The method sharing or even who is in the organisation.

*Time* – How to make the system fit into an already busy work schedules.

The assessment showed that previous attempts in knowledge sharing have too much focus on technology and fell short due to the failure to address issues such as leadership, process and culture. The program was to learn from past mistakes and successes.

A four stage model was used in the implementation strategy. These were:

*Mobilisation* – Create the need for change

*Vision* – Develop the vision using pilot groups and migrate this to the whole organisation.

*Design* – Create the processes for sharing and re-use

*Transition* – Plan to sustain the change.

This implementation strategy was introduced in a two day workshop which also allowed for modifications to be introduced. Day one was to introduce the required behavioural change. This proved difficult as many participants were looking for a technology solution to sharing. They regarded themselves already having the required culture and that the workshop was a waste of time. However the client feedback had shown that their perspective was that a consultants ability was dependant on the personal ability of the individual. The breakthrough came as a result of the combination of demonstrated leadership commitment and buy-in from a respected team member.

The case study provides an insight into the function of the pilot program and several individual reflections on the workshops. It does point to the need to be prepared for opposition through the belief that employees are already doing “all they can”.

Whilst the case study, reports on the experiences of a large organisation, the study does focus on the outcomes from pilot groups. This does provide an indication of experiences of small groups that may be relevant to SMEs.

**Davenport T, 1996**, in the work “Knowledge Management Case Study: Knowledge Management at Hewlett-Packard, Early 1996 describes a separate initiative started by Bob Walker, HP’s CIO and Vice President. This was to bring together a diverse group of engineers who had already some form of KM process underway. The chosen groups were in product



processing, corporate education and a computer dealer channel. This study is more general than Martiny M, 1998 and less applicable to SMEs.

### **3.6 Knowledge Management for SMEs and the Tourism Industry**

1999 WTTC TRAVEL AND TOURISM ESTIMATES: Recent figures released by the World Travel and Tourism Council show that the travel & tourism economy will account for 11.7 per cent of world GDP in 1999. The report also found that travel & tourism has emerged strongly from the Asia economic crisis, with leisure tourism expected to grow by 4.7 per cent in 1999 and business travel by 4.4 per cent. Spending by international visitors will amount to 8 percent of world exports in 1999. Over 8 per cent of all jobs worldwide will depend on the travel & tourism industry this year and will support the creation of over 5.5 million jobs per year over the next decade.

**Low et al, 1997** presents the ANESTA (AN Expert System for Tour Advisory) system that produces self-guided tour schedules. The information input to the system was sourced from tourism industry products in Hong Kong. Assumptions were made based on expert input from personal interviews with industry experts. These assumptions covered items such as tour duration, start and end points and meal requirements.

The ANESTA system has two purposes, first to provide an automated information system and secondly to provide information on tour schedules. The system has a graphical user interface that includes photographs of tour products.

The knowledge base includes fifty tours, thirty hotels and Mass Transit Railway (MTR) stations. Transport between these tour sites is also included. The information can be presented to the user in a number of ways such as chronological order, by budget or by duration. The user can specify start end points and meal requirements. The ANESTA knowledge

base can be replaced with knowledge from other cities. The system runs on entry level PCs and is able to generate a seven day tour in twenty seconds.

Low et al does not detail if a framework was used to assist the implementation or if any organisational changes were needed. It could be assumed that the majority of knowledge used was explicit although reference is made to experts providing input to possible tour requirements. The report does suggest that further investigation using user surveys is required into the customer satisfaction.

**B.R. van der Spek en A.L. Spijkervet (1998)** has published a paper specifically addressing the issue of Knowledge Management for SMEs. This paper is a study conducted by “Het Internationale Kennismanagement Netwerk” (The International Knowledge Management Network) based in Utrecht, The Netherlands. The study examines the use of Knowledge Management by 18 “Centres of Innovation” (ICNN) in The Netherlands. The ICNN is orientated towards a diverse group of production companies who employ 200 or less. The mission of the ICNN is to assist with the application of knowledge within this group of SMEs. Some characteristics of the ICNN are:

- ◆ An independent organisation funded by government (Economic Ministry)
- ◆ Each 18 regions are able to establish a close working relationship with its clients, the SMEs.
- ◆ Able to address smaller issues where large organisations have no interest.

The ICNN reports the following characteristics of the SMEs:

- ◆ SMEs have a relatively small turnover and have limited scope for Knowledge Management projects.

- ◆ SMEs have a low proportion of staff in relation to owners. There is more attention given to production and short-term needs rather than long term organisational development.
- ◆ The SME is pragmatic, results orientated, flexible and innovative.

The report suggests that for SMEs, Knowledge Management has less priority than issues such as achieving results and the impact of competition. In addition, the CEO is often the owner/director who generated the vision and may not perceive a need to share this knowledge.

The ICNN uses the following model (VDB Model) to manage their Knowledge Management projects. The phases of the model are:

*Enlightenment:* Outline the advantages of Knowledge Management. This is done through the use of meetings, brochures and personal visits.

*Examination:* Look at some of the specific issues facing the SME and determines how Knowledge Management can be used.

*Selection:* Choose the appropriate implementation method.

During the Examination phase, a knowledge analysis method is used. This is called the “Mirror and Bead” method where self-examination will reveal beads of solutions. Analysis is made on the organisation in relation to:

- ◆ Mission and goals, in many SMEs these are often not fully developed
- ◆ Products and markets
- ◆ Organisation’s processes
- ◆ Knowledge house-keeping. A table is used to determine:
  - Where is the explicit knowledge
  - How is knowledge used in the production processes

- How is knowledge passed amongst employees
- What is the impact of the organisation's culture on Knowledge Management.

Knowledge can be valued based on the criteria of basic knowledge, organisational specific knowledge, core knowledge and “knowledge which shows promise”. The core knowledge is described as knowledge that would be valuable to competitors and will, in the future, be described as basic knowledge.

The report does suggest that this approach may be judged to be simple. The desired result is to create a method that is both practical and adaptable to the specific organisation. The report concludes that the VDB Model has been implemented in a number of SMEs with pragmatic results.

This work does report on a specific initiative to introduce Knowledge Management in the SME world. The report does not however, comment on cultural issues which may requires attention. It also does not touch on the Return On Investment issue that must be of particular importance to SMEs.

**Prenninger (1998)** details the MaKe-IT SME project which is designed to assist small manufacturing companies introduce Knowledge Management. The project group consists of seven organisations in the EU. The project goal is to develop a low cost solution that benefits SMEs. The objectives are to deliver an applicable system for a wide variety of organisations, be implemented with low cost simple software and to be able to exchange knowledge with other similar organisations.

The project was driven by the following assumptions:

- ◆ SMEs are one of the strengths of the EU economy

- ◆ Employee knowledge is the company's most valuable asset
- ◆ SMEs often produce products with a high knowledge component
- ◆ SMEs are more likely to have more investment in intellectual capital than physical assets
- ◆ SMEs often need to rely on a limited source of information
- ◆ Knowledge is often not easily shared

Current Knowledge Management implementations are not always appropriate.

Knowledge Management for SMEs is currently not being addressed.

The project has eight phases of which five are now complete. The findings so far have covered the importance of Knowledge Management, Benchmarking, HR management and developing the first prototype.

To determine the importance of Knowledge Management, the project has used German research that points to 92 percent believing that Knowledge Management is important. The report does not indicate that this research was conducted on SMEs or larger organisations. The summary of findings are similar to those that would be expected from larger organisations and the findings do not appear to be focused on possible peculiarities of SMEs. The examination of corporate culture does not take into account key issues of SME management as described by van der Spek en A.L. Spijkervet (1998) in their ICNN report with SMEs.

The paper suggests some implementation strategies and standard technologies that may be considered by SMEs.

### **3.7 The Future Knowledge Management Issues**

KPMG, *The Knowledge Journey*, 1998, suggest that these issues are just ahead of us.

- ◆ Intellectual Capital will be more widely recognised
- ◆ The measurement of Intellectual Capital will be more widespread and a value attached to these intangible assets. New forms of reporting may need to be introduced to account for these assets such as a 'balanced scorecard'.
- ◆ Tools for Knowledge Management will be integrated into suites. This will provide a choice of bespoke or package solutions. ERP providers will build Knowledge Management into their products.
- ◆ Knowledge process owners will emerge from the within an organisation to form a Knowledge Organisation.
- ◆ Knowledge will be traded outside the organisation
- ◆ Security of knowledge will become important. Knowledge may 'leak' to competitors. Security systems will need to be implemented to protect the organisations intellectual capital.

**Delphi on Knowledge Management (1997)** in describing what Knowledge Management will look like in the future suggests that Knowledge Management will be "an entry requirement not a differentiator" for organisations. The report proposes that organisations will not use hierarchical structures the use their knowledge, rather they will use decentralised systems to spread knowledge. The concept of future "Knowledge Brokers" is explored where individuals have the task of acting as an intermediary between those who contribute to a knowledge base and those who can use it to their benefit. Other future drivers are seen as the challenge of sharing tacit knowledge and employees becoming agents of knowledge. Inhibitors will be the technology that is essential but insufficient.

**Cushman et al, (1999)** considers that by 2003, corporation accounting practices will formally incorporate a measure of their intellectual capital as well as the traditional incorporation of financial assets. Organisations will use knowledge as a competitive advantage through the formal use of the knowledge value and systems. Other predictions in this report include:

- ◆ All managers will be in positions where 50 percent of their work is determined and by events and knowledge
- ◆ Organisations without knowledge programs will trail by 30 to 40 percent in speed of deployment of new competitive initiatives
- ◆ More than two thirds of Knowledge Management programs that do not match their business objectives will fail
- ◆ More the 50 percent of implementing Knowledge Management programs will be spent on cultural issues
- ◆ An enterprise wide system that does not have high level support will fail in the first two years

## **4 Annotations of Surveyed Literature**

**1. Abecker, A., et al., "Toward a Technology for Organisational Memories", IEEE Intelligent Systems, May/June 1998, pp.40-48**

The paper discusses knowledge modelling techniques in terms of enterprise, information and domain ontologies. The paper suggests that when knowledge is recognised, it must be immediately incorporated in to the 'organisations memory'.

**2. Angus, J., et al., "Knowledge Management: Great Concept. But What Is It?" Informationweek. (673), Mar 16 1998, pp. 58-70.**

The following knowledge management software packages are reviewed: Wincite System's Wincite 5.0; 2. Intraspect Software Inc.'s Intraspect 1.5; ChannelManager Inc.'s ChannelManager 2.0 (beta); 4. BackWeb Technologies' BackWeb 4.0; 5. KnowledgeX's KnowledgeX 1.0.

**3. Applehans W, Globe A, Laugero G, Managing Knowledge: A Practical Guide to Internet-Based Knowledge Management (Addison-Wesley's Information Technology Series)**

Describes how to decide what content to include on your site and how to create a "knowledge architecture" Uses practical guidelines to using KM techniques to ensure that Intranet and Extranet deliver the right content. Based on the authors' experience developing J.D. Edwards' Intranet and Extranet, this book contains examples and helpful tips on how to get started with a web-based KM initiative.

**4. Adler, P., "When Knowledge is a Critical Resource, Knowledge Management is the Critical Task", IEEE, May 1998.**

Describes managing knowledge within a technology and manufacturing environment and the concepts of centralising knowledge.



5. **Alain, J. and Godbout, A., "Filtering Knowledge : Changing Information Into Knowledge Assets", Journal of Systemic Knowledge Management, January 1999.**  
This paper discusses the nature of the filtering step in order to define a sound knowledge management approach.
6. **Beath, C., and Walker, G., "Outsourcing of Application Software: A Knowledge Management Perspective", IEEE, Proc. 31<sup>st</sup> Annual Hawaii International Conference on System Sciences, 1998**  
Discusses the use of KM for managing packaged software selection and using knowledge in decision making on software purchasing.
7. **Birtles H, Overcoming "Roadblocks on Knowledge Management", Image and Data Manager, July/August 1999, pp. 30-34**  
Discusses the progress of some Australian KM implementations including Boral Energy, Queensland Treasury Corporation and Phillips Fox.
8. **Borchers, A, "Ganging up on Informational Overload", Computer, April 1988, pp. 106-108**  
Describes the use of collaborative filtering and the use of tools such as Tapestry, GroupLens, Ringo, and Lotus Notes.
9. **Bratic, W., Rouse, P., Vollmar, G., Strategic Management of Intellectual Property, Law Governance Review, Winter 1998, pp. 53-61**  
This paper discusses the growing importance of intellectual property and suggest ways of protection. The need for legislation to cross national boundaries are discussed so that the value of IP can be increased.
10. **Brennan, T., "Who's using their Head", Image and Data Manager, September/October 1998, pp. 30-32**  
A brief Australian article which discusses the potential importance for knowledge when the intellectual capital of an organisation exceeds the value of its other assets.

**11. Brooking, A., Corporate Memories, Strategies for Knowledge Management, Thompson Business Press, London, 1999.**

Discusses corporate strategy in relation to Intellectual capital;  
corporate memory and strategies for Knowledge Management.  
Provides SMEs with a basic overview of practical KM issues.

**12. Brooking, A., "The Management of Intellectual Capital", Long Range Planning, Vol 30 No 3, June 1997, pp.364-365.**

A discussion on intellectual capital and how this can be defined.  
Examples are given of today's organisations where it is possible that  
the value of intellectual capital to far exceed all other assets. The paper  
uses four categories to describe intellectual capital and suggests how  
these can be measured.

**13. Burstein, F., "Experimental Evaluation of the Efficiency of a Case-based Organisational Memory Information System Used as a Decision Aid", IEEE 31st Annual Hawaiian International Conference on Systems Science, 1998, pp. 207-213.**

Case study of organisational memory at Monash.

**14. Carayannis E, "The Role Of Extranets, Intranets And Intelligent Agents In Knowledge Generation, Diffusion And Leveraging", Technovation Vol 18 No 11, 1998, pp. 697-703.**

The article details the knowledge transfer process in terms of a  
learning process. It describes how a web-based system might be used  
and how the ROI might be determined.

**15. Case Study .Managing Knowledge in a Knowledge Economy, De Vos Consultancy, 1997,1998,1999.**

Describes a hypothetical case study dealing with aspects of introducing  
a KM project and the relationship with the CIO.

**16. Chen Y., and Liao C., "A Systematic Approach of Virtual Enterprising Through Knowledge Management Techniques", Concurrent Engineering, Volume 6 No 3, September 1998, pp.225-243.**

This paper outlines an approach to Knowledge Management systems  
by using a systematic implementation. There is a focus on how a  
virtual organisation might implement a KM system. The paper goes

into some depth in the technical details of the possible data models.

**17. Conference on Knowledge Management, The Conference Board, Brussels, September 15-16 1998**

This document is a synopsis of the conference proceedings. It includes references to the papers delivered by Michael Earl who argues for the establishment of Chief knowledge officers to establish a link between business and the CIO. It provides case studies on Monsanto and Zurich Financial Services.

**18. Curley K, Knowledge Management, Lotus Institute, 1998**

This brief paper explores the relationship of organisational learning in relation to KM tools. It also suggests different stages for KM and the possible barriers to KM implementation with only a brief reference to Lotus tools.

**19. Cushman, A., et al., The Knowledge Management Scenario: Trends and Directions for 1998-2003, GartnerGroup, 18 March 1999**

This report proposes a number of frameworks for various phases of Knowledge Management including Value, Culture and Process. The Value framework suggests a cycle of business drivers, such as ROI and competition, moving to strategy choice, then the KM applications finally resulting in business outcomes. The report examines a five year scenario for KM and has numerous future projections which are quantified for their probability. Examples from the World Bank, Shell and Xerox are included.

**20. Davenport T., and Prusak L., (Contributor) Information Ecology : Mastering the Information and Knowledge Environment, Oxford University Press, New York, 1997.**

Davenport proposes a revolutionary new way to look at information management that takes into account the total information environment within an organisation. Citing examples drawn from his own extensive research and consulting, including such major firms as AT&T, American Express, and IBM, Davenport illuminates the critical

components of information ecology, providing a quick assessment survey for managers to see how their operations measure up.

**21. Delphi on Knowledge Management, Delphi Consulting Group Boston 1997.**

An overview of three Delphi reports:

1. Knowledge Management - In Perspective
2. Knowledge Management - User Survey
3. Knowledge Management - Software supplement

Discusses the key topics:

A framework for KM

Four key functions: Intermediation, Externalisation,

Internalisation, Cognition.

Growth in KM (compared to document flow and work-groups)

Obstacles

KM trends

**22. Davenport T., De Long D., Beers M., "Successful Knowledge Management Projects", Sloan Management Review, Winter 1998, p43.**

Attempts to discuss some of the practical realities in KM implementation. The authors have examined more than thirty KM projects and discusses some differences in their approach. It focuses on four areas: Creating knowledge repositories, improving knowledge access, enhancing the knowledge environment and improving knowledge as an asset. The work also discusses means of determining when projects are successful and what factors lead to success.

**23. Davenport T, Knowledge Management Case Study: Knowledge Management at Hewlett-Packard: Early 1996, Graduate School of Business, University of Texas, Austin, Texas, [www.bus.utexas.edu/kman/hpcase.htm](http://www.bus.utexas.edu/kman/hpcase.htm), 01 February 1998**

Describes the introduction of KM into two separate business areas, Product Process and Computer Dealer Channels. The paper describes some earlier attempts at knowledge sharing and how these influenced

the future implementations.

**24. Davenport T., Eccles R., Prusack L., "Information Politics", Sloan Management Review, Vol 34 No 1, Fall 1992. pp. 53-65**

The paper suggests that managers must understand how information needs to be managed. It suggests that a federalism system will best support an information-based system.

**25. Davis M, Knowledge Management, Information Strategy: The Executive's Journal, Fall 1998, pp. 11-21.**

Discusses the need for a controlled vocabulary in relation to the use of KM in a library environment. It also looks at techniques used on context searches. The article suggests roles for both competency knowledge managers and chief knowledge officers. The article also tackles some technical issues relating to some transport systems that could support messaging architectures.

**26. Demarest M., "Understanding Knowledge Management", Long Range Planning, Vol 30, June 1997, pp. 374-384.**

This paper suggests the stage for a knowledge base and the goals that this should achieve. These include, finding knowledge easily and quickly, improving individual performance and improving personal work output by lowering personal stress. It suggests that management needs an understanding of the value of knowledge assets as a step to becoming a learning organisation.

**27. Delphi on Knowledge Management, The Delphi Group, Boston, June 1997**

The report provides a framework for understanding Knowledge Management by incorporating Nonaka concepts of knowledge and suggests that these are the key concepts.

**28. Drew S., "From Knowledge to Action: the Impact of Benchmarking on Organisational Performance", Long Range Planning, Vol 30 No 3 1997, pp.427-441**

Describes possible methods of benchmarking that can be used both in manufacturing and the service industries. Various methods of benchmarking are compared and suggests that benchmarking can be the instigator of change.

**29. Earl M, Conference on Knowledge Management, The Conference Board, Brussels, Sept 98.**

Key topics discussed are: Creating organisational value, What is Knowledge Management, creating a KM strategy and where to start. Discusses the role of CKOs. Includes case studies of Monsanto and Zurich

**30. Edvinsson L, "Developing Intellectual Capital at Skandia", The Long Range Planning, Vol 30 No 3, June 1997, pp. 366-37.**

Describes a method of measuring the value of intellectual capital and integrating this with Scandia's traditional accounting systems. It extends into methods of presenting these assets as being combined on the balance sheet. It explains how the organisation needed to develop new language to manage the new account concepts that it had evolved. Fletcher L, Information Retrieval for Intranets: The Case for Knowledge Management. Technology Review, September/October 1998, pp.32-34

Suggests how a knowledge base may be moved to an intranet.

**31. GartnerGroup, The Knowledge Management Scenario: Trends and Directions for 1998-2003, Strategic Analysis Report -- 18 March 1999**

Discusses the use of a number of frameworks to be used in the implementation process, such as cultural, value and process. It then examines the integration of the enterprise KM Frameworks:

**32. Harvard Business Review on Knowledge Management, Harvard Business School Press, Boston, 1998.**

Includes articles on:

The Coming of the New Organization (Peter F. Drucker)

The Knowledge-Creating Company (Ikujiro Nonaka)

Building a Learning Organization (David A. Garvin)  
Teaching Smart People How to Learn (Chris Argyris)  
Putting Your Company's Whole Brain to Work (Dorothy Leonard and Susaan Straus)  
How to Make Experience Your Company's Best Teacher (Art Kleiner and George Roth)  
Research that Reinvents the Corporation (John Seely Brown)  
Managing Professional Intellect: Making the Most of the Best (James Brian Quinn, Philip Anderson, and Sydney Finkelstein)

**33. Havens, et al., "Easing into Knowledge Management", Planning Review, 27(2), March/April 1999, pp.4-9**

The paper argues that three-quarters of an organisations market value comes from intangible assets. Examples from Pricewaterhousecoopers are given.

**34. Heijst G., van der Spek R., Kruizinga E., "Corporate Memories as a Tool for Knowledge Management", Expert Systems with Applications, Vol 13, No 1, 1997, pp. 41-54**

Discusses the interaction between corporate memories and a learning organisation. Provides the basis for a framework to use learning to add to corporate memory.

**35. Hildebrand C, "ROI Making Knowledge Management Pay", CIO Magazine - December 15, 1998 / January 1, 1999, pp. 34-37.**

Examines Knowledge Management applications at different companies and divides those projects into high-, medium- and low-impact projects, based on such factors as whether there was a clear demonstration of realised benefits, comparative usage levels and trends, and levels of advocacy. In order to qualify for inclusion, the projects had to be linked to a strategically important activity.

**36. Howard A, Knowledge Innovation Aarnaes Howard Associates, 1998**

Suggests the role of Chief Knowledge or Learning Officers The document advocates knowledge creation and innovation as the only

way to grow rapidly and sustain leadership positions through the value-adding process of converting data and information into knowledge and moving it or transferring it across organisational boundaries. Defines a knowledge map that serves as a common frame of reference.

**37. Jordan J., Jones P., “Assessing your Company’s Knowledge Management Style”, Long Range Planning, Vol 30 No 3, 1997 pp. 392-398**

Describes how an organisation might need different knowledge frameworks for each profile of work.

**38. Knowledge Management: “Linking People to Knowledge for Bottom Line Results”, Corporate Executive Briefing, Dataware Technologies, 1996**

Examines KM systems in terms of data and retrieval technologies and how these could be applied to KM. The use of the web is suggested as a front-end for a knowledge warehouse. It discusses knowledge agents and content management.

**39. Kotnour, T., Proctor, M., “Process and Tools to Support Knowledge Management in a Virtual Organisation”, IEMC, 1996, pp. 247-252**

Discusses organisational learning, sharing knowledge, KM tools and processes.

**40. KPMG, The Knowledge Journey: A Business Guide to Knowledge Systems, KPMG Consulting, London, 1998**

This paper discusses the basics of Knowledge Management and focuses on possible document management aspects. It provides a framework to KM implementation in the form of a map moving from knowledge-chaotic through five stages to knowledge-centric organisation.

**41. KPMG, Knowledge Management: Research Report 1998**

Research finds provide an understanding of the relevance of KM particularly in relation to employee effectiveness. The report points to departing employees having a negative effect on customer relations,



43% report an “damaged relationship”. More than 10 percent of organisations reported “loss of significant income” when no KM systems was implemented. The paper provides some practical examples of experiences in KM through research on organisations with and without KM systems.

**42. Lange, B., “OMNI: A Corporate Knowledge Environment for Collaborative Work”, IEEE, July 1992, pp. 949-965**

Examines the Omni project, based on a task model , access to corporate experience, interaction among team members.

**43. Liebowitz,J., (Editor), Wilcox, L., (Editor) Knowledge Management and Its Integrative Elements, CRC Press, Boca Raton. 1997**

This work covers the general field of knowledge management, with particular emphasis on knowledge-based systems and their use in preserving knowledge in an organisation, and integrating it across departments and disciplines. Examples are given from industry, education, and US government. The book also covers learning organisations, intelligent organisations, and enterprise management.

**44. Liebowitz, J., “Knowledge Assets and their Scheduling of Use Within Organizations”, IEEE, March 1997, pp.262-265**

Describes a tool GUESS, (General Used Expert Scheduling System) to allow the scheduling of information to be used within a knowledge system. The system was developed for NASA. Discusses the possible role of a CKO.

**45. Long, D., “Building the Knowledge Based Organization: How Culture Drives Knowledge Behaviours”, Center for Business Innovation, May 1997.**

The paper argues that managers need a framework that links organisation’s culture and knowledge systems. The paper draws on experiences of Chaparrall Steel and Intel.

**46. Lotus White Paper on Knowledge Management, Lotus, IBM, January 1998**

An extensive document which commences with the fundamentals of KM but quickly moves to directing the reader towards possible technical solutions, often bordering on document management. Suggests the Lotus framework for KM and argues that some “real world experience suggests that technology can offset or even overcome some cultural disinclination towards knowledge management”.

**47. Low, BT., et al., “Expert Systems in the Service Industry: a Comprehensive Survey and an Application”, International Journal of Computer Applications in Technology, Volume 10, Nos 5/6, 1997, pp. 279-299.**

Examines the use of expert and knowledge systems in the service industry and details an example from the tourism industry where an expert system is used to construct itineraries and provide information on demand.

**48. Lyon, J., “Knowledge Management, Get in on the Action”, www.infotoday.com/mls/dec/story.htm, April 1998.**

Describes a method of using Knowledge Management as a practical aid to managing a research project.

**49. Macintosh, A., Position Paper on Knowledge Asset Management, Artificial Intelligence Applications Institute, University of Edinburgh, Edinburgh, 1997**

Provides a definition of Knowledge Management and knowledge assets and discusses why KM is important. Examines the challenge of deploying the knowledge assets of an organisation to create competitive advantage becomes more crucial as the marketplace is increasingly competitive and the rate of innovation is rising. This indicates that knowledge must evolve and be assimilated at an ever faster rate. Also refers to Wiig’s “The three pillars” of KM and the additions made by van der Spek and de Hoog.

**50. Marquardt, M., Knowledge Management in Learning Organisations, McGraw Hill, New York, 1996.**

Discusses the knowledge collection process as well as the knowledge creation process including the Nonaka's grouping of tacit, explicit and internal knowledge. It also looks at the transfer of knowledge and provides practical examples from a National Semiconductor experience.

**51. Malhotra, Y., Knowledge Management in Inquiring Organizations, Proceedings of 3rd Americas Conference on Information Systems (Philosophy of Information Systems Mini-track), Indianapolis, IN, August 15-17, 1997, 293-295.**

Discusses the need to move beyond knowledge as found in procedure manuals and in to the human aspects of knowledge creation. Explores the 'taken for granted' type of knowledge with the 'constructive nature' of knowledge creation.

**52. Malhotra, Y., "Knowledge Management for the New World of Business", Journal for Quality & Participation, Vol 2 No 4, July/August 1998.**

Discusses the cohesion required between information as managed by machines and the creative capacity of humans. It suggests that there is no direct relationship between the dollar spend on IT and the effective use of information.

**53. Marshall, C., Prusack, L., Shpilber, D., "Financial Risk and the Need for Superior Knowledge Management", California Management Review, Vol 38, No 3, Spring 1996, pp.77-101.**

Describes a proposed framework for KM that includes culture, skills and day-to-day actions. It highlights the possible dangers of 'knowledge hoarding'. It suggests reasons for the sudden interest in Knowledge Management. The article proposes that information without contextual knowledge can be dangerous. The paper examines three financial trading cases including the Nick Leeson case at Barings Bank.

**54. Martininy, M., "Knowledge Management at HP Consulting", Organizational Dynamics, Autumn 1998, pp.71-77.**

This is a case study of a 5000 employee consulting organisation and the process of implementing KM. The paper details the pilot process so that details of the implementation process used are included. It also points to possible pitfalls in the process.

**55. Maurer, H., "Web-Based Knowledge Management", Computer, March 1988.**

Suggests ways of linking documents in a web environment.

**56. Meeks, T., "Taking the Lead in KM", Image and Data Manager, September/October 1998, pp. 52-54.**

Discusses the experience of the US company Buckman Laboratories who commenced on their KM program several years ago. Looks at the relationship between technologies and management.

**57. Mowery, D., Knowledge Management Architecture, CRC Press LLC, Boca Raton, 1998.**

This paper discusses knowledge in the context of the 'meme' theory. This is a relatively new vision of knowledge. The paper quotes the concept coming from Richard Dawkins *The Selfish Gene*, where a meme is knowledge transmitted through communication and not procurement. An example of the use of web technology to acquire and filter knowledge is provided.

**58. Mowery, D., Oxley, C., Silverman, B., "Strategic Alliances and Interim Knowledge Transfer", Strategic Management Journal, Vol 17 (special winter edition), 1996 pp.77-91.**

This paper describes a method for measuring knowledge capabilities. Like O'Dell and Grayson 1998, it suggests the 'absorptive capacity' to measure the capacity of an organisation to 'absorb' information from alliance partners. The Japanese have been particularly advanced with this method.

**59. Neef, D., “Making the Case for Knowledge Management: The bigger Picture”, Center for Business Innovation, 1997.**

Discusses the relevance of a knowledge based systems in relation to expanding globalisation of today's organisations. The paper has a focus on large multi-nationals or the relevance of knowledge to governments.

**60. Nonaka, I., Takeuchi, H., The Knowledge Creating Company, Oxford University Press, New York, 1995.**

Regarded as a seminal work, this book provides a foundation on the understanding of knowledge within organisations. It examines the history of Japanese culture and how this shapes the current understanding of knowledge within contemporary Japanese organisations. The work makes comparisons between these cultural behaviours and those of western organisations and how the Japanese culture has under-pinned some of the Japanese success.

**61. O'Dell, C., and Grayson, C., If Only We Knew What We Know : The Transfer of Internal Knowledge and Best Practice, American Productivity & Quality Center, Houston, 1998.**

The paper refers to the 1994 work of the APQC International Benchmarking Clearinghouse in examining how best practices can be transferred to other organisations. The barriers it identified were the lack of incentive to make it happen, lack of practices and the lack of “absorptive capacity” to make the change. It refers to examples from TI and Eastman Kodak.

**62. O'Leary, D., “Knowledge Management Systems”, IEEE Intelligent Systems, May/June 1998, pp. 30-33**

Discusses why to use KM and KM spending estimate. Looks at acquiring knowledge, converting data and text to knowledge and linking people with knowledge.

- 63. O'Leary D., "Enterprise Knowledge Management", Computer, March 1998, pp. 54-61.**

Examines data / knowledge warehousing, creating knowledge from data. Ontologies relating to Knowledge Management. Filtering systems for knowledge, Culture and rewards.

- 64. O'Leary, D., "Using AI in Knowledge Management: Knowledge Bases and Ontologies", IEEE Intelligent Systems, May/June 1998, pp. 34-**

Looks at knowledge databases - Engagement, Proposal, News, Expert Systems. Examples from Arthur Anderson, Price Waterhouse, Ernst & Young. Also examines KM ontologies.

- 65. Prenninger, J., et al., Make-IT SME: Management of Knowledge Using Integrated Tools for SMEs, European Commission Esprit Programme, December 1998.**

Describes an EU initiative to develop a project for SMEs. Objectives for the project include suggesting ways of using suitable low cost technology solutions. Some distinctive issues relating to SMEs are included but the paper does not demonstrate if SMEs need a different approach to devising an implementation strategy.

- 66. Prusak, L., Knowledge in Organizations, Butterworth-Heinemann, Boston, 1997**

This work examines how knowledge can be nurtured in organisations. It suggests that building trust throughout a company is the key to creating a knowledge-oriented corporate culture, a positive environment in which employees are encouraged to make decisions that are efficient, productive, and innovative. The work includes numerous examples of successful knowledge projects at companies such as British Petroleum, 3M, Mobil Oil, and Hewlett-Packard.

- 67. Quintas, P., Lefrere, P., Jones, G., "Knowledge Management: A Strategic Agenda", Long Range Planning, Vol 30, No 1, 1997, pp.385-391.**

This paper investigates the concept of knowledge and how this can be used to a competitive advantage. It explores the opportunities that may

exist for knowledge between organisations and governments and how this acquisition process should proceed. It also examines some of the problem areas and suggests that problems are often related to a lack of understanding of knowledge itself.

**68. Reid, G., Butler, Y., Ernst & Young Knowledge Management - A Candid's View, Ernst & Young The North Sydney Club, 88 B 16/3/99**

Details how E&Y first started their KM program by concentrating on the development of knowledge repositories in two core areas: Marketing and Consulting. Looks at established Knowledge Networks (KNs) with Subject Matter Experts (SMEs). Shows how KNs are responsible for identifying key areas of knowledge that are strategic to the success and growth of the business.

**69. Ruggles, R., Little, R., Knowledge Management and Innovation: An Initial Exploration, Ernst and Young, May 1997.**

This paper argues that valuing knowledge will have a positive impact on the organisation's ability to innovate. It shows that organisations create more innovation than they can handle. It discusses ways to filter innovation and how projects should be "killed-off" as part of the valuing process development.

**70. Sanchez, R., Mahoney, J., "Modularity, Flexibility and Knowledge Management in Product and Organisational Design", Strategic Management Journal, Vol 17 (Special winter issue), 1996, pp.63-76.**

Provides examples of product design in manufacturing systems.  
Describes the decomposition of systems.

**71. Schmoldt, D., Rauscher, M., A "Knowledge Management Imperative and Six Supporting Technologies", Computers and Electronics in Agriculture vol 10, Elsevier, 1994, pp.11-30.**

Discusses the difference between information and knowledge. The paper examines the use of tools not only in relation to knowledge systems but also spatial data management and hypertext. The paper has some detail on the history of Knowledge Management including

knowledge in the global context.

**72. Stein, E., "Organisational Memory: Review of Concepts and Recommendations for Management", International Journal of Information Management, Vol 15 No 2, 1995, pp.17-32.**

Discusses the differences between organisational memory and knowledge by defining the processes as acquisition, retention, maintenance and retrieval. Describes with examples, the manager's role in organisational memory.

**73. Sowunmi, F., Knowledge Acquisition for an Organisational Memory System IEEE 29th Annual Hawaiian International Conference on Systems Science, 1996.**

Discusses knowledge acquisition through recording past experience. Also examines the life cycle of organisational memory and implementing a knowledge acquisition system.

**74. Sveiby, K., History of KM, <http://www.sveiby.com.au>.**

Argues that the classical management theory assumes that leaders make decisions and the led carry them out, because they control the flow of information. Sveiby suggests that a new management culture is needed to create learning organisations.

**75. Sveiby, K., TACIT KNOWLEDGE, Dec 1998, <http://www.sveiby.com.au/Polanyi.html> .**

Discusses tacit and focal knowledge. In each activity, there are two different levels or dimensions of knowledge, which are mutually exclusive: knowledge about the object or phenomenon that is in focus - focal knowledge. Knowledge that is used as a tool to handle or improve what is in focus - tacit knowledge.

**76. Sviolka, J., "Knowledge Workers and Radically New Technology", Sloan Management Review, Summer 1996, pp.25-40**

Provides case studies on the insurance industry through the use of profiling.



- 77. Taylor, W., “Uncovering Key Variables in Organisational Knowledge Management using Intensive Research Methods”, IEMC96, 1996, pp.662-666.**

The paper presents a best practice strategy for knowledge creation.

Like Nonaka (1995), Taylor argues that knowledge creation must be part of the whole organisational structure.

- 78. Van der Spek, R., and Spijkerveld, A., Knowledge Management: Dealing Intelligently with Knowledge, in Knowledge Management and its integrative elements, edited by Jay Liebowitz and Lyle Wilcox, CRC Press, Boca Raton, 1997.**

Suggests that the core of Knowledge Management is the “organisation of processes” which allows management to focus on the key elements of KM. It suggests that it allows the management to concentrate on the required coordination between departments.

- 79. van der Spek, R., Spijkervet, A., Kennismanagement in het Midden en Kleinbedrijf, Kenniscentrum CBIT en CSC, Het Internationale Kennismanagement Netwerk, Utrecht, 1998.**

This Dutch paper outlines an initiative to introduce a KM system in a group of SME innovation centres. It examines the particular relevance of SMEs and how these relate to the broader KM issues. It looks at some of the possible impediments that implementing a KM system in a SME might face.

- 80. Wiig, K., “Knowledge Management: Where Did It Come From and Where Will It Go?”, Expert Systems With Applications, Vol 13 No 1, 1997, pp.1-14.**

Describes the origins of Knowledge Management in the 1980's. The future of Knowledge Management is looked at by suggesting four perspectives: management practices, information technologies, organisational efforts and development.

- 81. Wiig, K., Hoog, R., van der Spek, R., “Supporting Knowledge Management Selection of Methods and Techniques”, Expert Systems With Applications, Vol 13 No 1, 1997, pp.15-27.**

Provides a framework containing elements to review, conceptualise, reflect and act. Each method is explained in detail including different

## **5 Proposed Directions for Project B**

The objectives for Project B will be:

- ❖ Review existing research and experiences from the literature review
- ❖ Determine which research is suitable for SMEs and Tourism
- ❖ Inquire why there is an apparent lack of research into SMEs and Tourism
- ❖ Use existing research to determine if Knowledge Management is suitable for SMEs and tourism by examining:
  - Differences between SMEs and organisations that have been researched
  - What impact would these differences have on Knowledge Management in the SME environment?
- ❖ Suggest suitable methodology for SMEs
  - Framework
  - Suitable tools
- ❖ Establish if ROI can be determined.
- ❖ Propose the required research to enable SMEs and Tourism to use Knowledge Management.

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## **10 Appendix 2**

### **Case Study Implementing Knowledge Management for a SME in the Tourism Industry**

## **22 Appendix 3. Economic Impact of Tourism**

**MONTHLY FACTS SHEET ON THE ECONOMIC IMPACT OF TOURISM & THE LATEST VISITOR ARRIVAL TREND**

# Impact

## GROSS DOMESTIC PRODUCT

In 1996-97 tourism directly accounted for 5.8% of expenditure on Gross Domestic Product (GDP) and 5.4% at factor cost. Indirectly tourism accounted for a further 3.5% of GDP at factor cost (BTR).

*The methodology and data sources employed here differ from the previous estimates. Therefore comparisons should not be made between the two.*

## DOMESTIC TOURISM EXPENDITURE

Expenditure derived from domestic tourism was \$43.0 billion in 1998 (excluding expenditure by outbound residents) (BTR).

In 1995-96, outbound residents spent domestically \$4.6 billion (eg on travel agency services, travel to and from international gateways, and international airfares paid to Australian carriers) (BTR, ISR). (#)

## EXPORT EARNINGS

In 1998-99, international tourism to Australia generated export earnings of \$16.2 billion (up 1.1% on 1997-98). This accounted for 14.5% of Australia's total export earnings (14.1% in 1997-98) and 61.9% of services exports (62.7% in 1997-98) (ABS, ISR).

## INBOUND NIGHTS, EXPENDITURE

In the year ended 31 March 1999, overseas visitors aged 15 years and over stayed a total of 105.4 million nights (up 14.7% on the year to March 1998), and stayed an average of 27 nights. During this 12-month period, these visitors spent an average of \$4 176 on Australian goods and services (which includes international airfares on Australian carriers and pre-paid expenditure, and \$2 224 while in Australia) (BTR, ISR).

(#) Direct effects of tourist expenditure only.

## DOMESTIC TOURISM

Preliminary results from the National Visitor Survey (NVS) for 1998 show that residents aged 15 years and over took 73.8 million trips within Australia of at least one night's duration and spent 293.5 million nights away from home. In addition, 153.1 million daytrips were taken.

*The methodology employed by the NVS is different from that of the Domestic Tourism Monitor (DTM). Results from the two surveys cannot be compared.*

## SHORT-TERM DEPARTURES

Short-term resident departures for 1998-1999 totalled 3 188 700, an increase of 5.2% on 1997-98. Departures in June 1999 numbered 289 300, up 2.5% on June 1998 (ABS).

## EMPLOYMENT

In 1996-97, tourism was directly responsible for employment of over 670 000 persons (8.0% of all those employed) and indirectly for a further 290 000 (a total of 960 000 or 11.5% of all those employed) (BTR).

## HOTELS AND MOTELS

In 1998-99, the number of room nights occupied in hotels, motels, guest houses and serviced apartments increased by 5.6% to 38.6 million, and takings per room night occupied were \$103.5, a marginal increase on the previous year. The average room occupancy rate was 58.1% (58.0% in 1997-98).

## NEW INVESTMENT IN HOTELS AND MOTELS

Over the period 1993-94 to 1997-98 the value of work done each year in construction of hotels and similar establishments was \$291m, \$481m, \$638m, \$1 000m and \$1 054m respectively (ABS). The forecasts for 1998-99 and 1999-2000 are \$1 170m and \$1 230m (ISR).

## OVERSEAS VISITOR ARRIVALS (ABS Catalogue number 3401.0)

	YEAR	JAN-JUL	JULY	% CHANGE ON PREVIOUS YEAR		
	1998	1999	1999	JAN-JUL	JULY	AUG (p)
Japan	751 100	412 300	63 600	-6.4	-4.6	-4.3
Other Northeast Asia	439 600	290 200	51 400	9.8	13.5	8.6
China	76 600	50 900	8 700	12.9	10.1	15.9
Hong Kong	143 400	83 800	15 400	-4.6	4.8	-
Korea	66 600	56 300	9 400	82.2	59.3	64.8
Taiwan	150 000	97 400	17 600	-1.4	6.7	-9.0
Southeast Asia	556 200	352 100	45 500	12.5	12.1	18.4
Indonesia	93 000	61 800	9 100	13.8	1.1	-10.8
Malaysia	112 100	78 400	9 800	27.9	12.6	40.5
Singapore	247 100	140 100	17 100	0.1	18.8	17.0
Thailand	49 100	37 000	5 300	44.5	26.2	21.9
New Zealand	709 400	390 200	67 600	-0.4	-13.9	12.2
UK	467 500	276 600	35 200	8.6	22.6	28.2
Other Europe	484 000	270 700	46 300	9.4	15.2	10.9
USA	373 900	244 100	37 800	10.4	8.9	19.1
Rest of World	385 500	240 100	41 100	16.3	9.3	13.0
Total	4 167 200	2 476 300	388 500	5.9	4.4	10.3

p preliminary - - not available

Jan-July 99/98: Holiday +6%, VFR -1%, business -1%, education +10%, convention/conference +12%, employment +50%, other +32%\*

\* New Passenger Card requirements from 1 July 1998 have caused a break in series.



# TRENDS

## INTERNATIONAL TOURISM (ABS Cat 3401.0)

	Visitor Arrivals	Resident Departures
1992	2 603 300	2 276 300
1993	2 996 300	2 267 200
1994	3 361 700	2 354 300
1995	3 725 800	2 518 600
1996	4 164 800	2 732 000
1997	4 317 900	2 932 800
1998	4 167 200	3 161 100

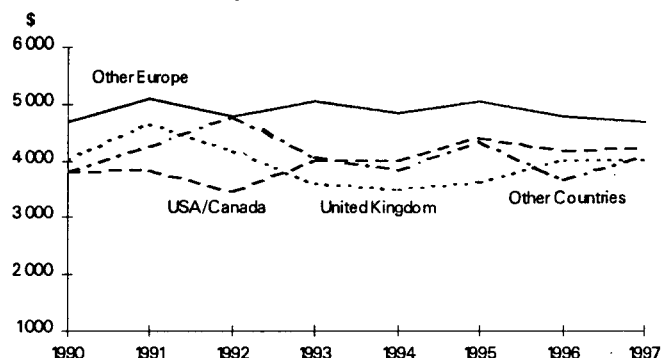
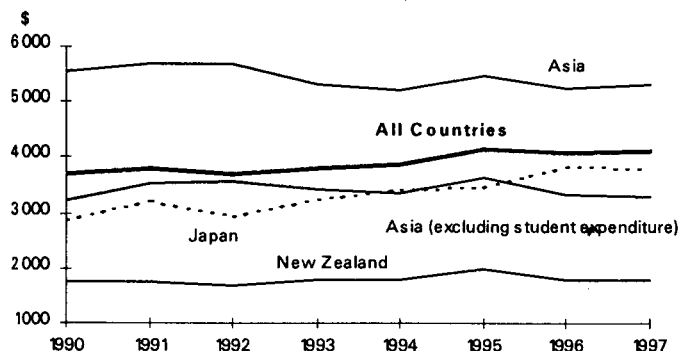
## DOMESTIC TOURISM (BTR)

	Trips ('000)	Nights ('000)
1995	59 679	251 760
1996	62 976	252 531
1997	64 580	257 529
1998	73 811	293 456

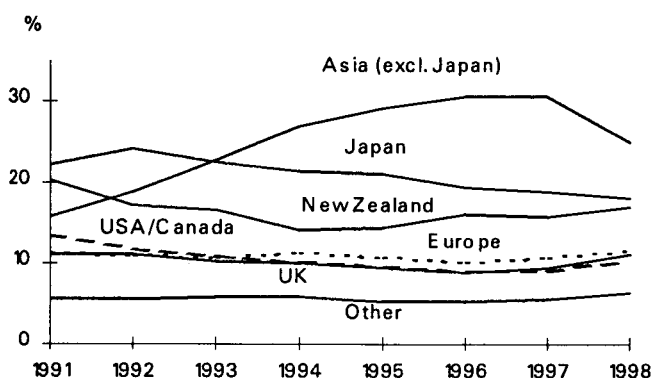
*(The NVS replaced the DTM from 1998. The methodology employed by the NVS is different from that of the DTM, which means that the results from the two surveys cannot be compared.)*

## AVERAGE INTERNATIONAL VISITOR EXPENDITURE ACCRUING TO AUSTRALIA, 1990 TO 1997

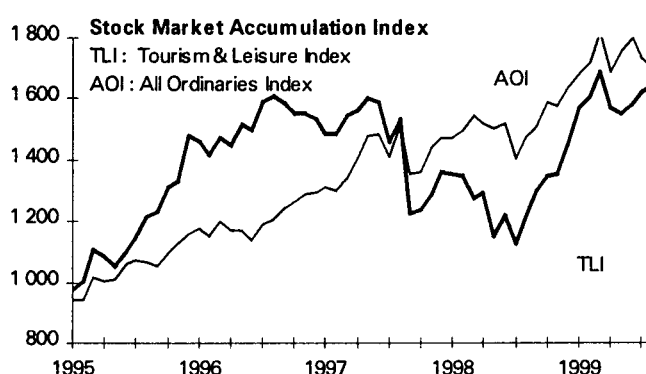
(ie expenditure in Australia (including pre-paid), airfares on Australian international carriers, and foreign airline expenditure in Australia) (ISR)



## INBOUND MARKET SHARE, 1991 TO 1998 (ABS)



## TOURISM AND LEISURE INDEX (Australian Stock Exchange, ISR)



## TOURISM EXPORT EARNINGS (a) (ABS, BTR, ISR)

	Travel Credits \$m	Passenger Services Credits etc \$m	Total Tourism Export Earnings \$m	Percentage of Services Exports	Percentage Of Total Exports
1994	8 979	3 886	12 865	65.5	15.3
1995	10 607	4 105	14 712	66.7	15.7
1996	11 637	4 375	16 012	66.7	15.9
1997	12 135	4 633	16 768	65.5	14.9
1998	11 756	4 535	16 291	62.2	14.2

(a) The methodology used to estimate tourism export earnings has been revised from January 1999. The new series are not compatible with previously published series. For analytical purposes, all series have been revised back to 1994.

## LONG RANGE FORECASTS (Tourism Forecasting Council, May 1999)

International visitors from all markets:	4.2 million in 1998 to 8.4 million in 2008, with 7.3% average annual growth for this period
International visitors from Japan & Asia:	1.8 million in 1998 to 4.6 million in 2008, with 9.8% average annual growth for this period
International visitors from rest of world:	2.3 million in 1998 to 3.8 million in 2008, with 4.9% average annual growth for this period
Domestic visitor nights:	290 million in 2006-07, averaging 1.1% annual growth from 1996-97

Circulation Enquiries: Ph (02) 6213 7008 Statistical Enquiries (BTR): Ph (02) 6213 7124 Other Enquiries: Anne Holmes Ph (02) 6213 7081

<http://www.tourism.gov.au/publications/impact.html>

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