CHAPTER 1
INTRODUCTION

1.1 Overview of Study

Knowledge Management (KM) has now become important to any organization especially where data, information, knowledge and wisdom are used to achieve the job goal by utilizing the knowledge. KM has gradually attract the attention of management and nowadays top level commitment and support, staff awareness, allocation of budget, deployment of staff, suitable tools and infrastructure should no longer be an issue or hindrance factors as the interest in KM is quite understandable given the moves towards K-based economies and workplaces.

At the turn of 21st century, there has been a fundamental shift in the economic environment of developed nations away from tangible manufactured goods toward value added services. This has led organizations to focus on Intellectual Capital and facilitated the emergence of KM as a business discipline (Savage, 1990; Davis and Davidson, 1991; Quinn, 1992; Nonaka and Takeuchi, 1995; Prusak, 1996; Sveiby, 1997; Davenport and Prusak, 1998). In the context of Malaysian economy, Malaysia is transforming its economic structure from manufacturing-based to knowledge-based economy towards achieving the Vision 2020. Thus, every organization in Malaysia irrespective of the size should be encouraged to embark in KM as this would benefit the organization itself and ultimately contributes to the overall economy of Malaysia.
Tourism industry is believed to have significant knowledge elements by nature and KM could provide substantial benefits and advantages if appropriate efforts and careful planning formulated to embark in implementing KM and this is the subject of the thesis emphasizing particularly at the Tourist Information Counters (TIC) under Tourism Malaysia (TM) and also some recommendations on the overall KM Framework which would also include the Ministry of Tourism (MoTOUR) and also the industry players. The challenges and benefits gained by implementing KM will also be discussed.

In investigating the opportunities for using KM by TM, two themes emerge:-

i. TM has a substantial need to use KM and it could benefit particularly the TIC due to its nature of work.

ii. The success of KM implementation at the TIC level as the front liners will be a catalyst in determining the direction or roadmap of future KM for the tourism industry.

1.2 Problem Statement

The purpose of the research is to investigate how TM can implement and use KM with particular emphasis on the TIC with suggestion of KM system implementation and how KM can be adopted to enhance the capability of TM.

1.3 Objective of Study

This study is carried out for the following objectives:-

i. To investigate problems in information dissemination and sharing at the TIC all over Malaysia which causes the
inefficiency of the front liners and it’s implication to the tourism industry.

ii. To propose the embarkation of Knowledge Management in TM as a tool for knowledge sharing between the industry players with emphasis initially at the TIC.

iii. To improve on ways of the existing knowledge sharing and manipulation amongst the TM employees in order to render better services by providing a platform for knowledge sharing.

iv. To suggest a single platform for all industry players to share and use information about tourism through the extension of the proposed KM Framework.

v. To see how KM could become a tool in boosting the tourism industry ultimately.

In order to determine if these objectives are relevant and achievable, three (3) research questions are proposed in the next section.

1.4 Research Questions

To meet the objectives of this research, it is important to understand the current situation, examine the possibility of employing KM technique to achieve a better solution and determine the likely success of a proposed solution. This leads to the following three (3) research questions:-

i. To what extent has KM been embedded in TM and MoTOUR?

ii. Could the availability of a single KM platform, updated by knowledgeable people, assist TIC to improve its services towards more effective and efficient tourism counters?
iii. Would the expected benefits gained by implementing KM, outweigh the expected constraints and limitations (hindrance factors)?

1.4.1 Hypothesis

This thesis investigates the following hypothesis:

Ha

TIC services are more efficient and effective via a Tourist Information Counter Knowledge Management System (TIC KMS)

1.5 Significance of Study

Through researcher’s own experience working at ‘one-stop centre’ tourism, there are cases whereby tourist did not get the right information during their consultation from the TA who manned the TIC. This could be due to several reasons including lack of information, miscommunication, misinformation, wrong information etc. Even though, surveys about the preciseness or conciseness of information provided at these counters have never been conducted but from the information gathered verbally, cases whereby wrong information have been advised to some tourist have been reported. Although the percentage of this cases could be relatively small or have yet to be proven, it could be detrimental for the tourism industry as the implications could also affect the efficiency and effectiveness of the TM as a corporate body responsible to market Malaysia as a destination of excellence and to make the tourism industry a major contributor to the socio-economic development of the nation.
So far, there has never been a single platform for these TAs to assess the current and updated information with regards to tourism in Malaysia as a whole where they can straight away refer without having to search for the information from various websites and portals and also from the explicit knowledge through magazines, manual brochures, bulletins etc besides also at the same time depending very much on their tacit knowledge and working experiences. This study concentrates on the suggestions for TM to start off with KM through several phases considering these TICS in providing a single TIC KMS.

This study is also aim to propose a better medium for the players in the tourism industry to share information within the country and amongst the industry players so that this will keep them on the same note with regards to tourism in Malaysia to provide better services to the tourist. However this would only be included in the future recommendation for TM.

1.6 Research Limitation

The scope of this project is broad compared to the allocated time and budget thus this thesis emphasizes more at improving the TIC operations. Researcher also anticipates difficulties in getting the full co-operation from selected samples due to their busy schedule. Problems on assessing private and confidential information and certain government policies might also arise.

TA’s skills and knowledge have never been tested or evaluated systematically. They were often sent for product update or familiarization trip for exposure, but knowledge gained has never been evaluated, how much they have learned or
knowledge collected through those exercise has never been examined and evaluated. If questionnaires were distributed, the end result might not be reflective of the true situation.

1.7 Scope and Assumption

The scope of this thesis is limited to implementation and use of KM for the tourism industry particularly emphasizing the TM in Malaysia. Since KM is still new in Malaysia, limited amount of research is expected to be available. However, general literature review on KM will be very much dependent on as references.

1.8 Structure of this dissertation

In this chapter, an introduction to the objective and rationale of study was made clear. Research questions were developed, significance of study explained together with the research limitation as well as the scope and assumption.

In Chapter 2, issues of KM relevant to this study need to be developed. This requires an extensive and elaborate amount of literature review in trying to understand the overall concept of KM in general and especially KM in tourism industry.

In Chapter 3, the research methodology for this study, including the rationale of and approach to survey research is described, including the survey questionnaire. The outcome of the survey addresses Research Question 1 (To
what extend has KM been embedded in TM and MoTOUR?), and provides a direction for Chapter 4.

**Chapter 4** relies on an analysis of the survey research explained in Chapter 3. Within this chapter, the rationale and design of a prototype system is provided. It is this KMS prototype that will assist in answering Research Question 2 (Could the availability of a single KM platform updated by knowledgeable people, assist TIC to improve its services towards more effective and efficient tourism counters?), and gain an understanding of expected benefits, thus answering the first part of Research Question 3 (Would the expected benefits gained by implementing KM outweigh the expected constraints and limitations (hindrance factors)?.

**Chapter 5** revolves around prototype testing and implementation of the proposed TIC KMS where it addresses all of Research Question 3.

**Chapter 6** examines the outcomes described in Chapters 3 – 5, thus providing answers to all Research Questions proposed in this study. Additionally, this chapter provides an opinion on whether this approach might provide better services to tourists and further boost tourism industry in Malaysia, together with suggested directions for future research.

Appendices are included at the end of the report to support and justify the significant findings of the study. A list of referred articles, journals and text labeled as Bibliography is also attached.
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

The extensive review attempts to discover major publications that will provide an insight understanding about the topic and related issues. The review also reveals the limitations encountered in the area of tourism industry specifically pertaining research and tools used in KMS.

Selected journals relevant to the topic have been referred. Throughout the review, these materials were then identified to fall into two major categories. First, specifically emphasizing on the big scope of KM. Second, focusing on the KM in the context of tourism industry and all its associated issues. In-depth studies on these two categories would enable further refinement pertaining to tourism industry in Malaysia that relates to TM as being the potential organization to embark into the effort of KM, which is the focus of this paper.

2.1.1 Limitations to the literature review

An extensive research on the area of KM in the tourism industry had been reviewed and the researcher discovered that there has been limited literature that is specific to the tourism industry in Malaysia specifically in the area of tourism and the usage of Information Technologies or how they can or have shaped the tourism industry. However to help the researcher in the attempts to cover the related topic, the Internet provide the most suitable research method and has been useful in providing
journals about tourism industry pertaining to KM in general. Hence, the study is largely based on limited amount of research materials that are mostly not directed to tourism industry in Malaysia especially from the IT perspective.

Most references were made from the Internet. At this writing, it is noted that there has been no similar study concerning the efficiency of tourist information counters through the usage of any IT system. Most of the journals focus more on the sustainable tourism, marketing and e-business in tourism, ways to enhance quality hospitality services etc rather than tools to support KM in the tourism industry. Limited number of materials is also found discussing on the specific KMS in the tourism sector.

2.1.2 Scope of the literature review

The scope of this literature review revolves around two major issues:- KM in a broader scope and KM in the tourism industry and all its related matters. Review on a broad perspective of KM includes human, structural and social issues. KM in the tourism industry relates to the issue of the importance of data and information and how to distinguish them, the concept of Community of Practice (CoP) with certain extent of knowledge flow, creation, transfer, dissemination and sharing occurring in that community especially with the huge, extensive and diverse knowledge in the tourism industry. As the study involves more on handling human tacit knowledge since it is conducted on a group of
‘knowledge worker’ (Tourist Assistants), the aspect of training, culture and reward is given appropriate emphasis. The review also looked into the area of issues pertaining to KM in the tourism industry as KM should not be a ‘one time’ effort but rather continuous with certain future enhancement already considered earlier in the proposed framework.

2.1.3 Gaps in the Research Area

The research has found quite a number of publications that specifically covered KM and strategic use of IT in the tourism industry. Interestingly, it is also discovered that a lot of publications on CoP are available, which has significant relationship with this research. These publications are important references that provide substantial insight of how CoP relates to the industry. In addition, bridging the CoP between and within an organization has been discussed widely by the academia and practitioners as well as the industry itself. It has also been noted that limited number of publications on the tools used pertaining the KMS in the tourism industry has been found.

Considering the importance of their contribution to the industry, there seems to be an opportunity for research literature to be published in assisting this important segment to understand the potential and use of KM effort suitable for adoption. There is indeed a huge gap in this area of research. Most of the research found particularly discusses on how to enhance hospitality services in a very general context for example in the hotel industry, entertainment, enquiry desk etc. Much attention has been
given rather on the approaches or strategies to improve the performance of tourism and hospitality industry.

2.2 **Knowledge Management – A Broad Perspective**

The concept of KM is now being acknowledged, recognized and adopted by many organizations and leaders as they understand the economic returns/return on investment reaped from implementing it through the “right” and effective KM strategy. According to a survey of 200 IT managers by Information Week Research in US, 94% of companies consider KM strategic to their business or IT processes. It is believed now that every industry needs to adopt some kind of KM failing which would result in its inability to either stay competitive or increase its organizational effectiveness and competitiveness. To create a competitive environment, where none is sharing their "secret" knowledge, can literally do more harm than good. Many organizations and leaders nowadays have realized that knowledge is so powerful and has widely acknowledge that perhaps it is an important factor to stay competitive in today’s knowledge-driven economy.

Tremendous research on KM has been conducted discussing various aspects of KM as a new emerging discipline discussed widely in the last few decades and still continue to be a topic of interest worth pursuing. Today, KM has shown its significance and impact, not only in the business context but also in other areas such as construction industry, industrial & engineering, education, bio-informatics, K-based user interface management system, insurance experts, Quality Management (Improving effectivity of Organizations) just to name a
few using wide assortment of technologies to create their KM tools and infrastructure for example hypertext, Computer Aided Design (CAD), online documentation, relational databases, text and document search engine, groupware, data warehouses, data mining tools, web-based application, Intranet, Internet, Enterprise Information Portal, e-Learning etc. A list of companies successfully implementing its KM project is provided later in this chapter using appropriate tools.

Knowledge is the information to produce value, such as standard and materials e.g. report, manual. Stenmark, D. (2001) established a working relationship between information and knowledge as two important entities from the perspective of IT. His significant finding noted that information can be made tangible and represented as objects outside of the human mind. Knowledge, on the other hand, is a much more elusive entity – while some see it as an object, others regard it as an interpretation or representation that is constantly re-negotiated. It has often been pointed out that data, information and knowledge are not the same, but despite efforts to define them, many researchers use the terms very casually. There have been two different ideologies about information and knowledge, which is very contradicting, one of which is about its similarity and another says they are far from identical. Knowledge and information are similar in some aspects. While information is more factual, knowledge is about beliefs and commitment. Further, knowledge is always about action – the knowledge must be used to some end (Nonaka and Takeuchi, 1995, pp. 57-58). Despite the various definitions spelled out by a few renowned researchers as depicted in the following diagram, the three entities remains to be vague and
imprecise and the relationship between them is said to be still insufficient from the KM literature.

Table 2.1: The Relationship between Information and Knowledge

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Data</th>
<th>Information</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiig, 1993</td>
<td>-</td>
<td>Facts organized to describe a situation or condition</td>
<td>Truths, beliefs, perspectives, judgements, know-how and methodologies</td>
</tr>
<tr>
<td>Nonaka and Takeuchi, 1995</td>
<td>-</td>
<td>A flow of meaningful messages</td>
<td>Commitments and beliefs created from these messages</td>
</tr>
<tr>
<td>Spek and Spijkervet, 1997</td>
<td>Not yet interpreted symbols</td>
<td>Data with meaning</td>
<td>The ability to assign meaning</td>
</tr>
<tr>
<td>Davenport, 1997</td>
<td>Simple observations</td>
<td>Data with relevance and purpose</td>
<td>Valuable information from the human mind</td>
</tr>
<tr>
<td>Davenport and Prusak, 1998</td>
<td>A set of discrete facts</td>
<td>A message meant to change the receiver’s perception</td>
<td>Experience, values, insights and contextual information</td>
</tr>
<tr>
<td>Quigley and Debons, 1999</td>
<td>Text that does not answer questions to a particular problem</td>
<td>Text that answers the questions who, when, what or where</td>
<td>Text that answers the questions why or how</td>
</tr>
<tr>
<td>Choo, Detlor, &amp; Turnbull, 2000</td>
<td>Facts and messages</td>
<td>Data vested with meaning</td>
<td>Justified, true belief</td>
</tr>
</tbody>
</table>


The broader perspective of KM includes the processes of knowledge use, knowledge creation, knowledge sharing, knowledge transfer and knowledge renewal which will be discussed later part of this chapter. However, what is important is to understand how all the input resources and processes contribute to performance (Malhotra, 2003). According to Lee & Hong, 2002, the concept
of KM is based on the earlier concept of Total Quality Management (TQM), Business Process Reengineering (BPR) or Business Process Innovation and Learning Organization (LO). The structure of KM as proposed by the authors is as illustrated in the reproduced diagram as shown in Figure 2.1.

![Figure 2.1: Structure of knowledge management](source)

*Source: Sang M. Lee and Soongoo Hong*

IT applications and KM life cycle as proposed by the authors are as depicted in Figure 2.2.
Alavi and Leidner (1999) viewed KM from three different perspectives: information-based perspective, technology-based perspective, and culture-based perspective. In terms of the information-based perspective, the characteristics of information such as readily-accessible information, real-time information, and actionable information. In this perspective, KM has been viewed as a means of keeping track not so much of knowledge but of who held the knowledge and how to locate them. From the technology-based perspective, KM is associated with various systems (including data warehousing, enterprise wide systems, executive information systems, expert systems, and the intranet) as well as various tools (e.g., search engines, multi-media, and decision making tools). Generally, KM is associated with the integration of cross-functional systems worldwide. A significant view is that a new type of technology specifically dedicated to KM did not emerge. Lastly, from the view of culture-based perspective, KM is associated with learning organization, communication, and intellectual property cultivation. Information/technology component has been
suggested as being 20% from the KM itself whereas the cultural and managerial aspects accounted for the rest of KM.

2.2.1 Framework/Model/Strategy

As the attention to KM is growing constantly, there have been few platforms in existence to discuss topics pertaining KM such as standards, best practices, framework, model, strategy etc. For example, in June 1995, Swiss Forum for Organizational Learning and KM at the University of Geneva was formed in the effort to build a solid base for the development of a practical KM (Probst, 1998). This forum is a platform for practitioners who consider knowledge a strategic resource and a central tool for protecting their competitiveness. One of the activities of the forum is to address knowledge-related topics such as strategy, training and global knowledge networks.

Similarly in Malaysia, Multimedia Development Corporation now known as MDeC, had formed KM Association of Malaysia in 2002 with the objectives of providing a platform for successful KM efforts and communities in Malaysia. The website for this association is http://webaccess.mdc.com.my/km-portal/. This is an internet portal that allows membership registration for KM communities including international members. This association provides international exchange on KM and provides competitive advantage through benchmarking and networking between members. At this writing, this association managed
to attract thousands of subscribers/members including private sectors, public sectors, students, researchers, practitioners etc.

A research on 25 firms by Zack, M. H. (1999) has found that the most important context for guiding KM is the firm’s strategy. An organization’s strategic context helps to identify KM initiatives that support its purpose or mission, strengthen its competitive position and create shareholder value. Author argued that the link between KM and business strategy has always been ignored. This article provides a framework for describing and evaluating an organization’s knowledge strategy. Tested on 6 well known companies namely Image Corp (photographic imaging firm manufacturing), Buckman Labs (specialty chemicals manufacturer), Lincoln Re (life/health insurers), LeaseCo (industrial garment firm) and Big6 (public accounting and professional services firm) had proven the importance of knowledge strategy regardless of industrial sector. Author suggested the adaptation/application of the popular Porter’s “five forces” model, SWOT framework to define strategy. Performing a SWOT analysis involves describing and analyzing a firm’s internal capabilities – its strengths and weaknesses – relative to the opportunities and threats of its competitive environment.

An organization serious in embarking to KM effort could be seen in its initiative to form a KM department to look into all matters pertaining KM. For example in Malaysia MDC has formed its Knowledge
Management and Information Technology Department in 1999. Being among the first to embark in KM in Malaysia, MDC had set its KM objectives as follows:

- To shape a world-leading environment
- To attract and nurture leading-edge and world-class companies
- To facilitate knowledge transfer and wealth creation
- To build a well-mandated, value-based, highly effective institution

Jones, Herschel and Moesel (2003) propose an alternative framework to facilitate KM activities based on their extensive literature work:

1. Create positions of dedicated organizational innovators who will facilitate the effective acquisition of new knowledge from sources outside the organization – e.g. the Chief Knowledge Officer (CKO).

2. Use CKO and other knowledge champions to facilitate knowledge sharing and the effective use of an organizational memory by working with opinion leaders throughout the organization to codify and institutionalize new knowledge.

3. Use knowledge champions to create and update directories for appropriate knowledge centers.

4. Use CKOs and other knowledge champions to facilitate knowledge sharing and the effective use of an organizational memory by identifying and satisfying the knowledge needs,
wants and expectations of organizational users and the organization in general.

Author concluded that consistent with the management of knowledge centers and a central directory is the recognition that knowledge champions must continually understand the changing need of users within different areas of the organization. The purpose is to make sure they are responding to the information/knowledge needs of different users and providing the right knowledge in the right knowledge center.

Even though, it has often been said that there is no single “right” model or a “silver bullet” solution of KM, it is still useful to consider certain framework, model or strategy that have been proven to be successful and adopted in many organizations.

2.2.2 Success (& it’s enabler) and failures

Generally, technology is perceived as a driver in many KM projects in the late 1990s. However, as the evolution and adoption of KM is better accepted, nowadays organizations are treating the process and people aspects as being the critical success factors in any KM initiatives. According to Tsui, E. (2005), in the last five to six years, there has been plenty of KM projects that come and go. Many of these projects were successful and organizations are still leveraging benefits from their KM systems, but at the same time it is also fair to consider, a proportion of failed projects. Author also lamented that many of the KM projects that commenced in the past are primarily driven by the adoption of technologies such as search engines, retrieval and classification tools, e-
collaboration tools, portals and content management systems. One of the lessons learnt from these failures is that technology alone should not be the primary driver for any KM projects and that an appropriate balance of technology, process, people and content is instrumental to the continued success of any KM deployment. In the same published paper, author highlighted the distinct made by Lock Lee between business processes and business practice. Business processes are normally centrally defined and structured. Business practice on the other hand, occurs at the operational level and involves a lot of tacit knowledge. This is somewhat related to the organization of this study which is having both business processes and business practices.

In Malaysia, MDeC is among first local company to embark on KM in a structured and organized way. Among the objectives of KM incepted as early as 1999 are to facilitate knowledge creation and transfer by providing effective infrastructure, contents and inputs for strategic decision making. It also aspires in moving towards measuring intellectual capital and institutionalizing of KM in MSC. Another example is PERODUA, a Malaysian car manufacturer is known to embark its KM effort in 2001. Knowledge sharing and KM is expected to be ingrained within the culture and to be an integral part of core business activities. Malaysian organizations must encourage KM to survive and not left out in the Knowledge Era.
Rao, M (2003) wrote in the KM Communicator about the eight C’s of KM success applied by the successful IT companies such as Infosys, EDS, Fujitsu Consulting, IBM, Oracle, SAS, Xerox etc. Author analytically applied the “8 Cs” framework (parameters beginning with the letter C): connectivity, content, community, culture, capacity, cooperation, commerce and capital, into each of the abovementioned IT sector’s best knowledge enterprises by giving appropriate examples respectively.

2.2.3 Common Problems in KM

A variety of obstacles are preventing KM from being ingrained in day-to-day business practices. Common problems being the biggest impediments in KM according to many research and survey include:

1. KM involves not only technology but also people. These include human and social factors such as changing the culture, knowledge sharing, motivation to contribute knowledge, leveraging intellectual assets or tacit organizational knowledge etc.

2. Getting buy-in from the upper level management is difficult.

3. Classification of knowledge is not an easy task due to information overload. This leads to failure in recognizing the value of knowledge because value of information is not understood.

4. Systematically capturing of information and sharing it across internal and external boundaries is a challenge.
5. As many technologies are now being used to capture corporate knowledge thus selecting the most suitable tools is a problem.

Hu, Huang, Kuse, Su and Wang (1998) argued that on average, American corporations analyzes only 7% of the information they collect or generate. This indicates that most companies recognize the strategic importance of their intellectual capital and spend a considerable amount of resources collecting, storing and protecting these assets but only a fraction of the collected information and knowledge is utilized or reused effectively. Authors pointed out among the many road blocks or challenges in transforming personnel knowledge into organizational knowledge and in utilizing organizational knowledge effective. These road blocks are:-

1. Culture barriers for sharing knowledge – examples include the ‘not invented here’ syndrome, insecurity about the quality of other people’s work, the unwillingness to invest in understanding the work of others, and the insecurity of sharing knowledge with others. Author suggested that this can be overcome by changing the measurement and incentive system for knowledge reuse by transforming the culture of sharing and by generating executive support.

2. The information quality barrier – relates to the lack of quality measurement for the information resulted in the creation of non-essential content in knowledge repositories. The
challenge is to filter out this over-abundance of data and only abstract critical data into comprehensible knowledge.

3. The technology barrier – difficulties to find or retrieve the appropriate knowledge for reuse. Most employees don’t know where, when or how to find and reuse the intellectual capital of the corporation. Technology can ease this process. Enabling technology that can minimize the barriers or help to overcome them needs to be developed. Organizational knowledge must be structured so that its meaning can be optimized. Thus domain specific information of documents must be associated with knowledge (known as metadata) so that it can be used to categorize, organize, search, locate, compare, retrieve, reuse and share the knowledge.

2.2.4 Case Studies and Tools

According to Tsui E. (2005), Edward, Shaw and Collier conducted workshops with ten organizations to ascertain their KM initiatives. Their findings revealed that only three of the ten organizations have a KM program that is technology-driven and even so, organizations are utilizing general IT tools (e.g. e-mail, bulletin boards, information databases) to support KM initiatives rather than KM specific technologies.

In US, companies such as 3M, Hewlett Packard, Xerox and Buckman Labs are among successful KM implementers. Hewlett-Packard’s
Professional Service Organization has created several tools to realize its KM strategy. Three of these tools – knowledge-sharing forums, knowledge capture and learning communities help to establish a strong sense of community and link people together to develop and integrate knowledge (Probst, 1998). Buckman Labs, a US$300 million chemical company with operations in 21 different countries and 50 years of experience had long realized the importance of integrating and consolidating knowledge from operations worldwide and the importance of global knowledge sharing has been successful in its TechForum which replaces its traditional IT solution. Using CompuServe technology, e-mail and forum provider as well as the network provider are used as a global business communication platform which connects Buckman users around the world to share knowledge via messages on the forums, company-wide discussions and documents authored using PC tools. This TechForum had become the central pivot of Buckman’s global KMS with its own message board, conference rooms to facilitate debate and library section where the communication threads and other pertinent knowledge were stored (Pan, S. L. and Leidner, D. E, 2003).

Dilnutt, R. (2002) listed three contemporary cases in Australia practicing KM involving two major Australian-based financial institutions and a government treasury organization. A major Australian-based bank with global operations recognized the opportunity to be more effective in its product services through its call center. The call center supported a number of products based on managed funds such as superannuation,
assurance and insurance and investment trusts. As a result, its ROI has been increased at a very minimal cost. The technology implementations leveraged from an existing Lotus Notes infrastructure meaning there was no technology capital cost for software or hardware upgrades. It not only managed to improve on the standard call center measurements of response times but also increases customer satisfaction and perception polled through frequent customer surveys.

Intranets are also being used for KM because they support easy access via web browsers. According to a survey by InformationWeek Research in US, on average 52% respondents were given online access to their companies’ knowledge assets. Internet technologies give Schneider Automation, a manufacturer of industrial automation-control equipment, a platform for easy information access. It built an extranet on top of Lotus Notes/Domino that is accessed via web browser by the company’s own employees and by the sales force it shares with its parent company, Schneider Electric in Paris. Equipped with a repository containing information needed for business development and technical supports, the system has strong capabilities to guarantee that the information never goes out of data and is always kept accurate. All information whether it is a power point presentation or technical document has an expiration data and a responsible party that “owns” the data. The company also integrated help-desk software to manage technical support and marketing information. If an employee cannot find the information he or she needs from the repository, the help-desk software lets the employee create a
trouble ticket that is passed to an internal department called Customer Central. Once the answer is found, it is then put into the knowledge base. Hallmark launched what it called as “knowledge-creation community” on a web site accessible to all its card company’s retail stores. Through this web site, retailers can communicate with Hallmark, exchange e-mail with each other, chat, share ideas on a bulletin board and access a database of best practices. Hallmark expects the site to be a fertile ground for information sharing among the retailers as well as serving a supporting role in its own product development.

From all these examples, there are wide varieties of KM tools suitable to fit into any KM strategy depending on the nature and needs of an organization. To date, corporate intranet and web technologies are widely used in many KM projects. According to Stenmark, D. (2003), Intranets were indeed also quickly hailed as the ultimate solution to many organizational issues, including anything from dissemination of management vision to integration of seemingly incompatible computer systems (Scott, 1998). Author also lamented that when organizations adopt Internet technology to set up intranets, they have what seems to be a good foundation for knowledge creation. However, it is also important to note that technology alone does not guarantee success. According to Malhotra, Y (2003) diverse technologies, when applied similarly with little regard for people or processes would yield same result: failure. Thus KM should not neglect other equal important elements which
should be taken into consideration, sociological, cultural and behavioral factors which will be briefly discussed in the following sections.

2.3 Knowledge Management – Elements in KM

As being mentioned earlier, KM involves not only technology but also people. These include human and social factors such as changing the culture, knowledge creation, knowledge sharing, motivation to contribute knowledge, leveraging intellectual assets or tacit organizational knowledge etc. KM is essentially a deeply social process, which must take into account human and social factors (Clarke & Rollo, 2002; Thomas, Kellogg & Erickson, 2001). This is further supported by Gumus, M and Hamarat, B (2004) quoted as saying, knowledge is much more than information and knowledge sharing is not an information sharing.

Considering the knowledge creation as an act of human being, KMS must involve people and encourage them to think together and to take time to articulate and share information and insights that will be useful to their community. This section explores the associated elements related to KM, its roles and challenges to better understand what actually revolves around KM.

2.3.1 Human & Social Factors

People are as critical to KM as processes are. Thomas, Kellogg and Erickson (2001) argue that human and social factors involved in the creation and communication of knowledge and the use of knowledge have received insufficient attention in KM. Therefore it is essential for
those designing knowledge management systems to consider these aspects as being relevant to KM. Their view is that knowledge is bound up with human cognition, and it is created, used and disseminated in ways that are inextricably entwined with the social perspective.

They conducted an extensive review work ranging from basic research to applied techniques that emphasizes cognitive and social factors in KM describing two approaches i.e. social computing and knowledge socialization. Their significant findings among others concluded that the simple picture of KM as getting the right information to the right people at the right time is wrong. KM is not just a matter of managing information but rather is deeply social in nature and must be approached by taking human and social factors into account. Knowledge naturally can be collected, stored and passed along. The important part of KM is getting access to the “right knowledge”. Nowadays however, it is not just a matter of getting the right people. It is more beyond that:-

- which people are the right people
- people need to engage with knowledge and learn it

Another finding with regards to human factors was done by Neucleus Research. It revealed that research of more than 50 collaborative applications deployments has found human factors can influence up to 50% of the total potential benefit to the company. Neucleus has defined four basic categories of human barriers to collaboration i.e. individual, structural, hierarchical and cultural. The greatest benefit of collaboration according to this research is in the free transfer of information and
knowledge within a company and its extended supply. The ideal strategy for overcoming structural barriers is to avoid them from the outset. Groups within companies do not always share information freely and technology alone will not change them. In terms of hierarchical, Neucleus believes that, to really benefit from collaboration, organization must teach their employees to coach rather than control. To ensure success, care must be taken in first assembling cross-cultural groups that are focused on a single objective or have similar backgrounds. A concluding remark from this research is that the most ineffective applications can be successful if the employees are willing to maximize their use while the most effective can be rendered useless if employees shun them. This further strengthens the fact that human and social factors are indeed two important aspects that must be given equal emphasis/importance to ensure successful KM efforts. And this also lead to the following element in KM, training.

2.3.1.1 Training

No matter how wonderful KMS is built, knowledge cannot be directed at sustaining profitability if people do not have a skill or ability to use knowledge creatively in activities like product innovation or process innovation. One of the critical issues to consider in managing and maximizing knowledge is then to develop people’s ability to learn (Hwang, 2003). Only people are able to learn. According to @BRINT Institute chairman and CKO Dr. Yogesh Malhotra, "The key issue is not about the latest
information technologies, but whether those technologies are used within, and for facilitating, a culture of information sharing, relationship building and trust."

KM is methods or solutions that enable an organization to capture and structure its knowledge assets. Author goes on saying KM is an approach to build the learning organization. A learning organization is an organization in which its members can acquire, share, create knowledge or apply it in their decision making.

Milne, Mason and Hasse (2003) points out that labor security, training and skills are being shaped and altered by new technologies particularly the internet. Through an extensive literature work, authors lamented that recent writers have emphasized service quality and training issues and the role of workers as active participant in shaping tourism development outcomes.

2.3.1.2 Culture & Reward

KM has been proposed as a solution to give organizations more control over the information that is relevant to their businesses. The literature reveals that not all implementation of KM have been successful because the human factor is one element of KM that is slow to respond to the implementation of the KM tool as been discussed earlier. The consensus among KM gurus is that
one of the main success barriers relates to the organizational culture and knowledge sharing. Baggio R (2003) further asserts that KM binds technology and culture and requires specific competencies. The single most important task is to understand the needs, the strategy and the cultural and social environment of an organization.

According to Mason, D and Pauleen, D. J (2004), understanding and implementing KM initiatives require the development and nurturing of relationships, awareness, and in general, a common ground amongst organizational members. For most organizations, this will require a significant change in organizational culture, from one that values explicit and codifiable information to one that values the knowledge held only in their employees’ heads and gives those employees reasons to share their knowledge. The role of culture in an organization aspires successful KM implementation cannot be denied and has always been discussed widely by many authors. Culture is also said to be one of human barriers to collaboration which impedes successful KM implementation. Amongst the challenges of knowledge sharing culture is to create willingness to both share information and reuse information created by others. It would also mean that organization need to eliminate the employees’ belief that freely sharing their knowledge makes them vulnerable especially in a highly competitive organization. A better strategy is to deploy a
KMS that couples the capture of organizational knowledge with tools for increasing individual productivity in order to foster a knowledge sharing environment.

Malhotra, Y (2001) argues that the present of most sophisticated ‘knowledge sharing’ technologies do not guarantee true integration of information flows. This is because, often individuals may not willingly share information with their peers, supervisors or with other departments for fear of losing superiority of knowing what others do not know. This would result in sharing of partial, inaccurate or ambiguous information. Organizations must have a mechanism of knowledge sharing culture for example reward structure in order to motivate their employees to share accurate and timely information which is supposedly to be based on trust, despite the potential of use of information in unanticipated ways.

Motivation also plays an important role in successful knowledge sharing for e.g. individual gets compensated according to their talents. According to Alavi & Leidner (1999), an effective way to motivate knowledge sharing is through the organizational reward and incentive mechanisms. Both McKinsey & Company and Price Waterhouse Coopers (a management consulting and a professional services firm, respectively) use this mechanism to promote knowledge sharing among their consulting and
professional staff. At McKinsey, for example, number and frequency of use of a consultant’s publications (a measure of knowledge sharing) is an important input to the consultants’ promotion decisions. Similarly, Price Waterhouse Coopers enhanced the appeal of knowledge sharing by revising the professionals’ performance reviews to reward them for knowledge sharing activities (Hildebrand, 1994). This is strongly agreed by Stenmark, D (1999) indicating that lack of a proper reward mechanism on the individual level may effectively hinder sharing of ideas despite potential organizational benefits.

An organization’s ability to incorporate or install a reward system to encourage knowledge collection and sharing amongst the employees can inculcate a knowledge sharing community. The ability of a large organization to implement organizational politics can be a strategic move which is confined to those organizations that have the capacity to create this level of culture (Drucker, P., 1998)

2.3.2 Structural/Organizational Issues

Organization structure plays a significant role in KM. An organization desires to be successful in its KM implementation must have a supportive organizational culture. A study by Mason, D and Pauleen D. J. (2004) on perceptions of KM among middle managers in New Zealand organization concluded among others that changes in organizational
culture are critical to successful KM. This study also interestingly suggests that action for KM should focus on improving the management processes applied to KM rather than concentrating on the technology or the difficulties of capturing knowledge.

2.3.3 Tacit vs. Explicit Knowledge

According to Zack, M. H., 1999, knowledge can be characterized in many ways. Popular taxonomies distinguish between tacit and explicit knowledge, general and situated context-specific knowledge, and individual and collective knowledge. Knowledge can also be categorized by type, including declarative (knowledge about), procedural (know-how), causal (know-why), conditional (know when) and relational (know-with). Another common distinction between tacit and explicit as frequently quoted by many research work is that explicit knowledge is described as knowledge that can be easily expressed or codified, whilst tacit knowledge is personal and context dependent, and as such differs from explicit since it is very difficult to express, formalize or communicate.

The rise of information and communication technologies has made it possible to capture, store and disseminate knowledge more easily and cheaply than ever before. And yet, the limits of these technologies in capturing and sharing a certain kind of knowledge should be recognized (Davenport and Prusak, 1998). Whereas explicit, formal knowledge can
be codified and transferred, tacit, intuitive knowledge is not easy to codify (Hwang, 2003).

The challenge is how to make tacit knowledge explicit and of course the focus is on the ability of enforcing/practicing an appropriate knowledge sharing culture by exploiting tacit organizational knowledge. The significance of both tacit and explicit knowledge has been continuously become a hotly debated topic as the rising attention that KM has been conceived by many as a concept. Generally, the notion by Goldblatt’s (2000) that explicit knowledge represents only the tip of the iceberg of the entire body of the knowledge, then that 80% of the iceberg that lies underwater remains largely ignored by a narrow focus on explicit knowledge, is always used to emphasize the importance of those knowledge resided in the head of employees which is difficult to express or articulate. To further strengthen the importance of tacit knowledge is a research undertaken by Stenmark, D (2000-2001) where he concluded that profiles based on tacit knowledge that are identified by practice are considered more trustworthy than the espoused theory-based job descriptions. Author pointed out that most of the research done in the KM arena has an IS/IT background and despite the fact that making tacit knowledge explicit is difficult, costly and not always desired, this is the prevailing approach. The research undertaken utilizes IT for e.g intra-organizational web or intranet in order to exploit tacit knowledge, but without making it explicit and thereby rationalizes away the people in whom the knowledge resides. His finding includes a conclusion that the
professional interests of users in a corporate setting are examples of tacit knowledge and that this knowledge governs many of their daily routines.

As in the context of TM, much of tacit knowledge resides in the head of the TA who manned the counter as the front liner offering services in terms of explanation about tourism products, itinerary, holiday planning etc. ICT have had a major influence and impact on the tourism industry world wide. The usefulness of Internet technology in particular, will be explained later in this chapter. Glogoff (2001) states that online communication is not as ‘rich’ as face-to-face communication, nor is it as personal, trusting or friendly. Whilst the Internet changes the capacity and quantity of information that is available, Bimber (1998, 138) asserts that “it is not yet clear that it will also change motivation and interest, let alone cognitive capacity”. This strongly indicates that technology is not replacing the significant role of TA in information dissemination.

2.4 Communities of Practice (CoP) - General and in the context of tourism

CoP that develop naturally in organizations have drawn attention as a way of managing knowledge (Brown and Duguid, 1991). CoP provide a place or platform within which people of the same interest could discover, use and manipulate knowledge, encounter and interact with others who are doing likewise. Thus, CoP is closely related to human and social/cultural factors. According to Thomas, Kellogg and Erickson (2001), one way in which this might be achieved is in the context of an on-line computer supported communication environment. Their view is that a computer-based system
provides much more than just storing records and documents. It allows people to converse with one another enabling some visible presence. This would mean that people are interacting with explicitly expressed knowledge (e.g. reading), as well as conversing with one another (both as a means of explicating tacit knowledge and as a means of building and maintaining social factors such as trust and relationships that are important in knowledge management).

Few interesting example given in the KM magazine (December 22, 2003) as quoted by Mary Eisenhert in her writing pertaining CoP. Interaction between two groups at 3M Co. – one responsible for sandpaper and one for adhesives resulted in the invention of masking tape. Another good example of the increasing need to integrate and consolidate knowledge from operations worldwide which shows the importance of CoP being acknowledged by top level management is by taking Buckman Laboratories International, a global specialty chemicals company in Memphis, Tennessee, USA when they implemented K’Netix, its company-wide knowledge community, then-CEO Robert H Buckman frequently monitored the question-and-answer forum to see which employees were participating most actively and which were most diligent in answering questions and these active participations are being rewarded for their contribution. This way, not only that the company prospered but it has also become an award-winning exemplar of successful KM.

Tool that matches with participants in CoP is a key factor in ensuring an effective communication and sharing. Thus, it is important to make sure that people are comfortable using the selected tools and the goal to make the information easy for any employee to find the information is accomplished. The
said tools that could be considered such as conferencing software, e-mail, profiling software, databases, web casts and push and pull technologies. Equally important is ensuring that integrating these tools into their daily work processes neither overburdens them with irrelevant data nor hinders their ability to find quickly information and expertise they need. However as discussed earlier, technology provided will be useless if the repository or databases are not well managed.

It is interesting to observe that however, there has been little empirical research about the usage of all these technology so far in the context of tourism industry in Malaysia.

Mason, Speidel and Milne (2003) conducted another interesting project based on the concept of CoP. The project undertaken was aimed at encouraging regional development by introducing small scale tourism to underdeveloped regions of New Zealand. By using an innovative ICT methodology the software was able to generate authentic community websites, to create unlimited numbers of individual operator websites and offer an integrated booking system, using only standard Internet Technology. Using a simple template programmed in PHP and interfaced to an Access database, equal space is given to operators to enter their particulars into the system. The outcome was the successful deployment of a community owned and developed regional tourism products, a trail through Maori owned community land. Their research made a significant finding that with the right methodology it is possible to produce an efficient and effective computer application which conforms to the principles of community
informatics. Tourism operators participating include backpacker’s, hostels, motels, large hotels, fishing charters, guided walks, restaurants, rural manufacturers, orchardists and many other businesses. This platform provides community linkages reinforcing the community bonds between the operators. However, in Malaysia there is no similar project in terms of integrating or linking operators digitally to benefit the concept of CoP despite the many tourism websites developed by various parties be it the government or private sectors.

2.4.1 Knowledge Creation

Many researches by KM practitioners and academia discuss the crucial role of the humans in facilitating knowledge creation processes in an organization. And those studies include many diverse fields such as medicine, law, manufacturing, education, tourism etc. Thus rising attention has been given to the human aspects of knowledge creation.

Jensen, S (2003) conducted a study on knowledge creation and transfer in the tourism industry in the county of Storstrom, Denmark. In this paper the author discusses how knowledge is created, shared & transferred in between organizations in a specific industry – namely tourism. Author contends that there are 2 major roots that shape an organization’s ability to build and renew competencies. They are: Structural factors – relates to product and the industry itself. Tourism product is not a standardized product and different parts of products like accommodation, experiences, transport are not produced by a single
process of production. These products are normally produced by different entities with varying corporate cultures for e.g. a lifestyle firm are normally run not for economic criteria but more focused on value, while professional firms typically are big and are run for economic motives.

Human Resources – another important criterion for successful knowledge building. According to Lundval & Archibugi (2001) – knowledge building are drawn from 3 sources (i) hiring & firing (ii) internal competence (iii) networking and alliances. In addition to being an important factor, the tourism labor market is characterized by low level formal education entry with limited training, high labor-turnover rates, low wage and younger age group. It is argued that the industry has problems with KM and may lack intellectual and social capital and also lack co-operation. Due to these traits, the author argues that there is a need for external inputs to facilitate knowledge building.

A study by Stenmark (2003) about knowledge creation and the web with regards to the factors indicating why some intranets succeed where others fail indicates that only in organizations where management has embraced an updated attitude towards information management, can the corporate Intranet truly contribute to knowledge creation and creativity. Author argued that organizations adopting Internet technologies will have a good foundation for knowledge creation. Through a theoretical framework, author presented seven key factors in the attempt to examine
the usefulness of intranets in KM work. The creativity enabling-factors are the no-preconceptions principle, autonomy, serendipity, diverse stimuli, rich information provision, internal communication and motivation. When these seven factors were paired with four distinctive features of the intranet i.e. hyperlinked, networked, flexible and organizationally bounded, it was concluded that unpredictability and diversity are the labels that best describe the most favorable IT environment for knowledge creation. Author also points out that corporate intranet are likely to become useful knowledge creation environments only in organizations where the management dares to let go of its control desire and empower the organizational members to take a more active role in the design of the information landscape.

2.4.2 Knowledge Transfer

Knowledge transfer occurs in the cycle of knowledge which involves knowledge identification, creation, capture and sharing of that knowledge. The ultimate goal of knowledge transfer is knowledge use (Hawkins, D.E, 2004). It has often been said that providing access to knowledge or facilitating its transfer among individuals is still proving to be a difficult process. Many organizations nowadays encourage knowledge sharing without even realizing how much knowledge is actually being utilized. The ability to quickly identify and transfer usable knowledge and practices so that it can be use and reuse is an important source of competitive advantage for an organization.
Knowledge transfer is often said to be one of the main steps of a typical KM process where it would mean transferring existing knowledge to all parts of an organization. In the tourism industry, networking and linkages between all the stakeholders are needed to transfer knowledge to ensure that every single entity in this industry will ‘speak’ the same language. Integration and creation of new knowledge is crucial in bringing together all the stakeholders to co-operate and collaborate otherwise isolated knowledge will hinder the effort to boost the industry. Baggio R (2004) asserts that the intangible factor of knowledge may lead to strong advantage in competition mainly in service providing industries like tourism. The crucial aspects in the tourism industry are the existing internal volume of knowledge and the possible advantages that may derive from it, as well as the additions of new knowledge items. Internal knowledge refers to the communication and experiences among the industry players plus the general “culture of the organization”. The overall knowledge of an organization is not only the sum of the individual contributions; to gain benefits from individual knowledge it has to be fully integrated into the specific environment (Bonke et al., 2001).

2.4.3 Knowledge Sharing
Methods of sharing knowledge range from portals and intranets to online discussion sites to informal discussions among employees. Some companies might incorporate or build knowledge sharing into employees’ formal job reviews, some might offer bonuses and
promotions subject to sharing knowledge while others might consider the contribution in the overall evaluation. Whatever the method used, it is important to make a clear statement that an organization appreciates knowledge sharers to inculcate a healthy and successful knowledge sharing environment. The barriers to sharing information have been dramatically lowered by the widely used Intranet technologies, however if it is underutilized, the existing knowledge assets are only accessible to a small part of an organization. Thus KM systems are worthless unless employees use them. Companies are still facing a battle to convince employees to participate in KM programs. Among other issues need to be addressed include linking KM directly to job performance, creating a safe climate for people to share and recognizing people who contribute through appropriate methods discussed earlier.

In US, few big companies successful in their knowledge sharing culture as stated in the CIO Magazine, Dec. 1, 2003 are the like of Grocery Retailer and distributor, Giant Eagle, through its web portal called KnowAsis, Shell International Exploration and Production through its SiteScape online collaboration forum and Russell Reynolds Associates through its circulation of documents and immediate responses. In this issue, it was also highlighted that recognition must be given to those people who share their knowledge. Peter Engstrom, Vice President for corporate knowledge creation at Science Applications International Corp (SAIC), a research and engineering company believes that the most powerful incentive for sharing is peer recognition. This is in contrast
with the earlier discussion where to some practitioners, a reward incentive must be put in place to encourage knowledge sharing. According to Engstrom, knowledge sharing cannot be forced among employees before first creating the atmosphere of trust. “You have to systematically embed knowledge sharing into culture as opposed to overlaying it on top. You can’t bolt it on and force people to use it. The atmosphere of trust has to be there first”.

Skyrme (2002) suggests 3C’s to knowledge sharing: Culture, Co-opetition and commitment. Author explores some of the barriers or psychological obstacles and offers some pointers to overcoming them. Author argues that among the reasons why people do not want to share include:-

- The citation of “knowledge is power”
- “Not-invented here” syndrome
- Not realizing how useful particular knowledge is to others.
- Lack of trust
- Lack of time
- Functional silos
- Individualism
- Poor means of knowledge capture
- Inadequate technology
- Internal competition and
- top-down decision making.
Author suggests that to overcome such barriers, the issues of organizational structure and inadequate technology need to be addressed. But focus must be given to the three Cs of Culture, Co-opetition (a blend of co-operation and competition) and Commitment. An interesting remark concluded by the author is that knowledgeable people do like to share their expertise. It's just something about their work environment that discourages this natural inclination.

While the components of an infrastructure are crucial to the system, KM experts estimate that 90 percent of the success of KM depends on attaining the buy-in of knowledge users and encouraging knowledge sharing. Again, it is related to the human denominator being among the important factors in KM. A company cannot compile a common pool of knowledge unless everyone involved agrees to and learn how to document what they know. Successful collaborations are crucial to a fully-developed and effective knowledge infrastructure. Fortunately, technologies such as Internet, Intranets, Extranets, telecommunications and videoconferencing can help facilitate simple knowledge sharing through continuous communication, flex-meetings and face-to-face personal and group interactions, even across the physical barriers of time and location. All can be used to further the goal of keeping the channels of communication open to allow for the exchange of issues and ideas within and across an organization.
2.5 Knowledge Management and ICT in the Tourism Industry

The travel and tourism industry has been heavily affected by ICT applications. In 1985 in US, SABRE has been the pioneer of on-line system adopting IT innovation. This first airline computer system was developed by IBM and American Airlines in 1953, particularly in the area of automation and networking of distribution channels. There have been three main innovation waves in the tourism sector: Computer Reservation System in the 70s, Global Distribution System in the 80s and the Internet in the 90s. By the end of the 1990s the boom of the Internet had become obvious. The Internet, in particular, has been useful in many regards to the travel and tourism sector. It is used to provide multimedia information about destination to prospective travelers. It also affects auxiliary industries, such as the transport sector, which plays a major role in the tourism industry.

In today’s tourism industry, it has often been said that customers demand are growing ever more demanding and less loyal, customers expectations are also ever raising. With the aid of ICT applications, prospective travelers can view a destination, book accommodation, book the flight and other forms of transport and pay for all these without leaving their homes. The use of ICT has permeated the travel and tourism industry. ICT in this industry consist of various components that include computerized reservation systems, teleconferencing, video, video brochures, management information systems, airline electronic information systems, electronic funds transfer, digital telephone networks, smart cards, mobile communication, e-mail, and Internet (Mansell & When, 1998).
These various communication technologies are being used in all sectors travel and tourism industry and related sectors.

A conference held in Helsinki, Finland in 2003 with the theme ‘technology on the move’ had wide range of presentation papers on the use of IT in the tourism sector which include the application, techniques, findings, suggestions and future recommendation. The current and future roles of ICT in travel, tourism and hospitality were discussed and can be use to bridge the gap between academic theory and practice.

Little or virtually none existent with regards to dedicated ICT literature in the tourism industry in Malaysia could be found if one excludes online ticketing system, promotional and marketing activities over the net. When the airline industry was monopolized by a government linked company (GLC), Malaysia Airline (MAS), there have been tremendous shift in carrying out their business through IT application. Competition emerged with the forming of a no-frills carrier company, Air Asia when the market was overwhelmed by their motto “now everybody can fly”. Air Asia thus could offer tickets at cheaper prices than MAS but their services are still subject to certain market segments acceptance. In order to compete and to sustain their businesses, both struggle to enhance their services in all aspects and utilize IT eventually for cost reduction and market penetration. This can be seen from the recent higher usage of on-line selling by both carriers with certain terms and conditions applied and the value-added promotions launched through their websites.
As mentioned earlier, the Internet is now considered as a medium of promotional alternative besides the conventional marketing and this is obvious by the development of many tourism websites promoting their products such as hotels and resorts, travel and tour agency, rent-a-car, theme parks etc. But the same question remains, whether the website contains updated information and well-maintained. Another issue is the ROI from the creation of such websites despite the cost spent in developing and maintaining them. In US and Europe, advances of Internet have been well utilized in providing facilities for travelers. Due to the vast amount of data and multimedia content available, searching the web is a monumental task. According to Bernstein J and Awe S. C (1999), online commercial sites are growing, and travel is the fastest growing segment of online commerce, with no sign of slowing down. Author presented a wide array of selected list of travel sites to help librarians and the traveling public, locate information to fit their needs according to ten major categories: megasites, practical matters, lodging and restaurants, budget travel, specialty travel, transportation, maps, regional/country/city-specific links, the travel business and travelogues/current news/journal articles. Milne, Mason and Hasse (2003) further assert the advantages of Internet among others cost cutting, able to facilitate the direct creation and management of websites, improve the links between tourism and the surrounding economy. They quoted that websites offer more comprehensive information through internal content and links. A local hotel website can, for example, be a portal to nearby suppliers and surrounding community interests. An online dinner menu can be linked to the local producers that supply food. Other links can be created to handicrafts or community events. This type of information and depth of knowledge increases the likelihood that
visitors are aware of spending opportunities before they arrive, and begins to build good will between tourism operations and the surrounding community (Mason & Milne, 2002). It is this type of networking that is envision for the tourism industry of any country in the world.

In Malaysia however, the tourism websites developed by various parties either government or private companies contain more on general information on tourism and most of which confines itself to certain products or states. On the same note, a study by Milne, Mason and Hasse (2003) made a significant finding that despite the many advantages offered by Internet, many websites however are developed and maintained by people who live far away from the localities and business that rely on them and have limited knowledge of tourism industry issues. Lack of understanding between web-developers and tourism operators are often said to be among the factors of poor web site performance. Another interesting point to note is that most websites remain as little more than ‘virtual brochures,’ with limited interactivity and e-commerce content and few links to other elements of the local tourism product (Lawrence et al 2002). A tourism portal which integrates all aspects of tourism and linking up all the stakeholders is yet to be developed which is included in the recommendation of this paper.

Braun, P (2004) in an Electronic Governance Conference in Melbourne, Australia pointed out that new economy innovation and related economic power revolves around information and KM alongside with connectivity, e-governance, organizational processes (activities, capabilities & efficiencies), networks
(industry, regional, devolution), strong leadership, learning/knowledge flows and flexibility and change. In her study entitled Government-Industry ICT Partnering in Regional Australia: issues surrounding top down initiatives, author identified silo politics, lack of leadership, lack of expertise and lack of learning as among the most significant barriers to government-industry ICT partnering. As a key economic driver, the Australian government has expressed great interest in the potential of online technologies to develop market and distribute the Australian tourism product. Author discusses in length the Internet-based project such as The Victorian Tourism Online Project and The Grampians Portal Project and concluded that the portals has been classified merely as an additional market channel alongside with the traditional collateral, tangible benefits in joining the portal were difficult to detect, fail to attract small and micro tourism operators due to pre-existing lack of affinity with the product, no ownership of the portal, no obvious listing benefits on the state or national tourism site etc. Author recommended that to enhance government-industry relations and sustain regional tourism development, steps must be taken by all the industry players to put in place product complementarities, build and increase rapport between the state tourism body with agencies and industry across product regions by coordinating web standards and creating seamless upstream and down-stream linkages across ‘unofficial’ tourism websites.

2.5.1 The importance of information and knowledge for tourism

Information flow in the tourism industry occurs in both downstream (consumer) i.e. the tourist and upstream (supplier) such as airline companies, hotels, transportation etc. Tourism product is a variable and
versatile product for e.g. basic products can be embedded in different ways for instance a hotel may be combined with different travel arrangement or additional arrangements such as sports tourism, health tourism, agro tourism, eco tourism, home stay programme or even cultural events in the context of Malaysia.

The changes and pressures of a rapidly changing global, information-based economy make knowledge vital to organizations and tourism industry is not excluded. Corporate knowledge silos and the barriers they erect contribute to a perceived lack of information, often referred to as infomamine. But most knowledge workers have access to too much information, often called infoglut (Offsey, S., 1997). As explained earlier, tourism industry obviously creates and uses large amounts of data, information and ultimately knowledge. It is indeed a knowledge-intensive industry and Internet provides a platform to find any kind of information in the forms of timetables, schedules, rates and charges pertaining to tourism such as information about best places of interest, accommodation, city tour, transportation etc. However, the Internet has led to a deluge of information, but most of it is not useful for any given task (Offsey, S., 1997). This is indeed true because most of us had experienced using Internet search engines to look up information on say tourism-related matters only to find out thousand of hit returns, most of them irrelevant. In the context of this study, when TA encounters this situation, this would mean their time is wasted since the information they need is not available timely. Accurateness of information is another issue
altogether. Inaccurate information is one of among many factors that impede quality counter service. This would in turn affect their performance in ensuring effective and efficient counter service at all time. Since this industry deals with huge amounts of information, it is more meaningful if community members are willing to share these rich sources of knowledge.

Besides information that resides in the head of TAs, traditional approach to informing about areas of interest is studying travel guides and other related materials such as booklets, magazines, brochures, pamphlets etc. According to Lueg (2003), quality tourist guides provide comprehensive information regarding the most interesting sites but they also have specific limitations. First, the content provided by traditional tourist guides tends to be fairly static. Second, traditional tourist guides tend to present information from a limited number of different perspectives typically corresponding to the number of authors. Similarly, in Malaysia there are several parties who published travel-related guide’s materials. TM through its distribution centre in Batu Caves are authorized to print and published all travel-related brochures that are used by all the TICs. At the same time, other parties such as individuals who run a particular travel interest sites on their own initiatives print out their brochures pertaining to their business. With the advent of Internet, tourism-related websites becomes another mean of sources or alternative where travelers can seek information from, regarding sightseeing areas they are planning to visit as well as other tourism-related matters.
Numerous tourism websites are being developed by the government agencies, industry players, individuals etc but there is no control mechanism with regards to the accuracy of the information contains on those websites. Whether the websites are regularly updated is questionable since there is no dedicated authorize parties held responsible to make sure the information is accurate and updated all the time. The web gives access to almost unlimited information but does not verify nor integrate that information. Thus, lack of co-ordination and collaboration in terms of tourism information is perhaps a factor inhibits the prosperity of the tourism industry and is detrimental to a long-term marketing effort to promote Malaysia as a tourism destination. It has often been said that information is the backbone supporting tourism. Therefore, timely and accurate information relevant to consumers’ needs is often the key to satisfying tourist demand, supported by an array of major technologies.

There is a considerable body of literature on the importance of networking in tourism. Research indicates that network building is a major new source of competitive advantage and an essential regional and indeed global management requirement (Braun, 2002). In a study on networking tourism SMEs pertaining to e-commerce & e-marketing issues in regional Australia, author suggested that SMTEs would benefit from increased information flow through regional networking and cooperative e-marketing campaigns to enhance market visibility, global positioning and strategic leverage in the new economy.
When discussing whether ICT is treated as revolution or reinforcement in the tourism industry, Milne, Mason and Hasse (2003) highlighted an interesting issue about the world tourism market which is still remain unwired. Thus fostering of a culture of connectivity, networking, learning and trust may offer a potential solution to the possible loss of competitive advantage in the new economy. Braun, 2001 asserts that networking and cooperative relationships are considered prime determinants of commercial success. Undertaking a study of networking tourism SMEs in Australia, author suggested that SMTEs have the opportunity to both collaborate and compete by joining a regional marketing portal founded on cooperative principals such as sharing resources and exchanging industry knowledge.

2.6 Knowledge Management System

Many organizations are developing information systems designed specifically to facilitate the sharing and integration of knowledge. Such systems are referred to as KMS (Alavi & Leidner, 1999). However, the evolution of information technology provides a wide variety of tools to support KM projects for e.g. e-mail, bulletin boards, information databases, groupware, relational databases, data warehouse, data mining tools and so on. Accumulation and utilization of Knowledge uses technology such as Internet/Intranet, Web-based Application, groupware and e-Learning. The majority of KM systems in implementation are on capturing, searching and distributing knowledge e.g. search engines, portals, collaboration systems, intellectual capital reporting tools (Tsui, 2005). Author
argued that information technology can accomplish a lot more than mere storing and retrieving data. However a lot of research done by KM practitioners and academia had concluded that, technology alone without aligning with a properly defined KM strategy and supported by a change program will not guarantee a successful KM program.

People tend to work within silos of information that don’t get shared across an organization easily. People are forced to indulge in repetitive work when they could actually tap into a knowledge system and work in a more innovative manner. A KMS should afford an easy-to-use interface and allow access to information based on the role the user plays. This system would connect to all kinds of documents like web pages, text documents, spreadsheets, emails, PDF docs, images and more. Information also exists in people’s heads and the proposed system should provide motivate people to document or share knowledge that is resident in their heads. Thomas et al. (2001) argue that a successful KMS is one that includes a knowledge community, where people can interact in the discovery, use and manipulation of knowledge.

“The challenge is to create knowledge management systems that capture knowledge and make it accessible and usable as it evolves” (From: PR Newswire, Monday, May 21, 2001). This is further supported by Jones, Hersheel and Moesel (2003), if a user finds knowledge in the knowledge centers to be obsolete or irrelevant to his or her needs, or they cannot find the information/knowledge that they need, they will most likely discontinue use of the system, impeding effective knowledge sharing.
Pan, S.L and Leidner, D.E (2003), conducted a research of how to bridge CoP with IT in pursuit of global knowledge sharing. Authors also explored issues and concerns regarding the changing role of IT and concluded that the importance of IT availability to the knowledge workers who participate in KM-related activities across the globe cannot be denied. Their significant recommendation for future studies on KMS noted on two important issues. Firstly, there is a need to base such studies on an integrated understanding of the design of KMS and performance of KMS. This is because there is no KMS design that can fully satisfy the changing KM needs. From a KMS design point of view, Buckman Labs went through a number of different design and approaches to ensure the best KM practices can be facilitated. An organization will have to re-adapt itself to different designs of KMS in order to bring out the best KM performance. Secondly, studies can also look into other IT-based factors as reference to learn why some of the KMS implementations have failed.

Steve Offsey, KM Products, Dataware Technologies, Inc. (1997) laid out benefits of a well-designed system as follows:

- **Awareness** – everyone knows where to go to find the organization’s knowledge, saving people time and effort.
- **Accessibility** – all individuals can use the organization’s combined knowledge and experience in the context of their own roles.
- **Availability** – knowledge is usable wherever it is needed – from home office, on the road or at the customer’s side. This increases responsiveness to customers, partners and co-workers.
• Timeliness – knowledge is available whenever it is needed, eliminating time-wasting distribution of information ‘just-in-case’ people are interested.

Stenmark (2004), discusses the Volvo Information Portal (VIP), an agent-based recommendation system which provides an awareness of new and relevant intranet information. This VIP replaces earlier KMS project at Volvo which is called Competence Database System. A significant area of KMS research is the development of systems with the potential to bridge the knowledge application gap in organizations. Author also noted that it is important to keep KMS alive, updated, current, and maintained by encouraging use. The main contribution of this research is five general design principles describing how KMS can be integrated with everyday work to leverage user practices:-

1. KMS should not be introduced as explicit stand-alone applications that staff must interact with in addition to their other job responsibilities. KMS should instead be invoked when knowledge is applied in practice by exploiting spin-off from activities they already engage in. This indicates that there should probably not be one large KMS system covering everything but many small applications handling more specific aspects.

2. To be perceived as attractive, KMS should provide staff with a natural incentive not only to participate but to provide information which is regularly updated and as accurate as possible. The most plausible way for this to happen is to have the system reward contributors with direct and tangible benefits.
3. When KMS depend on input from and interaction with many users, familiar applications used by many employees should be selected as hosts for the KM features to be added, e.g. email applications, word processors, web browsers or printer spooling systems.

4. KMS must acknowledge and co-exist alongside existing social processes and organizational culture. Ignoring such issues and overestimating the power of rational thinking is likely to lead to failure.

5. Tomorrow’s KMS must be able to adapt to rapid changes in the kind of knowledge being managed and the field to which it is applied. KMS based on rigid and well-defined structures are less likely to be able to make such adjustments and may therefore fail.

2.6.1 Knowledge Management System in the tourism industry

In today’s Internet economy, through electronic communication, collaboration, commerce and business processes, IT plays an important role in many business activities such as sales, marketing, procurement, human resources, design and distribution. And the significant role of KM has risen for the last few decades as competition is growing, cost pressures are rising and ensuring customer services has become more important in order to sustain in today’s knowledge economy era.

The strategic role of knowledge creation, management and sharing is of crucial importance today and will be even more imperative in the future as has been discussed earlier. However according to Baggio, R (2003)
there is still no good examples exist yet in the tourism industry but a look at the result obtained by other types of organizations (mainly in the service sector) can easily convince that the returns (tangible and intangible) of the adoption of an adequate KM strategy can be of great value.

From the sufficient body of the reviewed aforementioned literature, it can be concluded that there is no specific solution with regards to KMS in the tourism industry. However this study proposes that KM should be embedded in the operation of TIC as an initial effort which later will be expanded incorporating the whole organizations and all the players in the tourism industry. Thus, further enhancement of the proposed TIC KMS is the development of the comprehensive KMS Portal whereby appropriate actions must be taken into consideration in order to make it successful such as:-

1. Information and communications infrastructure development.

2. Training for all industry players, connection to portals or through intelligent websites to enable interactive communication nationwide.

3. Coordination of activities so as to disseminate accurate information and the shift from product focus to customer focus.

4. Development of a KMS Portal as a focal point in providing content, context and infrastructure.
5. Valued information for the consumer and links with all relevant sites throughout the country.

6. Specific information for the travel industry and the front liners.

However, the future will tell as to whether these efforts will bear fruits in the sense of KM initiatives in the tourism industry.

2.7 Definition of Acronyms

This section explains all the terminology that will be used repetitiously throughout this study.

2.7.1 Knowledge

Knowledge: a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents and repositories, but also in organizational routines, processes, practices, and norms….” (Davenport, 1998).

2.7.1.1 Kinds of knowledge

Data: is a material and a numerical value which has neither a meaning nor the context in itself e.g. amount of sales.
Information: it means that data is arranged, processed and given the significance with an intention and the purpose e.g. amount of sales by product.

Knowledge: it is the information to produce value, such as standard and materials e.g. report, manual.

Wisdom: it is a success pattern of action and philosophy which gives the right decision e.g. experience, knack.

The above is represented by the following diagram adopted from Knowledge Management Society of Japan:

![Figure 2.3: Kinds of Knowledge: Adopted from KM Society of Japan](image)

2.7.1.2 Types of Knowledge

Explicit Knowledge: Explicit knowledge is expressed explicitly and it can be recognized by anybody e.g. reports, methods, manuals etc. In TM, explicit knowledge are scattered around in the forms such as:
a. Printed materials – brochures, maps, bulletin, magazines, annual reports, own notes, CD-Roms etc. Printed materials are distributed to all TIC nationwide on a regular basis.

b. E-mails – helpdesk, news alert, newsclicing, E-zine etc.

c. Internet/Websites.

Tacit Knowledge: Tacit knowledge is the knowledge which everyone has or share tacitly e.g. experience, image, skillful techniques, corporate culture etc. Tacit knowledge for the Tourist Officer (TO) and Tourist Assistant (TA) are those knowledge that resides or are stored in their head and these knowledge varies from one TO/TA to another. This could be because of the length or service, experiences, qualification, self-initiative, commitment, loyalty etc.

2.7.2 Definition of Knowledge Management

“KM is the art of creating value from an organization’s intangible assets”. (Karl E. Sveiby)

“KM promotes an integrated approach to identify, capturing, retrieving, sharing and evaluating an enterprises information assets. These information assets may include databases, documents, policies, procedures as well as the un-captured tacit expertise and experience stored in individual’s heads”. (Gartner Group, Oracle Magazine, 1998).
“KM is the systematic approach which invents, understands, shares, creates and utilizes knowledge in order to create values such as customer’s value, employee’s value, stock holder’s value, business partner’s value and social value to achieve the vision and goal of the organization”.

KM develops and operates effective system which realizes for right persons at right time to transfer smoothly and utilize their knowledge”. (Mr. Tomohiro Takanashi, Knowledge Management Society of Japan, KM Report Volume 11).

“KM are processes, technologies and organization for capturing, classifying and adding value to the Intellectual Capital of the firm – and then deploying it to the employees”. (Ernst & Young)

Baggio, R (2004) defines Knowledge Management as a collection of disciplines, technologies and practices embedded in an information infrastructure that supports creation, sharing and leverage of intellectual assets – tangible and intangible – in an organization to achieve business goals.

2.7.3 Definition of Knowledge Management: A Working Perspective

“KM is the set of professional practices which improves the capabilities of the organization’s human resources and enhances their ability to share what they know.

(Internet:http://www.ovitztaylorgates.com/KMRoadmap.html)
2.7.4 **Knowledge Worker**

An employee, whose roles relies on his/her ability to find and use Knowledge (Amrit Tiwana, The Knowledge Management Toolkit).

**Knowledge Worker:**

- Works consciously to change and utilize one’s knowledge in order to achieve company’s goal.
- Tries to learn, create, share the knowledge and utilize it to improve and innovate the business process.
- Has capability of how to use the information and can propose creatively by oneself.

(Internet: http://www.fsktm.um.edu.my/SharingKnowledge/KNOWLEDGE%20MANAGEMENT.PDF).

2.7.5 **Knowledge Economy**

Knowledge Economy leverages on the existing of ‘soft’ factors of ideas, information and knowledge and relationship with enormous impact in speed, in terms of real time communication in the economy, volume and value of the economy. (Internet: http://www.k-workers.net)

Knowledge Economy is not just about new technology, high-tech industries or the Internet. It is also about leveraging the know-how, what we know, the ability to be competitive by way of innovation, creating and developing new ideas, developing new products, new effective processes and new market segments.
2.7.6 **Knowledge Society**

Knowledge Society is one where knowledge is the basic economic resource. (Drucker, 1993)

2.7.7 **Intellectual Capital**

There are many definitions for Intellectual Capital:-

Intellectual Capital is the economic values of two categories of intangible assets of a company: organizational (structural capital) and human capital.

Intellectual capital statements explain the difference between market values and book values and thus show where firms’ intellectual capital is hidden. (Edvinsson & Malone, 1997; Lev & Zarowin, 1998; Stewart, 1997; Sveiby, 1997)

Intellectual Capital has three dimensions, namely employee competence, internal structure and external structure: Employee competence involves capacity to act in a wide variety of situations to create both tangible and intangible assets…Internal structure includes patents, concepts, models, and computer and administrative systems….The external structure includes relationships with customers and suppliers. It also encompasses brand names, trademarks, and the company’s reputation and image”. (Sveiby, 1997)

2.8 **Conclusion**

As tourism industry has contributed to the economic growth of a lot of countries and it is still growing and prospering, it is imperative to pursue the emerging
issues of KM. Many of the research indicate that there is no single solution of KMS to any specific business discipline and tourism sector is no exception. However, the significant roles of IT to the tourism and travel industry cannot be denied as can be seen from the evolution of IT since the use of earlier SABRE system to the Internet revolution in the recent years. It can be concluded that in the context of tourism industry in Malaysia, there is indeed a huge gap in research about the adoption of information technology that can be used in the holistic approach in integrating all the industry players, thus the emerging needs of an appropriate methods or platforms to this end is required. As explained in Chapter 1, this project intends to make a kick start of KMS with the aim of providing an effective web-based KMS for the use of TA which lead to the further enhancement of the KMS project to benefit all the stakeholders in the industry. Towards this end, probably suggestions can be made to establish a ‘Malaysian knowledge network for e-Tourism’ that connect all the tourism stakeholders and provide access to relevant information and knowledge on a single platform with TM/MoTOUR being the knowledge champion.

An organization serious in embarking onto KM effort could be seen in its initiative to form a KM department to look into all matters pertaining KM. Figure 2.4 depicts the suggestion for Tourism Malaysia in their initial effort towards adopting KM. Through this theoretical framework, the understanding of KM globally would assist TM in setting its direction. In-depth understanding of what KM has to offer would bring some light to further extend the KM initiatives collaboratively with partners and alliances. Tourism stakeholders’
participation is crucial to ensure that KM effort will continue to pursue and accomplishes its goal.

Figure 2.4: Conceptual Overview

Figure 2.5: Tourism KM Portal Overview
Based on the above framework, Figure 2.5 illustrates two different approaches (Micro to Macro Level and Domain Region) that could be adopted in the implementation of KM efforts in Tourism Malaysia. One way or another, collaborative efforts should emphasize on the importance of involving both internal and external entities in the tourism industry. Internal parties involve are such as the organization itself, its parent Ministry i.e. Ministry of Tourism and other related government agencies. Meanwhile the external entities comprises of all the stakeholders directly or indirectly involve in the tourism industry.

In the Micro to Macro Level approach, the proposed web-based application named TIC KMS (only the counter services) is developed during the 1st phase and further upgraded to TM KMS (involving all the personnel in Tourism Malaysia) in the 2nd phase and eventually enhanced to TM KM Portal (extended to all tourism industry players’) in the last phase. The development shall be done via different stages.

Similarly in the Domain Region approach, the development stages are done via phases 1 to 3 but shall involve all parties nationwide at the same time. However, for such a modest aspiration, it is crucial to measure the success of the first phase KMS effort in TM as a benchmark for future KM uptake. And concerns over the commitment of upper level management, determining the parties that should be the knowledge champion, participation of the involved parties, the knowledge content determination, bridging the gap between the policies and practicality are among the factors that should be well taken care of to ensure successful KM initiatives.
CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter explains how the research was conducted, describes population selection and sampling procedures, data collection techniques, instrumentation design and how it is tested, pre-testing the questionnaire, results of reliability and validity testing, data tabulation and data analysis. The development methodology used for this project and an overview of Tourism Malaysia as a potential organization to embark on this Knowledge Management efforts are also explained in detail.

3.2 Overview of tourism industry in Malaysia

Tourism is an important sector and this industry is now dynamically driving activities in the Malaysian economy. It is currently the second largest foreign exchange earner after manufacturing and it employs a significant level of the country’s total work force. The tourism industry has significant contribution to economic development through its close linkages with many industries and from the positive net contribution of the services account by the tourism industry such as accommodation, transportation, shopping/retailers etc.

The importance of the sector has finally been recognised by the government with the establishment of a new Ministry wholly dedicated to service the tourism industry in March 2004. Currently, accommodation generates the biggest component that contributes to the tourist expenditure pattern increasing from
32% in 1995 to 33.1% in 2005. Shopping expenditure remained the second largest expenditure component of tourists constituting 24% of total expenditure in line with the Government’s efforts to promote Malaysia as a shopping paradise. The separation of culture and arts from tourism (this ministry was formally known as Ministry of Culture, Arts and Tourism) has changed the promotional effort with a greater tendency to feature fashion events, as opposed to traditional cultural shows.

Tourist arrival is expected to receive a growth of 10.4% with 18.1m expected tourists’ arrival in 2006. This will translate an estimation of RM38.75billion tourist receipts. **Table 3.1** depicts Malaysia’s performance in terms of International Tourist Arrivals and Receipts through out year 2000 till 2005.

<table>
<thead>
<tr>
<th>Year</th>
<th>Tourist Arrivals (Million)</th>
<th>Tourist Receipts (RM Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>10.2</td>
<td>17.3</td>
</tr>
<tr>
<td>2001</td>
<td>12.8</td>
<td>24.2</td>
</tr>
<tr>
<td>2002</td>
<td>13.3</td>
<td>25.8</td>
</tr>
<tr>
<td>2003</td>
<td>10.6</td>
<td>21.3</td>
</tr>
<tr>
<td>2004</td>
<td>15.7</td>
<td>29.7</td>
</tr>
<tr>
<td>2005</td>
<td>16.4</td>
<td>32.0</td>
</tr>
</tbody>
</table>

**Source : Tourism Malaysia**

With Visit Malaysia Year 2007 campaign, TM will continue to undertake its marketing strategies consist of a mixture of creative and innovative promotional activities, advertising campaign, publicity and public relations and information dissemination. Whereas its promotion efforts are done via frequently organized
exhibition and fairs, sales missions and road shows, seminars, workshops and special projects, Meeting, Incentives, Conventions and Exhibition (MICE), consumer promotions etc.

**Industry Players**

Players in the tourism industry in Malaysia include:

- Malaysia Tourist Guide Council (MTGC)
- Malaysian Hotel Association (MAH)
- Malaysian Association of Hotel Owners (MAHO)
- Malaysia Airport Bhd. (MAB)
- Malaysia Duty Free Operator Association (MDFOA)
- Home stay Association (HMA)
- Malaysia Budget Hotels Association
- Malaysia Complexes Management Association (PKK)
- Council of Bukit Bintang Shopping Centres (CBBSC)
- Malaysia Retailers Association (MRCA)
- Car Rental Chain Association (CRAM)
- Malaysia Bumiputra Travel and Tour Guide Association (BUMITRA)

**Tourism-related industries include:**

- Transportation
- Accommodation
- Theme parks and attraction
- Hills and resorts
- Beaches and islands
• Adventure and nature
• Museum and historical sites
• Café and restaurants
• Events
• Shopping/Retailers
• Festivals

Market Segmentation/Niche Market include:

• Health Tourism
  • Medical Tourism
  • Sports Tourism
  • Cruise Tourism
  • Eco Tourism
  • Agro Tourism
  • Student Tourism
  • Malaysia My 2\textsuperscript{nd} Home Programme
  • Meetings, Incentives, Convention and Exhibition (MICE)

Tourism Services include:

• Tourist Information Counters
• Enquiry Centre

3.2.1 Ministry of Tourism Malaysia (MoTOUR)

MoTOUR was first incepted on 20 May 1987. It was by then the combination between Cultural Department of Ministry of Culture, Youth
and Sports with Kemajuan Pelancongan Malaysia from the Ministry of Trade and Industrial, known as Ministry of Culture and Tourism. However on 22 October 1992, the name was changed again to Ministry of Culture, Arts and Tourism. In 2004 the name has again been changed followed by the separation where the old ministry was broken up into two different Ministries i.e. Ministry of Tourism and Ministry of Culture, Arts and Heritage.

The objective of MoTOUR is to develop the Malaysian National Culture in accordance with the National Culture Policy towards strengthening national unity, to preserve & control the national identity as well as enrich the life of humanity and spirituality that is balanced with socio-economic development, and to develop the tourism industry to become a main industry in the country's economy by spurring its growth based on the elements of National Culture.

3.2.2 Tourism Malaysia (TM)

TM is a statutory body established under the Malaysia Tourism Promotion Board Act 1992 with the objective of promoting Malaysia as an outstanding tourist destination with the aim to increase the number of foreign tourists to Malaysia, extend the average length of their stay and, in doing so, increase Malaysia’s tourism revenue. It also aspires to develop domestic tourism while enhancing Malaysia’s share of the convention market. TM is a corporate body under the Ministry of Tourism and is located at the PWTC building.
Organization Structure

TM has various divisions such as Management Services, Planning & Research, Tourism Services, Industry Development, Information Technology, Convention, International Promotion, Advertising, Communications, Marketing Support Services and Domestic Promotion. Estimated number of employees currently is 1,000 and it has offices world wide as well as offices and Tourist Information Counters at almost all states throughout Malaysia. Each and every division plays an important or significant role thus its function must be well understood, as it will be used as the inputs for the creation of KM contents in this project. The organization structure for TM is as shown in Appendix A.

3.2.3 Malaysia Tourism Centre (MTC)

Malaysia Tourism Centre (MTC) is a division under The MoTOUR which acts as a one-stop centre tourism providing various services and facilities for the tourist such as such as tourist information counters, tourist police counter, access to tourism websites, ticketing reservations, restaurants and handicraft shops, cultural shows, Malaysia Heritage Exhibition etc. TIC at MTC is handled by three (3) different types of TA i.e. 3 staffs under TM, 6 staffs under MoTOUR and 5 staffs under PEMPENA which is a subsidiary company of TM. However these TA have the same job functions. The centre is open from 7am till 10pm and these TA works on a shift basis. What make it different from a normal TIC are the various services and facilities offered to the tourist.
3.2.4 Tourist Information Counter (TIC)

TIC falls under the supervision of Tourism Services Division. It has the responsibilities of disseminating information on tourism related matters to the tourists and in doing so they have to make sure that they pass accurate information. They are also given the responsibility to promote Malaysia as a tourist’s destination worth spending time and money.

TICs are manned by two types of knowledge workers, Tourist Officers and Tourist Assistants. TO/TA have different qualifications. For TO, they are at least a Diploma holder whereas for TA, they must possess a minimum qualification of Sijil Pelajaran Malaysia. However their job functions and responsibilities are almost the same but basically TO are more senior than TA in terms of service and of course are more experienced. However the term TA will be used throughout this paper to represent both.

3.3 Research Design

The methodology used in this study is survey research. This quantitative research uses cross-sectional type of survey where the questionnaires was distributed to a pre-determined sample i.e. the TA. In this type of survey, the information is collected at just one point of time by distributing the questionnaires to the TA concerned. Response however was received in staggered basis during a time span of one month.
3.4 Sample and Location of TIC

Sample selected for this research is the TAs attached to TM, MTC and PEMPENA all of whom reports to the MoTOUR. TM as described in Chapter 1 is a corporate body, MTC is one of the divisions directly under MoTOUR whereas PEMPENA is a subsidiary of TM. The population for this type of research would mean all the front liners involve in handling the counters offering tourism information dissemination including both the government and private sectors. To ensure full coverage of potential respondents, updated information of the TAs was prepared by the researcher by calling each and every one of the TIC. Since the TIC is geographical vastly located, the questionnaires were sent either by hand or via postal. TIC located in Klang Valley such as MTC, KLIA, KL Sentral and PWTC received the questionnaires by hand whereas for those TIC located at other states including Sabah and Sarawak, questionnaires had been sent via postal. TIC’s location and the number of respondents responded, is as shown in Appendix B.

3.5 Instrumentation

This research uses questionnaire as the main instrument for data collection and interview method to obtain clear understanding of the organization. The questionnaires were distributed via two methods: mail and by hand. Initially, the questionnaire in Section A consists of 20 questions and Section B 61 questions consist of both close-ended and open ended questionnaires. It has then been shortened to 16 questions and 56 questions respectively after it was pre-tested (the sample of the questionnaires is contained in Appendix C).
A series of interviews were conducted involving selected key senior personnel attached to various divisions. The questions posted are as shown in Appendix D.

### 3.6 Procedural Details

A total of 63 sets of questionnaires were sent out to the identified respondents in early December 2004 and 43 questionnaires were duly filled and returned before the due date on 15 January 2005. It receives quite an overwhelming respond of about 68.25%. The questionnaires distributed within Klang Valley by hand showed higher/better response than those sent via postal to the TIC located at the states. A total of 25 sets of questionnaires out of 28 were returned which constitutes a total percentage of 89.3%. Whereas from 35 sets of questionnaires sent out nationwide including Sabah/Sarawak, 18 were posted back which receives a total percentage of only 51.4%. When comparing the overall percentage of Klang Valley vs. all states, TA within Klang Valley responded better with 58% while the remaining 42% responses were obtained from the other states. This breakdown is as illustrated in Chart 3.1 below:-
Chart 3.1: No. of respondents
A Comparison between Klang Valley & Other States

Chart 3.2: Total Respondents by states

Chart 3.2 explains the total respondents by states. As clearly indicated from the above bar chart, except for Kelantan and Pahang, the rest of the states participated in the questionnaires satisfactorily with Klang/Valley yielding the highest respondents. This is because there are four (4) different locations of TICs
i.e. in PWTC, MTC, KL Sentral and KLIA, whereas in most of the states there is only one (1) TIC. States which has an international airport or located at the border such as Langkawi and Johor has more than one (1) TIC.

Chart 3.3: Respondents vs non response for Klang Valley

Chart 3.3 clearly explains the percentage of respond from Klang Valley TIC with the total of 89.29% respondents while 10.71% did not respond.

Chart 3.4: Respondents vs non response at other states
Chart 3.4 illustrates the percentage of respondents at other states where overall 51.43% responded and non response of 48.57%. Comparing Chart 3.3 and Chart 3.4 clearly indicates that the respondents at the Klang Valley responded better than those at other states due to easier accessibility and reachability.

3.6.1 Structure of the Questionnaire

The survey questionnaire contains three (3) sections as follows:

i. Section A – Level of IT literacy

ii. Section B – Knowledge on Tourism

iii. Section C – Comments (if any)

3.6.2 Objectives of Data Gathering

The objectives of this data gathering are to see the level of IT literacy amongst the TA (Section A) and most importantly to see their competency level with regards to knowledge on tourism-related matters (Section B).

As this is just an academic research and to avoid hesitancy to respond honestly, it has been clearly stated in the questionnaire that all responses will be kept strictly confidential. There were no mention of names of respondents in the questionnaire and they were assured of anonymity. When deriving the questions, author anticipated that there are certain questions that might appear to be sensitive and susceptible to be left unanswered. Therefore all the questions asked have been put in such a manner that it sounds subtle and does not involve policy.
The purpose of Section A is generally to find out the level of IT literacy amongst the TA and their perceptions on IT and Internet particularly. The findings also aims to predict the readiness of TA if the proposed web-based application were to be implemented on a mandatory basis. Section B pertaining to knowledge on tourism has been divided into various sections as follows:-

i. Profile – to obtain the pattern of scope of experience amongst the TA in terms of their length of service and also their capability of attending tourists per day either face to face or phone calls.

ii. General knowledge on tourism and level of confidence – most questions are asked about tourism-related matters in a very general context.

iii. Internet and its level of trust – to see their opinion about Internet and level of Internet usage

iv. Knowledge flow, update, creation and sharing – generally to see how TA update, create and share their knowledge and what are the major problems in the knowledge flow that occurs in performing their daily routines.

v. Amongst requirements of the system and its expected benefits – soliciting information that could give some indications on their requirements and expectations out of the prototype that is going to be developed.

vi. Training – to see their views about the importance of continuous learning.
vii. Reward – to see how they perceive reward as motivational element in enhancing their knowledge and competency level.

Section C is provided for the TA to give their comments or suggestions.

### 3.6.3 Item non response

All respondents answered all the questions in Section A accordingly. Overall the questionnaire receives a percentage of 2.3% non response item in Section B. Whereas Section C receives a non-response of 86%. Only 14% responded by giving their comments.

### 3.7 Development Methodology

This project chooses prototyping as an appropriate system development approach. In software development a prototype is a system or a partially complete system that is built quickly to explore some aspect of the system requirements and that is not intended as the final working system. This prototype approach is selected due to the following reasons:-

- Prototyping is an effective way of developing system user interfaces. If a prototype has been developed as part of the requirements process, this can reduce later development costs for the system (cost effective).

- Helps to determine the implementation platform that can support the appropriate processing requirements. The feasibility and usefulness of the system can be tested, even though, by its very nature, the prototype is incomplete.
• Concerns with determining the efficacy of a suitable programming language to be used, a database management system and communications infrastructure.

• Helps to elicit users requirements and translate it into a working system and able to overcome the problems of misunderstanding and ambiguities that may exist in the requirements earlier stage of the development thus it reflects the real needs of the user. User requirements that have been missed are identified.

• Helps to validate the system requirements.

The main stages in developing the prototype are as follows:-

• Perform an initial analysis

• Define prototype objectives

• Specify prototype

• Construct prototype

• Evaluate prototype and recommend changes
A life cycle for prototyping is as illustrated below:

![A Prototyping Life Cycle](image)

**Figure 3.1: A Prototyping Life Cycle**

Through a proposed prototype of web-based application called TIC KMS, the last three stages are repeated until the objectives of the prototyping exercise are achieved.
As shown in Figure 3.2, the development of TIC KMS prototype will follow the guidelines from defined software development framework. The actual phase involve in the development of TIC KMS is further elaborated and taken into implementation. In general, each step shown in the framework will be conducted separately as the development phase took place. Note that only steps related to prototyping phase is taken into consideration. Upon completion of the prototype, it will then be evaluated in terms of its strength and limitations. This is part of the post prototyping phase. However, the prototype remains as it is because completion of the whole system is beyond the scope of this project.

The planned activities in the development of the proposed TIC KMS prototype are as follows:-

- Phase 1: System Requirement
The following methods are applied:-

i. Elicitation of users’ requirement through questionnaires distributed. Data will then be tabulated and analyzed after which conclusion will be derived.

ii. Another method is interviewing suitable personnel attached at the various related divisions in the organization,

iii. Through author’s own observation.

• Phase 2 : Initial Framework Analysis of System Specification

i. Program Design – the prototype will use Internet-based prototyping solutions based on world wide web browsers using PHP, script for web server running on Apache HTTP Server

ii. Proposed User Interface – a combination of Macromedia Dreamweaver MX, Adobe Photoshop, flash etc

iii. Database – MySQL, editor for the database will use PHPMyAdmin

• Phase 3 : Prototype Development Plan

i. Come out with a corresponding schedule to implement each part of the identified specification.

• Phase 4 : Developing Prototype

i. This phase targets to complete an early workable version of the prototype based on the basic system requirement and major data
is applied to encourage and attracts end user to use the proposed system.

ii. Close relationship and communication with end user will increase the chances to find their exact needs and further refine the system.

- Phase 5 : Evaluating Prototype
  i. Revise working prototype with End User.
  ii. End user will help to review the model of the system in order to spot ambiguous and unforeseeable requirements during the initial elicitation process in order to improve the prototype.

- Phase 6 : Justification with Early and Current System Specification
  i. Changes on certain features and additional requirement would require a new system specification.
  ii. End User’s suggestion and related report is taken into account to develop next version of prototype.
  iii. A prototyping development life cycle is completed. Discussion over new objective and target is made in order to obtain new milestone that will be incorporated in the future plan.

The details on the above will be explained in Chapter 4 i.e. Requirement Analysis and Design Specification.
3.8 Summary of Research Methodology

To date, this research study has determined, based primarily on survey research and through an extensive literature work reviewed in Chapter 2 that there is not any widespread use of KM techniques in place in TM and MoTOUR. In this chapter, a prototype KMS has been specified, and will be elaborated further in the next few chapters.
CHAPTER 4
REQUIREMENT ANALYSIS AND DESIGN SPECIFICATION

4.1 Introduction
This TIC KMS is developed through a prototyping approach due to the reasons that have been elaborated in Chapter 3.

4.2 Activities in data collection
This section explains the means of data collection involved in this research that shall be useful in analyzing the requirement and developing the design specification.

4.2.1 Surfing the Internet
Various websites has been surfed to get an insight understanding about tourism and what are most required from those websites from the TA’s point of view.

4.2.2 Conduct initial interview & Observation
Informal interview were carried out with senior personnel in TM and MoTOUR, as their vast experience would help the Researcher in understanding the structure, nature and vision of the organization. Interviews were also conducted to a certain number of TA’s in selected TIC such as MTC, PWTC, Johor, Langkawi and Labuan to gain a better understanding of their daily routines and their requirements out of the proposed system as part of the elicitation process. Researcher also
collected invaluable experiences of how these TAs deal with tourists at these TICs.

4.2.3 Data Analysis from Questionnaires Distribution

As has been explained in Chapter 3, an extensive questionnaire had been distributed to all TAs nationwide. It receives quite an overwhelming respond where 68.25% responded. These returned questionnaires were then analyzed according to the objectives set earlier. Data gathered from these questionnaires also enable Researcher to derive user requirements to be used in developing the prototype for TIC KMS.

The analysis of data for this study is done using SPSS Version 13 and is divided into two (2) parts. The survey findings obtained from this data analysis are as explained in the next section.

4.2.3.1 Survey Finding for Section A

The objective of this section is to investigate the level of IT literacy amongst the TAs in terms of:-

i. TA’s acceptance and readiness if the web-based KMS is implemented

ii. TA’s perception of the Internet
Respondents Background

Chart 4.1: Gender - Male vs Female TA

As shown in Chart 4.1, 76.7% of TAs is female and the remaining 23.3% are male.

Chart 4.2: Respondents Age

As can be clearly seen from Chart 4.2, majority of the TA i.e. 65.2% falls between the ranges between 26 to 35 years old with 41.9% represents the age between 26 to 30 and 23.3% between 31 to 35.
Chart 4.3 indicates that majority of the TA possess SPM/MCE as their highest level of education with 55.8% followed by Diploma with 30.2%. Coincidentally 7% are degree and certificate holder respectively.

IT Facilities

Chart 4.4 indicates that most TICs especially those located at HQ provide more than 2 units of PC. Whereas TIC located at the states have
either 1 or 2 units of PC which are represented by the percentage of 23.3% and 20.9% respectively.

As shown in Chart 4.5, majority of the TA (93%) claims to use computer at work in performing their daily routine. Only 7% were found not using computer at all. The usage frequency is as shown in Chart 4.6.

64.3% admitted that they use computer throughout the day for various purposes as shown in Chart 4.6 and Chart 4.7. 28.6% uses computer
more than once a day, 4.8% only use computer once a day and 2.4% uses computer only once a week.

The above chart reveals that majority of the TA uses computer to surf Internet for information on tourism and general information as well as to update their knowledge specifically on tourism-related matters. This is further proven by looking at Chart 4.8 where 93% had answered Information Search as the major purpose of accessing the Internet.

### Chart 4.7: PC Usage Purposes Breakdown

The above chart reveals that majority of the TA uses computer to surf Internet for information on tourism and general information as well as to update their knowledge specifically on tourism-related matters. This is further proven by looking at Chart 4.8 where 93% had answered Information Search as the major purpose of accessing the Internet.
Chart 4.9 shows that majority of the TA (84%) require training in IT with specific interest as shown in Chart 4.10 below:-
Majority of the TA showed interest in learning MS-Windows, MS-Office Tools and Basic Computer Hardware the most. Looking at the pattern, less training is required for Internet Surfing and e-mail usage. This indicates that most TA has no problem in internet surfing and email usage. This further asserts the above finding that TAs do surf Internet in their daily routine for various purposes specifically in information search.
**Chart 4.11** shows that printed materials or collaterals such as brochures, bulletins, newspapers, magazines etc are used to be the primary reference for TA before the provision of IT facility.

![Chart 4.12: Internet as a tool replacing the above in information search/update](image)

However, when asked their opinion about whether the Internet has replaced partly or completely another technology or medium for information search/update, majority of the TA agreed with this fact where 76.7% probably are using Internet whereas 23.3% still refer to the above medium indicated in **Chart 4.12**.

![Chart 4.13: Overall Perception of IT](image)
Finally, majority of the TA agreed that IT has been accepted as a useful tool in performing their daily routine where 83.7% found IT to be very useful.

The frequencies table for Section A is as attached in Appendix E.

4.2.3.1.1 Concluding Remark

Based on the survey findings, it can be concluded that the level of IT awareness and literacy is quite satisfactory. Majority of the TA feels that Internet is a useful tool which helps them in information search etc. Thus, if a web-based application were to be installed and used, it is predicted that they will be able to handle it with less training required. Internet connection is available at most of the counters and most TICs have sufficient PC to be used on a one to one basis.

4.2.3.2 Survey Finding for Section B

To obtain an overall picture of TAs competency with regards to tourism-related matters and how KM can help to enhance the efficiency and effectiveness of TA services.
Respondent’s Profile

From the figure shown in Chart 4.14, most TA have more than 5 years and less than 10 years working experience (28.6%). 19% have more than 10 to 20 years of experience whereas 4.8% is scheduled to retire. This means that 52.4% are senior TA. The remaining 47.6% are TAs within less than 1 year and not more than 5 years experience. The ranges of experienced and lesser experienced TAs comparatively are quite balanced.
In average, most TAs has to entertain between 11 – 20 tourists (25.6%) and 11 – 20 calls per day (41.9%) as shown in Chart 4.15 and Chart 4.16 respectively.
General Knowledge on Tourism and Level of Confidence

Majority of TAs feels that they have sufficient knowledge about tourism before attending to any tourist.

Majority of TAs (92.9%) claims that they are able to ensure the accurateness of information disseminated. Only little portion (7.1%) admits that they are unsure about the accuracy of information they passed.
Quite interestingly, it has been noted that 45.2% of TA reveals that they do receive complaints about disseminating either wrong or less accurate information.

On average, majority of TA (52.3%) needs between 3 – 5 minutes to seek for further information when responding to a tourist on a face-to-
face basis. This is considered quite long because by right the information should be on their finger tips all the time. However, 31.1% needs less than 3 minutes to do the same.

![Chart 4.21: Awareness about own state best places of interest](image)

79% are confident that they are well-versed with their own state best places of interest and the remaining 21% reveals otherwise.

![Chart 4.22: Knowledge about own state vs other states/overall](image)

It is important to note that there is a well balanced of percentage in terms of TAs knowledge with regards to information pertaining own
state as compared to other states/overall. Interestingly there is a balance spread for the proportion of 90/10 & 60/40 and 80/20 & 70/30 with percentages of 11.9% and 19% respectively. This is clearly indicated in Chart 4.22.

![Chart 4.22: Proportion of 90/10 & 60/40 and 80/20 & 70/30]

As indicated in Chart 4.23, majority of the TA (97.7%) agreed that it is important to update their knowledge about other states in performing their daily operations. There is a small percentage (2.3%) that thinks otherwise.

![Chart 4.23: Need to enhance knowledge about other states]
As shown in **Chart 4.24**, it can be concluded that TA would be able to answer spontaneously and quite satisfactorily when asked about transportation, accommodation, theme parks and attraction, Beaches and Island, Adventure and Nature, Shopping Complexes and Festivals because all these areas indicate a percentage of more than 50. However, those below 50% such as Café and Restaurants, events, tourism product & services, yearly statistics of tourist arrival to Malaysia and yearly income generated through tourism industry in Malaysia, TA need to refer or find information on these subject matters prior to answering to tourists.
Chart 4.25: General Knowledge on tourism product/services

Chart 4.25 explains the pattern of TAs knowledge in terms of tourism product and services can be seen clearly. Cuti-cuti Malaysia and Malaysia Mega Sale have been identified to be very well known to the TA. They received 56.4% and 37.5% in the knowledge of TA respectively. Among the highest category within the range 60-79% are Eco Tourism (29.3%), Student Tourism (19.5%), Agro Tourism (25%), Sports Tourism (23.1%), Malaysia My 2nd Home Programme (22%), Home Stay Programme (34.1%), Malaysia Mega Sales Carnival (22.5%) and MICE (20%). On an average scale i.e. between 40-59%, TA was found to be knowledgeable with regards to all tourism product/services where it receives not less than 20% each. Health Tourism, MICE, Think Tourism and Mesra Malaysia campaign was identified to be less popular amongst the TA.
Chart 4.26: Ability to elaborate about tourism product and services

Chart 4.26 further asserts that Cuti-cuti Malaysia, Malaysia Mega Sale Carnival, Homestay Programme, Agro Tourism, Eco Tourism, Sports Tourism, Student Tourism, Malaysia My 2nd Home Programme are in the best knowledge of the TA since they claim to be able to elaborate on those areas. However MICE is least known to them.

Internet and its level of trust

Chart 4.27: Surf tourism websites
Chart 4.27 indicates that majority of TA i.e. 90% claimed that they had surfed other states tourism websites in information search and the remaining 10% did not make any attempt to surf it.

![Chart 4.28: % of TA who prints out and share info from Internet]

As indicated in Chart 4.28, majority of TA (89.7%) has been surfing Internet as a source of reference and often print out information to share it with other colleagues. The remaining 10.3% were believed not to be doing the same due to several reasons as explained in Chart 4.29.

![Chart 4.29: Reasons for not surfing the Internet]
Slow bandwidth Internet line has been identified as the highest hindrance factor for accessing Internet. Secondly, most TAs claim that most websites are not updated. Coincidentally lack of computer has received equal percentage as lack of trust being among other hindrance factors of not accessing the Internet. Minority of the TA only rely on printed collaterals. However all TA disagree that they are uncertain about the benefit gained from accessing Internet. They had rejected another possibilities outlined by the author for not accessing the Internet i.e. do not know how to surf and do not know how to use the PC. These findings has made a significant observation that majority of the TA has developed an appropriate level of trust towards the Internet as a reliable source of reference. There are still rooms for improvement in order to increase the level of trust in accepting Internet as a primary source of reference in the near future and TM should consider providing a higher bandwidth, equip TIC with sufficient number of PCs etc. Most importantly, the proposed TIC KMS could probably become the ultimate solution for the problems of lack of trust due to outdated websites.
Knowledge flow, update, creation and sharing

Chart 4.30: Easiest and fastest way to find info on the spot

Chart 4.30 illustrates that three main medium TA uses to find information they need on the spot are through making phone calls, ask among themselves and Internet surfing. Printed materials and emails are the least preferable medium.

In Chart 4.31, majority of TA claim that they are well aware of all the events organized by MoTOUR. They also do not encounter any problems in obtaining information about tourism events organized by
other government agencies. These are shown in Chart 4.32 and Chart 4.33.

Chart 4.32: Awareness of events organized by Ministry of Culture, Arts & Heritage

Chart 4.33: Awareness about tourism events organized by other than the above

Chart 4.34: Information flow among important tourism players (city hall, state govt and stac)
However, lack of information flow has been spotted when asked about whether the City Hall, States Government and State Tourism Action Council provide tourism information on a regular basis to TIC where majority of TA feels that they should be informed directly. This is shown in Chart 4.35 and Chart 4.36. In Chart 4.34, 83.3% TA responded that they are not aware of information organized by the above party. This has resulted in TA not knowing what is taking place at the state level.

![Chart 4.35: Consequences of not knowing the above](chart)

Majority of TA agreed that it is important to be updated on the detail information about all on going and forth coming events as shown in Chart 4.36.
Chart 4.36: Importance of being updated

Chart 4.37: Problems of not knowing events organized by Ministry of Tourism

Chart 4.37 further asserts that failure from being informed about tourism events organized by the ministry itself would result in having problems generally most of the time. Chart 4.38 explains some of the problems that might arise due to the abovementioned problem. Among the major problems according to the highest percentage are phone calls are passed around 22%, do not know who the organizer is, information is always unclear, will not be informed of any cancellation receives 19%
equivalently, will not be informed of the changes in dates & venues 18% and others 3%.

Chart 4.38: Type of problems encountered

Generally all TA agreed that it is important to keep them updated on all the current issues affecting the tourism industry in performing their duties. There are various references chosen towards this as shown in Chart 4.39.

Chart 4.39: Various references use to update information/knowledge

Newspaper and Internet are the primary references used by the TA. Emails receives the lowest percentage comparatively to other medium
which shows that besides newspaper and Internet, TA prefer to ask among themselves to keep updated with information/knowledge pertaining current issues in tourism.

Chart 4.40: Willingness to contribute knowledge

Chart 4.40 illustrates that if the system developed is implemented, majority of TA do not hesitate to contribute their knowledge, if given the access right. Only a small portion (5%) thinks otherwise but did not reveal the reasons when asked.

Chart 4.41: Willingness to spend own money for additional/updating info/knowledge about tourism

As shown in Chart 4.41, most TAs (64.3%) is not willing to spend their own money in seeking additional information/knowledge to better equip
themselves. However quite a big percentage i.e. 35.7% do not mind doing so.

Chart 4.42 shows that certain tourism industry player receives the lowest percentage for instance MDFOA, PKK, CBBSC, MRA, MRCA and CRAM. This indicates that their existences are not in the knowledge of TA.

Chart 4.43 shows awareness of role and function of each and every division in TM.
Majority of TAs are aware of the role and function of each and every division in the organization as shown in Chart 4.43. Thus it makes it easier for them to refer to the division concerned should there be any uncertainties.

**Amongst requirements of the system and its expected benefits**

Amongst the user requirements captured during the elicitation process, which could be incorporated into the system are as depicted in Table 4.1 as below:

<table>
<thead>
<tr>
<th>No.</th>
<th>Requirement</th>
<th>% Agree</th>
<th>% Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prefer to have a single point of reference</td>
<td>88.1</td>
<td>11.9</td>
</tr>
<tr>
<td>2</td>
<td>Prefer to view updated hotel rates</td>
<td>90.5</td>
<td>9.5</td>
</tr>
<tr>
<td>3</td>
<td>Prefer to have more information about hotels than just basic information</td>
<td>92.9</td>
<td>7.1</td>
</tr>
<tr>
<td>4</td>
<td>Suggestion of Tourism Services Division as knowledge champion/owner</td>
<td>90.5</td>
<td>9.5</td>
</tr>
<tr>
<td>5</td>
<td>Suggestion to incorporate complaints channel facility in the system</td>
<td>90.5</td>
<td>9.5</td>
</tr>
</tbody>
</table>

All TA agreed that the existence of the proposed system would benefit in terms of providing the same platform for coordinating the information flow within the industry. It is also agreeable that such system would ease their work and undoubtedly provide more accurate information.
Training

![Chart 4.44: Frequency of attending Product Familiarization](chart)

Chart 4.44: Frequency of attending Product Familiarization

From **Chart 4.44**, it can be concluded that TA requires more frequent product familiarization from time to time. Generally most of them (59.5%) only have the opportunity to participate once a year while 16.7% claimed that they had never been sent to attend any throughout their service. However, this could probably be true for the new TA’s joining the organization. A very small percentage i.e. 2.4% stood a better chance of attending such program once a month. 4.8% went once every four months and a portion of 16.7% attended twice a year. This program is believed to have significant impact in enhancing TAs knowledge. The experience to explore either existing or new tourism product exposes TA to the ‘look and feel’ of each product so that they can explain better about that particular product, its facilities etc. Knowledge acquired from this program can then be shared amongst the TA through various ways as shown in the following chart.
Preparation of a report has been agreed as the most appropriate way of imparting their knowledge acquired through a product familiarization program. Other means are presentation to colleagues, phone conversation and by word of mouth. None of the TA agreed that they refuse to share their knowledge. All TA agreed that the report prepared subsequently after a visit should be compiled and stored in the system for future reference and must be updated every time it is visited by other TA. These are well-represented in Chart 4.45.

4.2.3.2.1 Test

For this section, various tests have been imposed as follows:-

Section 1: Analysis Factor

1.1 KMO and Bartlett’s Test

1.2 Rotated Matrix Component

Section 2: Reliability Test

Section 3: Correlations
Section 4: Regression

Section 5: Nonparametric Test

Section 1: Analysis Factor

This analysis is executed to identify the dependent variables or factors which explain the pattern of correlations between groups of variables. This analysis also aims to see the re-classification of variables or factors based on the rotated component matrix. In this study 11 elements have been analyzed using this method. Prior to this test, data must be tested using KMO and Bartlett’s Test to determine whether the sample taken is sufficient to run the analysis factor. For this study, it is concluded that the number of sample acquired is significant to enable these data to be analyzed (refer Table 4.2).

Table 4.2: KMO and Bartlett’s Test

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>B22</td>
<td>1.000</td>
<td>.546</td>
</tr>
<tr>
<td>B41</td>
<td>1.000</td>
<td>.662</td>
</tr>
<tr>
<td>B49</td>
<td>1.000</td>
<td>.697</td>
</tr>
<tr>
<td>B51</td>
<td>1.000</td>
<td>.685</td>
</tr>
<tr>
<td>B53</td>
<td>1.000</td>
<td>.744</td>
</tr>
<tr>
<td>B55</td>
<td>1.000</td>
<td>.698</td>
</tr>
<tr>
<td>B56</td>
<td>1.000</td>
<td>.253</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis
After implementing this KMO and Bartlett’s Test method, these data are then analyzed using the rotated component matrix as shown in Table 4.3).

<table>
<thead>
<tr>
<th>Component</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit of Internet</td>
<td>.739</td>
</tr>
<tr>
<td>Information sharing across the organization</td>
<td>.814</td>
</tr>
<tr>
<td>KMS will make TA more efficient</td>
<td>.835</td>
</tr>
<tr>
<td>Continuous training is required to increase the quality of service delivery</td>
<td>.828</td>
</tr>
<tr>
<td>Product Familiarization is useful in knowledge update</td>
<td>.862</td>
</tr>
<tr>
<td>Reports on the above should be compiled, stored and digitized for future reference</td>
<td>.836</td>
</tr>
<tr>
<td>Reward system if implemented will motivate TA to improve their knowledge and competency level</td>
<td>.503</td>
</tr>
</tbody>
</table>

*Extraction Method: Principal Component Analysis*

Only one component was extracted since the solution cannot be rotated. The above table also indicates the factor loadings for each variable against its component or factor after rotation. Rotation is a method use to simplify the analysis factor explanation. Each number indicates the relationship between the variables and the rotated factor. This relationship will conclude the explanation factor and components. This can be seen based
on the factors with higher loading value for each factor or component where only factors exceeding 0.5 will be accepted in order to carry on with the subsequent analysis. From the finding, only 6 variables were found to be exceeding 0.5 for the only factor or component involved.

Section 2: Reliability Test

This test is executed to see the consistency and stability of questions asked and whether the respondents fully understood those questions. This test uses Cronbach’s Alpha which describes the positive relationship between each item. If the value generated is closer to 1, it means the more consistent and stable the related questions are. Tested with the same elements as above has resulted in a positive relationship, showing consistency and stability where the Cronbach’s Alpha value is close to 1 (refer Table 4.4 and Table 4.5).

<table>
<thead>
<tr>
<th>Table 4.4: Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td>.905</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4.5: Item-Total Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Benefit of Internet</td>
</tr>
</tbody>
</table>
Information sharing across the organization | .887
---|---
KMS will make TA more efficient | .888
Continuous training is required to increase the quality of service delivery | .877
Product Familiarization is useful in knowledge update | .883
Reports on the above should be compiled, stored and digitized for future reference | .898

**Section 3: Correlations**

**Table 4.6: Correlations**

<table>
<thead>
<tr>
<th></th>
<th>knowledge_management</th>
<th>more_efficient_in_services</th>
</tr>
</thead>
<tbody>
<tr>
<td>knowledge_management</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.381</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>43</td>
</tr>
<tr>
<td>more_efficient_in_services</td>
<td>Pearson Correlation</td>
<td>.381</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>43</td>
</tr>
</tbody>
</table>

**Table 4.6** shows the Pearson relationship, significant value and total of data analyzed. Pearson relationship indicates that data are normally scattered around. This relationship is also used as a measurement tool to see the linear relationship between two variables. Pearson relationship value ranges between -1 and 1. The positive and negative value indicates if there is a positive or
negative relationship exists between each variable. If the value is closer to 1, therefore there is a strong relationship between the variables and vice versa.

Significant value is used to see if each variable has a linear relationship between each other. The relationship is significant and each variable has a linear relationship with each other if the significant value is less than 0.01. Otherwise, the relationship is not significant and each variable has no linear relationship with each other. In this study, as can be seen clearly in Table 4.6, the significant value is 0.012 (slightly more than 0.01). Hence, the correlation between the two variables obtained is not significant and there is no linear relation between the variables.

**Section 4: Regression Analysis**

Regression Analysis is run to measure the relationship between a dependent variable with an independent variable to describe the influence of the independent variable over the dependent variable. In this study KMS is considered as the independent variable and TIC services are the dependent variable. Table 4.7 indicates the regression model which explains the role of KMS in enhancing the efficiency and effectiveness of the TIC services. Model 1 shows that if KMS is implemented, column R has the value of 0.381. This indicates that the efficiency and
effectiveness of TIC services will increase with the implementation of 38.1% or above of KMS.

Table 4.7: Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std Err of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.381a</td>
<td>.145</td>
<td>.125</td>
<td>2.99952</td>
</tr>
</tbody>
</table>

Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R Square Change</td>
</tr>
<tr>
<td>1</td>
<td>.145</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), knowledge_management

Section 5: Nonparametric test

The nonparametric tests for two independent samples are useful for determining whether or not the values of a particular variable differ between two groups. This test needs to be undertaken due to the result showed in Section 3: Correlations and to further proof the hypothesis of this study. The Mann-Whitney and Wilcoxon statistics has been used to test the null hypothesis that two independent samples come from the same population.

Prior to this test, a usability task analysis has been conducted to observe and compare time usage in information search using the manual search (pre) and KMS search (post). For this purpose 15 TAs from all over KL and Selangor have been gathered at MTC to participate in this test. To carry out this usability task analysis,
a table has been derived to make the required comparison over certain selected category of information that should be searched by the participating TAs. The author has selected the category of information randomly as follows:-

A. List of shopping complex in Kuala Lumpur

B. List of travel agent in Malacca and narrow down to Tanjung Bidara

C. List of cuisine restaurant around Kuala Lumpur narrow down to Thai, Swiss, French, Mediterranean and Vegetarian restaurant.

D. To find quick information about The Andaman Datai, Langkawi, Kedah (accommodation)

E. List of all accommodation along Batu Ferringhi Penang irregardless of the star rating (accommodation)

F. List of famous beaches in Terengganu (island and beaches)

G. List of famous theme park in Selangor (theme park)

H. Quick information about the private medical centre in Perak (health tourism)

I. List of upcoming events in November 2006

J. List of events according to state and category for example in Johor

K. List of lounges in Kuala Lumpur (entertainment)

L. List of fruit farms in Pahang (agro tourism)

M. List of home stay in Selangor according to district (home stay)
Under this test, two type of pre and post comparison have been made i.e. between manual search versus TIC KMS search and between Internet searches versus TIC KMS search. The result of the above usability task analysis is as shown in Appendix F. Based on the result obtained from this usability task analysis, a statistical analysis comparison using nonparametric test using SPSS has been conducted and the result for both test is as shown in Table 4.8 and Table 4.9 respectively:

### Table 4.8: Nonparametric Test (Manual vs TIC KMS)

#### Mann-Whitney Test

<table>
<thead>
<tr>
<th>SEARCH</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A PRE</td>
<td>15</td>
<td>23.00</td>
<td>345.00</td>
</tr>
<tr>
<td>POST</td>
<td>15</td>
<td>8.00</td>
<td>120.00</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Statistics&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>120.00</td>
</tr>
<tr>
<td>Z</td>
<td>-4.675</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td>Exact Sig. [2*(1-tailed Sig.)]</td>
<td>.000&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> Not corrected for ties

<sup>b</sup> Grouping Variable: SEARCH
Table 4.9: Nonparametric Test (Internet vs TIC KMS)

Mann-Whitney Test

Ranks

<table>
<thead>
<tr>
<th>SEARCH</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A PRE</td>
<td>15</td>
<td>23.00</td>
<td>345.00</td>
</tr>
<tr>
<td>POST</td>
<td>15</td>
<td>8.00</td>
<td>120.00</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test Statistics\(^b\)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>120.00</td>
</tr>
<tr>
<td>Z</td>
<td>-4.674</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td>Exact Sig. [2*(1-tailed Sig.)]</td>
<td>.000(^a)</td>
</tr>
</tbody>
</table>

a. Not corrected for ties
b. Grouping Variable: SEARCH

As shown in Table 4.8 and Table 4.9, the significant value is 0. This indicates that there is a significant difference in comparison (pre and post). Hence the hypothesis null is rejected and Ha is accepted. This has further proven that the hypothesis made that TIC services are more efficient and effective via a Tourist Information Counter Knowledge Management System (TIC KMS) is acceptable.
4.2.3.2 Concluding Remark

Majority of the TA agreed that:-

- Tourism-related information are scattered around.
- Too many references make it difficult to identify which is more recent and updated (confused).
- Lack of information about events organized by different parties has been identified as being one of the problems in knowledge sharing.
- Lack of communication amongst the industry players being the biggest impediment of information flow in the tourism industry. Information is not well disseminated.
- There is a need to have a single platform accessible to them which is updated, reliable and presentable.
- They will not hesitate to use, participate and share their knowledge especially when the reward element is introduced.
- Continuous training will ensure their knowledge is updated.
- The proposed system if successfully implemented will make them more efficient.

The frequencies table for Section B is as attached in Appendix G.
4.2.3.3 Survey Finding for Section C

Out of 43 sets of questionnaires, only 6 responded to this section. Among their comments are as below:

- First hand experience on tourism product is essential in performing their daily task as the front liners
- Complains on out-of-order PC facilities at certain counters
- Out-dated websites
- Questionnaires too long

The frequencies table for Section C is as attached in the last page of Appendix G.

4.2.4 Define Project Scope and Requirement

This prototype aims to enable information search besides being the primary reference and knowledge sharing amongst the TA. The dynamic databases created and maintained by a single party will avoid confusion, duplication, doubted and disputable information pertaining to tourism with high integration of data guaranteed. All existing and updated information will be verified by assigned personnel before the TAs as the end-user can view it as valid. TAs all around Malaysia will be given access right to browse this system and participate interactively in certain module.

4.2.4.1 Type of Users Determination

To get a better understanding of the involved parties in this TIC KMS, Table 4.10 outlines the types of users, their responsibilities and access right:
<table>
<thead>
<tr>
<th>Type of user</th>
<th>Responsibilities</th>
<th>Access Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourist Assistant</td>
<td>Everyday routine. Access the system to equip them with information.</td>
<td>Limited Access Right. Can only View/Browse and use the modules provided.</td>
</tr>
<tr>
<td>Administrator</td>
<td>• Full understanding of the system. • Installation and configuration. • Managing the login &amp; password authentication.</td>
<td>Unlimited Access Right</td>
</tr>
<tr>
<td>Super User</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; Verifier - Ensuring or validating the correctness of information uploaded.</td>
<td>Unlimited Access Right</td>
</tr>
<tr>
<td>• Knowledge Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chief Knowledge Officer</td>
<td></td>
<td>Unlimited Access Right</td>
</tr>
<tr>
<td>• Knowledge Officer (Tourism Officer)</td>
<td>In charge of updating, modifying, deleting and archiving information and databases (data entry)</td>
<td>Unlimited Access Right</td>
</tr>
</tbody>
</table>
4.2.4.2 Process Determination

This section outlines amongst the processes that can be feasibly implemented in TIC KMS. Each process has direct relationship with each other.

- Login Process
  
  This is a process of allowing users to enter the system.

- Access Control Process
  
  TIC KMS provides a strict access control in order to be reliable. It must have the ability to enable and disable certain TIC KMS modules according to users’ privilege.

- Browsing
  
  Users view the selected page.

- Data Entry Process
  
  Super users namely Knowledge Officer is given the responsibility for data entry which involve updating, deleting and modifying data.

- Data Verification Process
  
  Verification process must be done by super users such as Knowledge Manager and Chief Knowledge Officer.

- Administration Process
  
  Administer and managing the system.
4.2.4.3 Functional Requirement

The above diagram illustrates the functionality of the TIC KMS current state, which only involves TAs and future state, which will encompass the whole tourism industry stakeholders accessing the same model. As it is a web-based application, the functional requirement describing the interaction within the system will be explained later in this chapter.

4.2.4.4 Data

TIC KMS data were gathered during the interview with selected key personnel in TM and MoTOUR, particularly the TA being the end user of the system. During this stage, data gathered serves as the basic
information that helps to model the TIC KMS process into the Entity Relationship Diagram and to determine the related databases. Raw data gathered primarily from tourism collaterals such as brochures and magazines were fully utilized in getting as much information in the effort of creating relevant databases. Generally the important data used throughout the system is as shown in Table 4.11.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Data Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Information</td>
<td>1. Name (userid)</td>
</tr>
<tr>
<td></td>
<td>2. NRIC</td>
</tr>
<tr>
<td></td>
<td>3. Location (Branch)</td>
</tr>
<tr>
<td></td>
<td>4. Role</td>
</tr>
<tr>
<td></td>
<td>5. Registration Status/Authorization</td>
</tr>
<tr>
<td>Accommodation</td>
<td>1. Accommodation</td>
</tr>
<tr>
<td>Transportation</td>
<td>2. Transportation</td>
</tr>
<tr>
<td>Entertainment</td>
<td>3. Entertainment</td>
</tr>
<tr>
<td></td>
<td>· Bar</td>
</tr>
<tr>
<td></td>
<td>· Disco</td>
</tr>
<tr>
<td></td>
<td>· Karaoke</td>
</tr>
<tr>
<td></td>
<td>· Lounge</td>
</tr>
<tr>
<td></td>
<td>· Pub, Bistros and Cafes</td>
</tr>
<tr>
<td>Cuisine</td>
<td>4. Cuisine</td>
</tr>
<tr>
<td></td>
<td>· Type of food for e.g. Chinese, Malay, Indian, Western, Korean, Japanese, Vietnamese etc</td>
</tr>
<tr>
<td>Tourism Information</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td></td>
</tr>
<tr>
<td>5. Islands &amp; Beaches</td>
<td></td>
</tr>
<tr>
<td>• Famous Island</td>
<td></td>
</tr>
<tr>
<td>• Famous Beaches</td>
<td></td>
</tr>
<tr>
<td>• Sail &amp; Cruise</td>
<td></td>
</tr>
<tr>
<td>i. Diving</td>
<td></td>
</tr>
<tr>
<td>6. Hill Resorts</td>
<td></td>
</tr>
<tr>
<td>7. Theme Parks</td>
<td></td>
</tr>
<tr>
<td>8. Eco Tourism</td>
<td></td>
</tr>
<tr>
<td>9. Agro Tourism</td>
<td></td>
</tr>
<tr>
<td>i. List of fruit farms</td>
<td></td>
</tr>
<tr>
<td>10. Sports Tourism</td>
<td></td>
</tr>
<tr>
<td>11. Medical Tourism</td>
<td></td>
</tr>
<tr>
<td>• List of private hospitals</td>
<td></td>
</tr>
<tr>
<td>12. Education &amp; Student Tourism</td>
<td></td>
</tr>
<tr>
<td>13. Campaigns</td>
<td></td>
</tr>
<tr>
<td>• Visit Malaysia Year</td>
<td></td>
</tr>
<tr>
<td>• Malaysia Welcomes The World</td>
<td></td>
</tr>
<tr>
<td>• Think Tourism</td>
<td></td>
</tr>
<tr>
<td>• Mesra Malaysia</td>
<td></td>
</tr>
<tr>
<td>14. Meetings, Incentives, Conventions &amp; Exhibitions (MICE)</td>
<td></td>
</tr>
<tr>
<td>• Famous MICE</td>
<td></td>
</tr>
<tr>
<td>15. Malaysia My 2nd Home</td>
<td></td>
</tr>
<tr>
<td>16. Home Stay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List of participating home stays</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>17.</td>
<td>Shopping (Malaysia Mega Sales Carnival)</td>
</tr>
<tr>
<td></td>
<td>List of shopping complex</td>
</tr>
<tr>
<td>18.</td>
<td>Heritage, Arts &amp; Culture</td>
</tr>
<tr>
<td>19.</td>
<td>Festivals &amp; Events</td>
</tr>
<tr>
<td></td>
<td>List of Festivals</td>
</tr>
<tr>
<td></td>
<td>List of Events</td>
</tr>
<tr>
<td></td>
<td>Event Listing (Calendar 2006)</td>
</tr>
<tr>
<td>20.</td>
<td>Latest News</td>
</tr>
<tr>
<td>21.</td>
<td>List of Travel Agents</td>
</tr>
<tr>
<td>22.</td>
<td>Important contacts</td>
</tr>
<tr>
<td>23.</td>
<td>Malaysia Quick Facts</td>
</tr>
<tr>
<td>24.</td>
<td>Knowledge Evaluation (Quizzes)</td>
</tr>
<tr>
<td>25.</td>
<td>Frequently Asked Question (FAQ)</td>
</tr>
</tbody>
</table>

### 4.3 Activities in study phase

#### 4.3.1 Model the system (prototype)

The main stages in developing the prototype are as per explained in Chapter 3 page 82 – 87.

#### 4.3.2 TIC KMS Flow Charts

Flow chart showing the logical relationship between the system components is as illustrated in **Figure 4.2.**
Figure 4.2: TIC KMS Flow chart
4.3.2 TIC KMS Data Flow Diagram

Data Flow Diagram conveying how information data flows through the system and how that data is transformed in the process is as shown in Figure 4.3, Figure 4.4, Figure 4.5 and Figure 4.6.

![TIC KMS Data Flow Diagram](image)

Figure 4.3: TIC KMS Data Flow Diagram
Figure 4.4: TIC KMS Middle Level Data Flow Diagram – Process 1
Figure 4.5: TIC KMS Middle Level Data Flow Diagram - Process 2
Figure 4.6: TIC KMS Middle Level Data Flow Diagram – Process 3
4.3.4 Entity Relationship Diagram (ERD)

ERD represents all relationships and dependencies diagrams involved which graphically explain the related tables and the relationship between all the databases as well as their objects interaction.

Due to the excessive use of table to store various data, TIC KMS’s master database holds around 58 sets of tables, which results in a complex look of Entity Relationship Diagram. In order to understand the relationship between these tables, three (3) separate ERD i.e. ERD1, ERD2 and ERD3 are used and the explanation of amongst the important table involved are as shown in Appendix H.

4.4 System Design

4.3.1 TIC KMS Data Dictionary

The details of Data Dictionary are as outlined in Appendix I.

4.5 Proposed User Interface

The TIC KMS through a Web-based application was created for system administrators and different level of users as explained in 4.2.4.1 Type of Users Determination. The user interface for the TIC KMS is designed taking into consideration the various users of this system. Most importantly, they are designed to attract visitors and keep them interested. These administrators would perform tasks such as adding user-IDs, installing and configuring application and network components etc. It also involves the content-based component for the Knowledge Officer at the data entry level. Whereas for the TAs the interface
is designed to encourage browsing, searching, and exploration. Thus, the focus of the application’s user interface was task-based depending on their usability and each design decision is dictated by the focus and objective of the project.

4.5.1 TIC KMS Introduction Screen

This screen explains the general information about the system including objective and purpose of the system. To proceed, users have to key in their designated user name and password as shown in Figure 4.7.

![Figure 4.7: TIC KMS Introduction Screen](image-url)
4.5.2 TIC KMS Main Screen/Snap shots for three (3) different groups of users

As shown in Figure 4.8, the second screen is the main screen for the user to start using the system either for information search and utilization of relevant modules for the TA, data entry for the Knowledge Officer, data verification for the KM and CKO, administration work for the administrator, all depending on users’ authorization level.

Figure 4.8: TIC KMS Main Screen

The subsequent screen that will appear depends on the user’s request and authentication based on their roles. The related snapshots are as follows:-

- Snapshot for TA Screen as shown in Figure 4.9.
- Snapshot for System Administrator as shown in Figure 4.10.
- Snapshot for KO, KM, CKO as shown in Figure 4.11, Figure 4.12 and Figure 4.13 respectively
Figure 4.9: Snap Shot for Tourist Assistant Screen

Figure 4.10: Snap Shot for Administrator Screen
Figure 4.11: Snap Shot for Knowledge Officer Screen

Figure 4.12: Snap Shot for Knowledge Manager Screen
4.6 Program Design

4.6.1 TIC KMS Taglines

Taglines created for this main menu reflects the element of KM. These taglines appear intermittently:-

“Gateway To Your Knowledge Enrichment” and “Towards Tourism K-Community”.

4.6.2 TIC KMS General Design

Figure 4.14 illustrates the general design for TIC KMS.
4.6.3 TIC KMS System Architecture

Figure 4.15 illustrates the system architecture of TIC KMS. Built and designed to run on both Internet and Intranet network system, TIC KMS can be accessed using common web browsers such as Internet Explorer, Netscape Navigator, Mozilla Firefox etc. Two types of servers are used - a web server to host the web services and a database server mainly to process and store data. Ten (10) modules are developed to provide services to the users as explained in the next section.
4.6.4 TIC KMS Modules

In general, TIC KMS consist of the following modules:-

- User Profile
- New User Sign up Module
- Data Entry Module
- Data Verification Module
- Search Module
- Print Module
- General Complaint Module
- Report Compilation Module
• Knowledge Evaluation Module
• TA Community Module
  o Online Chat
  o Private Message
  o Forum

The above will be explained further in Chapter 5 – Implementation and Testing.

4.7 Summary of Requirement Analysis and Design Specification

Within this chapter, results from survey demonstrate that TA is ready and able to use a more comprehensive system with less training required. This could be clearly seen from the indication that their level of IT literacy is at a satisfactory level. Requirements derived from the elicitation process are sufficient to start developing the prototype. Prototyping approach is suitable since the requirements evolve with the progress of the system until it reaches a certain level of workability. Modules related to the target users and knowledge management elements were identified, refined and developed. User satisfaction will be obtained during the testing and implementation stage as described in the next chapter.
CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Introduction
Implementation and testing of the prototype was done at Researcher’s office at Malaysia Tourism Centre (MTC), which will act on behalf of the Tourism Services Division (the division suggested to be the knowledge champion in the earlier chapter). Few PCs were connected via Local Area Network and the prototype was accessible through one of the PCs which have been configured as a Server.

5.2 Environment Preparation
TIC KMS development environment was established before its implementation phase was conducted. The selection of hardware, software and database were determined.

5.2.1 Software Requirement
The software requirement to build TIC KMS can be divided into the requirement to design the web-based application and to write reports.

Tools for development
The programming language used to develop TIC KMS is a combination of the following:-

- PHP and HTML
- Dreamweaver for PHP and HTML editor
• Flash for graphic and animation
• Adobe Photoshop

5.2.2 Hardware Requirement

5 unit of PC with connection to the Internet for testing purposes.

5.2.3 Database

MySQL V4.0.20a-nt

5.3 Type of Users

There will be three (3) levels of users as described in detail in Table 4.10: Type of Users Determination on page 131.

5.3.1 Tourist Assistant (TA)

TAs are the end-users whom this prototype was developed for and tested on. Due to time and location constraint, test was only implemented on TA located at Malaysia Tourism Centre.

Test revolves around the following modules:-

• View
• Search
• Print
• TA Community
• Knowledge Evaluation
• General Complain
• Report Compilation
5.3.2 Super Users

Super users are Administrator, Knowledge Officer, Knowledge Manager and Chief Knowledge Officer. Their roles are as explained below.

5.3.3 Administrator

Responsible for normal administration matters such as configuring the system and managing databases. For testing purposes Administrator had been asked to create new users (new users sign up), create new TIC branch and delete TIC branch which is either no longer operational or closed down (branch management).

It is also the responsibility of Administrator to create new framework of Knowledge Evaluation on a monthly basis or as and when required and activate it when instructed by KO, KM or CKO. To ensure that Report Compilation database only consist of useful and informative documents, Administrator would need to do housekeeping work. This means that they will update this module on a periodical basis to ensure that only related documents with regards to TAs product update visit will be maintained in the database. The same task is imposed for General Complain Module where Administrator needs to do housekeeping work to clear complain that has been settled or processed.

For TA Community Module, Administrator has the privilege to control the chat session to ensure topics discussed are strictly work-related. If it
is found that the chat channel is misuse, Administrator can delete the channel including the text.

5.3.4 **Knowledge Officer – Data Entry**

Experienced Knowledge Officer was assigned to monitor the data entry. At the back-end, tourism information within the organization or beyond must be acquired before KO can give any instruction to key-in any additional information or modify existing information. The updating work must be progressively and dynamically done to ensure system contains only updated information. For Knowledge Evaluation module, KO must set the questions for TA and keep track of their marks. KO plays an active role in capturing new information or suggestion posted by TAs via the TA community module. KO is also given the task to respond to complaints posted by TAs according to the sets of action provided. Reference could be made manually from KM or CKO before responding to these posted complains.

5.3.5 **Knowledge Manager & Chief Knowledge Officer**

KM and CKO has similar responsibility that is to verify and validate any updates made to the database by KO. The database will only be updated once it has been verified by either KM or CKO. Both super users in this category have the privilege to keep track of the score marks of every TA participating in Knowledge Evaluation. TAs participation in other modules such as TA Community and Report Compilation can be also be monitored and viewed.
An overview of the above explanation is as per illustrated in Appendix J.

5.4 System Testing

The purpose of this testing is to test the workability of the prototype. A small network was set up at Researcher’s office i.e. at Malaysia Tourism Centre where a personal computer has been set up as the Server. The prototype resides in this server was then accessed by clients’ PC. 18 users were involved with the following breakdown according to role:-

i. Tourist Assistant – 10 users

ii. Knowledge Officer – 2 users

iii. Knowledge Manager – 2 users

iv. Chief Knowledge Officer – 2 users

v. Administrator – 2 users

List of participating Tourist Assistants are as shown in Table 5.1.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Role</th>
<th>Date tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lilis Suriyani</td>
<td>Tourist Assistant</td>
<td>30.3.2006</td>
</tr>
<tr>
<td>2</td>
<td>Carol</td>
<td>Tourist Assistant</td>
<td>30.3.2006</td>
</tr>
<tr>
<td>3</td>
<td>Mohd Hadien</td>
<td>Tourist Assistant</td>
<td>30.3.2006</td>
</tr>
<tr>
<td>4</td>
<td>Fairuz</td>
<td>Tourist Assistant</td>
<td>30.3.2006</td>
</tr>
<tr>
<td>5</td>
<td>Nadia</td>
<td>Tourist Assistant</td>
<td>30.3.2006</td>
</tr>
<tr>
<td>6</td>
<td>Haniff Harun</td>
<td>Tourist Assistant</td>
<td>31.3.2006</td>
</tr>
<tr>
<td>7</td>
<td>Nurhidayah</td>
<td>Tourist Assistant</td>
<td>31.3.2006</td>
</tr>
</tbody>
</table>
Testing was done on all users’ level to show their task, roles and responsibilities according to the respective modules. Modules with greater emphasis on KM elements were given more priority during the testing as explained below.

5.4.1 Modules with KM elements
The following are the snapshots of modules consist of some criteria/extent of KM elements:

5.4.1.1 Knowledge Create, Use, Share, Disseminate
- View
  
  **Figure 5.1** showing the main page of the prototype. From this page onwards, user can start browsing or searching for any kind of tourism information.
Figure 5.1: Main Page of TIC KMS
For Agro Tourism, besides the quick fact about agro tourism which contains basic information about agro tourism, the database consists of all fruit farms in Malaysia. For example Figure 5.2 showing the list of fruit farms in Selangor.
- Data Entry – Under this module, there are options for new accommodation update as shown in Figure 5.3, modify/edit existing information as shown in Figure 5.4A and Figure 5.4B, delete option as shown in Figure 5.5A, Figure 5.5B and Figure 5.5C and print option as shown in Figure 5.6A and Figure 5.6B.

![Figure 5.3: Accommodation Update - New entry](image1)

![Figure 5.4A: Accommodation - Modify Option](image2)
Figure 5.4B: Accommodation - Result of Modification Process

Figure 5.5A: Accommodation - Delete existing information
Figure 5.5B: Accommodation - Confirmation of deletion process

Figure 5.5C: Accommodation - Result of Deletion Process
Figure 5.6A: Accommodation - Print Option

Figure 5.6B: Accommodation - Print Page
- Data Verification

As explained earlier, Knowledge Manager and Chief Knowledge Officer are given the authority to verify any updates made by Knowledge Officer.

Figure 5.7: Knowledge Manager - Verification Page

Figure 5.8: Chief Knowledge Officer - Verification Page
Knowledge Evaluation

Quiz type questions in the form of multiple choices contributed by Super Users such as Knowledge Officer, Knowledge Manager and Chief Knowledge Officer are kept in the database. It is the task of Administrator to name and activate the knowledge evaluation set.

Figure 5.9: Knowledge Evaluation – Set Activation by Administrator only
*Festivals & Events*

Another useful submenu is Festivals and Events. For festivals, main festivals celebrated throughout the year organized mainly by Ministry of Tourism and Ministry of Culture, Arts and Heritage are listed down. Information about a particular festival can be seen in the box at the right hand side. This is shown in Figure 5.10.

**Figure 5.10: Festivals Listing Page**

**Figure 5.11: Events Listing Page**
Events are categorized according to tourism-related activities such as Agro, Eco, Education and Student, Entertainment, Homestay, MICE, Sports and Recreational, Travel and Tour etc as shown in Figure 5.11. Similar to Festival, information on each event can be seen from the right hand side box.

- **Report Compilation**

  Product Update Report can be uploaded into and downloaded from the system and shared/print by all the TAs. Similar to events, reports are categorized into tourism activities such as Accommodation, Theme Park, Architectural Landmark, Island and Beaches, MICE etc.

**Figure 5.12: Report Compilation Page**
5.4.1.2 Communities of Practice (CoP)

- Chat (TA “Tourism” Community) facilitates TA to communicate among each other.

- Forum (Discussion)
- Private Message (post any suggestion)

Figure 5.15A: TA posted a message to Knowledge Officer

Figure 5.15B: Result page of a posted message
Figure 5.15C: Knowledge Officer replied to user

Figure 5.15D: Result page of KO’s Acknowledgement
5.4.1.3 Other Modules

- New User Signup (through normal user with authorized access)

![New User Signup page](image)

**Figure 5.16: New User Sign up page**

- System Management (Administrator)
  Sub modules under system management include System User Management and System Branch Management.

  i) System User Management
  Administrator has the privilege of creating new user account, browse all user accounts which will list down all users at various TIC, browse user accounts according to selected TIC and delete user account. All these are shown in **Figure 5.17, Figure 5.18** and **Figure 5.19A, Figure 5.19B and Figure 5.19C.**
Figure 5.17: Create New User Account

Figure 5.18: Browse User Account for e.g. at Johor Tourist Information Centre (JOTIC)
Figure 5.19A: Delete User Account

Figure 5.19B: Choose username to delete

Figure 5.19C: Notification that User Account has been deleted permanently from the database
ii) Branch Management

Similar to System User Management, under Branch Management, Administrator has the privilege of creating new TIC Branch, Browse TIC according to selected branches and delete TIC Branch. **Figure 5.20** shows the page concerned.

![Figure 5.20: System Branch Management page](image)

- General Complain

General Complain Module provides a platform where TAs can lodge reports receives from tourists directly to the Knowledge Officer. An example of how to lodge complains by TA is as shown in **Figure 5.21A**, **Figure 5.21B**, **Figure 5.21C** and **Figure 5.21D**. Knowledge Officer’s notifications responding to the said complain are as shown in **Figure 5.22A** and **Figure 5.22B**.
Figure 5.21A: An example of TA lodging a complain

Figure 5.21B: System notified that new complain has been successfully updated into the database
Figure 5.22A: System notified that complaint has been received by the Knowledge Officer.

Figure 5.22B: Knowledge Officer Response Page.
Figure 5.21C: TA Check Status

Figure 5.21D: TA Follow up Status Page
Search

Search function where users need to type in the key words.

Figure 5.23: Search Result Page

5.5 Testing method

The purpose of the testing was to evaluate the usability and basic design structure of the prototype. The testing aims to determine whether the system could ease up information search, databases developed are helpful in TAs job routine and whether modules developed successfully incorporate certain extent of KM aspects. Ultimately the hypothesis of this project could further be proven that is TIC services are more efficient and effective via a TIC KMS.

The selected users were gathered in a few different sessions according to their roles and responsibility. Eighteen (18) end-users were chosen to be involved in the testing process. A total of ten (10) TAs have been selected to be the normal
end-user. Two (2) senior TA was selected as KO and another two (2) senior TA as KM. Two (2) office personnel acts as CKO and two (2) IT personnel at Malaysia Tourism Centre acts as System Administrator. All these users are categorized as Super Users.

An introduction about the prototype and the objective of carrying out the project were explained briefly before the testing took place. A short briefing explaining what steps should be taken by each users were organized in order to smoothen the testing session. End-users could ask for help during the session if they encounter any difficulties whilst using the system. The testing took about two (2) days to be completed. End-users were given different sets of questionnaire on user satisfaction to be filled up. These questionnaires were derived based on different user level as follows:

Questionnaire A – User Satisfaction (Tourist Assistant) – Appendix K
Questionnaire B – User Satisfaction (Knowledge Officer) – Appendix L
Questionnaire C - User Satisfaction
(Knowledge Manager & Chief Knowledge Officer) – Appendix M
Questionnaire D – User Satisfaction (Administrator) – Appendix N

5.5.1 Components Tested

Related components being tested during the testing were spelled out to highlight which components were tested by the various users with different level of users’ right. It was broken down into four (4) categories
namely Facility, General Tourism Information, Market Segmentation and
Modules as illustrated in Appendix J.

5.6 Test Data Analysis
Test data analysis was carried out to analyze the result from the surveys conducted on each type of users. As explained in 5.4 above, there are four (4) sets of questionnaires distributed to different type of users and each set was analyzed based on their satisfaction using the system. Questionnaire C contains the same set of questions for both KM & CKO. Therefore these users were grouped into the same table.

5.6.1 Result from user satisfaction (Tourist Assistant)
Analysis was done based on Questionnaire A as shown in Appendix K.

The result is as shown in the following table:-

<table>
<thead>
<tr>
<th>Table 5.2: Summary of user satisfaction – Tourist Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Q 1</td>
</tr>
<tr>
<td>Q 2</td>
</tr>
<tr>
<td>Q 3</td>
</tr>
<tr>
<td>Q 4</td>
</tr>
<tr>
<td>Q 5</td>
</tr>
<tr>
<td>Q 6</td>
</tr>
<tr>
<td>Q 7</td>
</tr>
<tr>
<td>Q 8</td>
</tr>
<tr>
<td>Q 9</td>
</tr>
<tr>
<td>Q 10</td>
</tr>
<tr>
<td>Q 11</td>
</tr>
<tr>
<td>Q 12</td>
</tr>
<tr>
<td>Q 13</td>
</tr>
</tbody>
</table>
5.6.2 Result from user satisfaction (Knowledge Officer)

Analysis was done based on Questionnaire B as shown in Appendix L.

The result is as shown in the following table:-

Table 5.3: Summary of user satisfaction – Knowledge Officer

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Q 2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Q 3</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Q 4</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Q 5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Q 6</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Q 7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Q 8</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Q 10</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Q 11</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

5.6.3 Result from user satisfaction (Knowledge Manager/Chief Knowledge Officer)

Analysis was done based on Questionnaire C as shown in Appendix M.

The result is as shown in the following table:-
Table 5.4: Summary of user satisfaction – Knowledge Manager/Chief Knowledge Officer

<table>
<thead>
<tr>
<th>Rating</th>
<th>Knowledge Manager/Chief Knowledge Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q 1</td>
<td>2</td>
</tr>
<tr>
<td>Q 2</td>
<td>3</td>
</tr>
<tr>
<td>Q 3</td>
<td>1</td>
</tr>
<tr>
<td>Q 4</td>
<td>3</td>
</tr>
<tr>
<td>Q 5</td>
<td>2</td>
</tr>
<tr>
<td>Q 6</td>
<td>2</td>
</tr>
<tr>
<td>Q 7</td>
<td>2</td>
</tr>
<tr>
<td>Q 9</td>
<td>3</td>
</tr>
<tr>
<td>Q 10</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 8</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Q 11</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Q 12</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

5.6.4 Result from user satisfaction (Administrator)

Analysis was done based on Questionnaire D as shown in Appendix N.

The result is as shown in the following table:-

Table 5.5: Summary of user satisfaction – Administrator

<table>
<thead>
<tr>
<th>Rating</th>
<th>Administrator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q 1</td>
<td>1</td>
</tr>
<tr>
<td>Q 2</td>
<td>1</td>
</tr>
<tr>
<td>Q 3</td>
<td>2</td>
</tr>
<tr>
<td>Q 4</td>
<td>2</td>
</tr>
<tr>
<td>Q 5</td>
<td>2</td>
</tr>
<tr>
<td>Q 6</td>
<td>1</td>
</tr>
<tr>
<td>Q 7</td>
<td>1</td>
</tr>
<tr>
<td>Q 8</td>
<td>1</td>
</tr>
<tr>
<td>Q 9</td>
<td>1</td>
</tr>
<tr>
<td>Q 10</td>
<td>1</td>
</tr>
</tbody>
</table>
5.6.5 Summary of testing results

The results are grouped based on common questions and according to users’ roles.

5.6.5.1 Summary result for Common Questions

For all sets of questionnaires, same questions were repeated i.e. Question 1 – 5. Table 5.6 below summarizes the result:-

Table 5.6: Summary of Q1 – Q5

<table>
<thead>
<tr>
<th>Rating</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 1</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Q 2</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Q 3</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Q 4</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Q 5</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

When asked whether the system is easy or difficult to learn, 61.1% answered that the system is easy to learn. On the average scale, all users agreed that placement of items are well organized and easy to find. However, fair marks are given on the attractiveness of the system where 55.5% had chosen scale 4 and 44.5% chose scale 5. Similarly, most of the TAs gave fair marks for the navigation of the system i.e. 61.1% for scale 4 and 38.9% for scale 5.

5.6.5.2 Summary result for TA

Majority of the TA agreed that the system would be able to speed up information search. They also agreed that the content of the system are quite comprehensive and useful. The modules were...
satisfactorily tested and majority of the TA rated all the modules within the range of 4 and 5. As a conclusion, TAs are satisfied with the system and will not hesitate to use it knowing that the system contains only updated and verified information.

5.6.5.3 Summary result for KO
The main task of these users is data entry. The system has been accepted as being easy to understand and use by both users in this category. All modules have been tested in details and they found out that the modules are easy to use and helpful for TAs.

5.6.5.4 Summary result for KM/CKO
The main task of users under this category is data verification based on entry made by Knowledge Officer. All users agreed that the verification module is easy to use. Even though the modules provided in this system are meant for TA, they also tested on these modules and agreed that the modules are easy to understand and would be very helpful and informative for TAs.

5.6.5.5 Summary result for Administrator
Both Administrators agreed that the system is user-friendly and easy to manage.
5.6.5.6 Overall result

Majority of respondents had answered within the range of 3 to 5 for all questions. Interestingly, 100% respondents are satisfied with the system and will not hesitate to use it if implemented. All respondents agreed that the system would be very useful as a medium to train newly hired TA.

5.7 System Testing Constraints

Through out the testing and implementation, several constraints were identified as explained in the next section.

5.7.1 Time

End-users are always busy with daily operation manning the counters. Limited times are allocated to do the testing due to this constraint. Prior consent from the management must be acquired before the testing could take place. Due to this time constraint, testing which was planned under Phase II cannot be implemented.

5.7.2 Database

Huge databases developed had caused delay in the overall prototype testing. The databases development was largely created through own data entry plus data extracted from TM’s websites, Ministry of TM’s website and other tourism-related websites. Long list of items such as accommodations, cuisine and festivals & events demanded a tedious and hard work of data entry, which is time consuming.
5.7.3 Broad scope

The prototype developed had incorporated almost every aspects of tourism industry, which is useful for the TAs daily operation. Basic tourism information such as accommodation, theme parks, beaches and islands are made available for the purpose of testing. Market segmentation such as Medical Tourism, Agro Tourism, Eco Tourism, Home Stay, MICE etc consists of sufficient basic information is also included that results in a broad and extensive testing scope. Combining all these together is necessary in order to put sense to the whole picture. However, there must be limitation in the scope of testing, again because of time constraints.

5.7.4 Location

TIC are scattered around. Testing can only be done at Researcher’s office and nearby. Thus, testing can only be implemented on a limited number of TAs.

5.8 Summary of Prototype Development

During the testing and implementation, generally end-users express their appreciation with regards to the usefulness of this prototype which they believe is helpful in their daily operation. However, there are still plenty of rooms for improvement to make the content more comprehensive and suggestions to improve the outlook of the system to make it more attractive. The idea of having a dedicated reference helps to increase their confidence level especially when the content is dynamically updated by their Senior Tourism Officers. Tacit
knowledge resides in their head no longer remains there since they have a platform to share it with their colleagues. This could inculcate a knowledge sharing culture. Comparing it with other related tourism websites, they are more comfortable using this system since it is developed as to suit their requirement and focuses on only related and useful information besides modules that could use to further enhance their knowledge with regards to tourism.
CHAPTER 6
CONCLUSION

6.1 Introduction

The implementation of TIC KMS has been carried out as planned and its strengths and limitations are as shown below. This chapter concludes the significance of the study as stated earlier in Chapter 1.

6.2 System Strengths & Limitations

6.2.1 System Strengths

Table 6.1 outlines and describes the strength of the TIC KMS:-

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic content management</td>
<td>TA can rely on the content of this system whereby it is updated and maintained by assigned personnel. The accuracy and consistency of information handled by experience knowledge worker known as Knowledge Officer (Tourism Officer) in this regard is assured.</td>
</tr>
<tr>
<td>Very Specific/Time saving</td>
<td>Reference to various tourism websites as in the current practice is done away with. Information updates are specifically for the use of TAs. Surfing too many websites might be strenuous, time consuming and can create confusion. Certain websites tend to be overloaded</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>with irrelevant information and design</td>
<td>usually too cluttered.</td>
</tr>
<tr>
<td>Inter-active</td>
<td>Certain modules allow users to participate like knowledge evaluation in terms of quizzes, chat room, upload reports, complaint channel, forum etc.</td>
</tr>
<tr>
<td>User Authentication and password</td>
<td>Each user is required to provide a valid user id and password in order to use the system. Administrator’s role is to manage the login and password authentication, installation and configuring the system.</td>
</tr>
<tr>
<td>Verification Process</td>
<td>All information entered in the system comes from a reliable source passing through a series of verification process by authorized personnel i.e. Knowledge Manager and Chief Knowledge Officer.</td>
</tr>
<tr>
<td>Web-enabled</td>
<td>Can be easily accessed by all users since it is web-enabled.</td>
</tr>
<tr>
<td>Communities of Practice (CoP)</td>
<td>Accessing the same system in their daily operation creates a ‘common knowledge-base’ amongst the TA and knowledge sharing culture can be inculcated.</td>
</tr>
<tr>
<td>Multiple access control capability with certain extent of accessibility</td>
<td>Users are grouped according to their access right. There are three (3) groups</td>
</tr>
</tbody>
</table>
of users:-

i. End-user (Tourist Assistants) - limited access right

ii. Administrator – Unlimited access right

iii. Super Users (CKO, KM and KO) - Unlimited access right

This control eliminates the possibility of unauthorized users from accessing the databases.

6.2.2 System Limitations

Table 6.2 outlines and describes the limitations of the TIC KMS:-

Table 6.2: Limitations of TIC KMS

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited to only for TAs usage</td>
<td>The early prototype was dedicated for the use of TA in their daily operations. In this phase, the flow involved in the backend process was still not visible yet. The whole coverage will only be included in the future enhancement as proposed in Phase II and Phase III where all tourism stakeholders will participate and contribute to the content of the system.</td>
</tr>
</tbody>
</table>
Unstable | A stable and reliable leased line linking up all the TA is still not in place as yet. Most TICs are using tmnet streamyx broadband. If the internet is down, TA will not be able to use the system because there is no back up line.

Limited database and functionality | The early version of prototype comprises of databases with limited content. However, it is still very useful to show the modules functionality. Except for Accommodation, Theme Park, Festival & Events, Home Stay, MICE, Hill Resort, Travel Agent and List of Private Hospitals (Medical Tourism), the rest are confined to information around Kuala Lumpur and Selangor.

6.3 Benefits

The benefits of implementing this KM effort can be divided into short-term and long-term benefits as follows:-

6.3.1 Short-term Benefits

1. Enable TA to quickly source information they required.

2. Share information with colleagues/Knowledge is available to all.
3. Upgrade service delivery/hospitality.
4. Reduce response time resulting in enhance tourist satisfaction.
5. Prevention ‘re-invention of the wheel’.
6. Reduced repeated mistakes.
7. New knowledge creation by using current knowledge.
8. Improve the quality of services for tourist.
9. Improve employees’ efficiency in handling tourists.
10. Can be used as a mean of training for new staffs thus reducing training cost.
11. Innovations, motivates knowledge sharing amongst the TAs.
12. Working style based on each individual is standardized.
13. TIC KMS provides a platform to collaborate information that needs to be shared.

6.3.2 Long-term Benefits

1. More efficient use/re-use of Knowledge assets.
2. Knowledge and Intellectual Capital are retained.
3. Knowledge is enhanced.
4. Competitive Advantage enhanced.
5. Knowledge is secured within the organization.
7. The value of the organization’s Knowledge is recognized.
8. Helps to increase the image of TM and tourism industry as a whole.
6.4 Challenges in the implementation of KM

Amongst the predicted challenges in KM and CoP implementation in TM are as follows:

1. How to cope with difficulty.
   - Difficulty to disclose tacit knowledge such as expertise and know-how.
   - Because the tacit knowledge is one’s competitive tool in any organization, TA might resist imparting knowledge for fear that they might lose their superiority or competitiveness.
   - A new appraisal system should be considered/recommend/developed.

2. To inculcate sharing culture is not an easy task.
   - Without the necessary culture, it is unlikely that KM will be implemented successfully.
   - Importance of top-level management involvement should be emphasized.
   - Interesting Reward Structure should be proposed.

3. Obtaining top management involvement/confidence.

4. Convincing the top management the importance of creating KM department and appointment of dedicated staff to manage knowledge and data collection.

5. Suggestion that top management should consider additional manpower at the TIC prior to the system implementation.

6. Obtaining co-operation from staffs to use the system developed.

7. How to evaluate and measure organizational knowledge.
8. Nature of the industry itself.

6.5 Problems/Issues in KM That Need To Be Addressed

In ensuring the successful KM implementation according to the set framework and objectives, several problems/issues in KM and CoP that need to be addressed has been identified. These issues are broken down into two parts, first which specifically relates to TIC and secondly which relates to the organization generally.

6.5.1 Issues related to TIC

1. Lack of interest in knowledge sharing (COP).
2. Knowledge is not used and shared appropriately.
3. KM does not continue.
4. Value of knowledge is not understood.
5. Information overloaded which hinder the selection of appropriate knowledge.
6. Reductions in staff that hold the knowledge due to lose of experienced staff either leaving TM for better offers, resign, retire or termination of contract staff.
7. Knowledge takes time to acquire.
8. Tourism Malaysia loses knowledge due to:-
   - Loss of staff
   - Memory loss – with the absence of a KMS
   - Data/Information loss – Due to inadequate references and not having proper archive systems.
• Data/Information is not purged or updated consistently – Due to outdated brochures and websites, outdated tourism information such as maps, hotel information etc.

9. Poor linkages of TIC staffs and event organizer.

10. Human Issues

6.5.2 Issues related to the organization

1. Top-level management commitment.

2. Lack of co-ordination between
   • Government department
   • TM and MoTOUR

3. Lack of skill to implement policies.

   A committee is suggested to be formed consisting of the following:-
   • Ministry of Tourism (lead agency)
   • Ministry of Culture, Arts & Heritage (pertaining to events)
   • Ministry of Sports and Youth (Sports Tourism)
   • Ministry of Education (Students tourism)
   • Ministry of Higher Education (Education Tourism)
   • Immigration Department (Malaysia My Second Home)
   • Ministry of Agriculture and Agro-based Industry (Agro Tourism)
   • Ministry of Federal Territories (Events & Product Development)
• Ministry of Domestic Trade and Consumer Affairs (Malaysia Mega Sales Carnival)
• Ministry of Health (Health/Medical Tourism)
• Ministry of Rural and Regional Development (Home Stay Programme)
• All state government offices (Events & Product Development)

4. Knowledge flows are a problem in tourism.
5. Poor linkages of research and the sector.
6. Failed to recognize value of knowledge.

6.6 Overall Conclusion

The prototype version of TIC KMS is an initial step towards coordinating various parties in the tourism industry. Starts small with embedding KM in this system which enables the front liners in accessing the accurate information as well as participating in knowledge creating, sharing and updating, this system is projected to allow participation of a broader spectrum of industry players for future enhancement. This way, it creates a close linkages/circuit towards establishing a proposed ‘Malaysian knowledge network for e-Tourism’ as mentioned earlier in Chapter 2. Future plans are also discussed in the following section, for consideration and it is suggested that TM should be the pilot to anchor the continuous effort towards a fruitful KMS in this particular industry.

6.7 Future Plans

1. To enhance the proposed TIC KMS in Phase 1 through phases below:-
Phase 2: TM KMS – include all TM staffs HQ and overseas and also all divisions in MoTOUR

Phase 3: Tourism KM PORTAL – include all stakeholders/industry players

2. To set up a KMIT Division specifically to handle all KM issues. It could be a division by itself or an expansion of the existing IT Division in TM.

3. Develop methods that will help TM to understand the value of knowledge and how to measure the value of Intellectual Capital thus retaining the existing knowledge workers is imperative.

4. Investigate the use of other KM tools that are probably suitable.

5. Critical Success Factor in implementing KM in TM.

6. To measure the success of KM in TM or the factors of failure in implementing KM.
   - If successful – how successful?
   - If fail – how and why?

7. Encourage all stakeholders to participate actively in the future Tourism KM Portal.

Based on the strength and limitation of the proposed system, remarks expressed by the TAs during the testing and implementation of the prototype plus the entire test imposed during the data analysis, the hypothesis that TIC services are more efficient and effective via a Tourist Information Counter Knowledge Management System (TIC KMS) has been proven. The confidence level in terms of providing accurate information and the element of knowledge sharing is further proven to be the integral part of this system. However, further
improvement to overcome the limitations as stated above must be taken into consideration before pursuing to the next phase as proposed.

The absence of KMS, the presence of traditional management of knowledge repositories and the lack of communication/collaboration within and between the industry players (partners and alliances) in Malaysia are identified as amongst the factors that slowed down the knowledge use, share, creation and dissemination amongst the TA specifically and the industry generally. To implement KMS will require TM to have a broad understanding of a well organized KM effort encompasses the organizational cultures with certain extent of change management or perhaps reengineer some parts of its processes specifically the TIC which is the focus of this study, addressing the human issues appropriately, all of which relates to their ability to identify, acquire and share knowledge etc. The use of suitable framework is important to set the direction of this KM effort in TM and the necessary KMS is probably just as an enabler. The top level management commitment and employees co-operation is vital to ensure the success of any KM effort especially in this knowledge-based industry with its socio-economic importance to Malaysia has a real opportunity to take advantage of KM.