

## CHAPTER 2

### LITERATURE REVIEW

This chapter reviews previous researches on four aspects:

1. E-Tourism Industry and Tourism Curriculum;
  - 1.1 Introduction of e-Tourism Industry
  - 1.2 Tourism industry in Thailand
  - 1.3 Tourism curriculum development
2. Knowledge management;
  - 2.1 Introduction
  - 2.2 Knowledge and taxonomies of knowledge
  - 2.3 A knowledge management approach
  - 2.4 Knowledge creation
3. Knowledge management system and
4. Knowledge engineering.

#### **2.1 E-Tourism Industry and Tourism Curriculum**

##### **2.1.1 Introduction of e-Tourism Industry**

According to the WTO's long-term forecast, *Tourism 2020 Vision*, tourism continues to grow (WTO, *Tourism 2020 Vision*, 2001). In geographic terms, growth is very much fuelled from emerging economies in Asia, and above-average growth rates are anticipated in the Middle East, Southern Africa, Southern America, and

Central and Eastern Europe. For the more mature regions of North America and Europe, below-average growth rates are expected of around 3 per cent a year (WTO, Tourism 2020 Vision, 2001).

In this big fast-growing tourism situation, a very wide range of ICTs is used in order to exchange information and to facilitate the operations of the tourism industry. Most of these technologies enable tourism distribution channel members to communicate with each other and with consumers in order to exchange information, contracts, reservations and payments (Buhalis D. , 2003). Technological solutions are normally incorporated to increase efficiency and reduce the cost and time required for undertaking particular activities and processes. ICTs empower consumers to identify, customize and purchase tourism products and support the globalization of the industry by providing tools for developing, managing and distributing offerings worldwide. Increasingly ICTs play a critical role for the competitiveness of tourism organizations and destinations (Buhalis D. , 2003). The new travelers are empowered by the Internet, which provides them with easy and cheap access to various information sources and extended communities (Rifkin, 2000). Further, the Internet is a highly personalized medium and new consumers expect marketers to address and cater to their complex personal preferences. Tourism marketing is becoming increasingly sophisticated as a result of greater importance attached to the reliability of information and competent analysis for the effective planning, monitoring and management of tourism enterprises (Buhalis D. , 2003).

Travel was one of the early adopters, creating entirely new marketing opportunities, though Web pages were little more than electronic brochures in the early stages. Professionals in both industry and education quickly realized the

Internet's importance and the prominent role it would play in tourism and hospitality businesses (Statia & Marion, 2009). Camison (2000) confirmed that tourism had become one sector in which information systems were increasingly important both at an internal and inter-organizational level (Camisón, 2000). Olsen and Connolly (2000) confirmed that technology had become a major factor in the operation of hospitality business and suggested that the use of IT applications would put "knowledge and information at the core of the competitive profile for tomorrow's hospitality enterprise (Olsen & Connolly, 2000).

The increased capacity, flexibility, and connectivity of ICTs has allowed tourism business to respond effectively and efficiently to the significant growth in mass tourism (Braun, 2006), thus supporting the "development and maintenance of organizational competitiveness and competitive advantage" (Buhalis D. , 2003).

Although ICTs have become a critical tool for the modern tourism industry, they have not replaced the human side of the service industry but have in many ways emphasized that developing customer relations is equally significant. This perspective views technology as an effective tool but not as a replacement for the human side of service industries (Statia & Marion, 2009).

Increasingly, ICTs are playing a role in customer relationship marketing (CRM), enabling organizations to interact with customers and continuously alter their product to meet and exceed expectations (Buhalis D. , 2003).

Buhalis (2003) defined as the digitization of all the processes and value chains in the tourism, travel, hospitality and catering industries that enable organizations to maximize their efficiency and effectiveness. He also defined the eTourism concept includes all business functions (eCommerce and eMarketing, eFinance and

eAccounting, eHRM, eProcurement, eR&D and eProduction ) as well as eStrategy, ePlanning and eManagement for all sectors of the tourism industry, including tourism, travel, transport, leisure, hospitality, principals, intermediaries and public sector organizations. The concept and domains of e-Tourism is described by Buhalis D. (2003)) as follows.

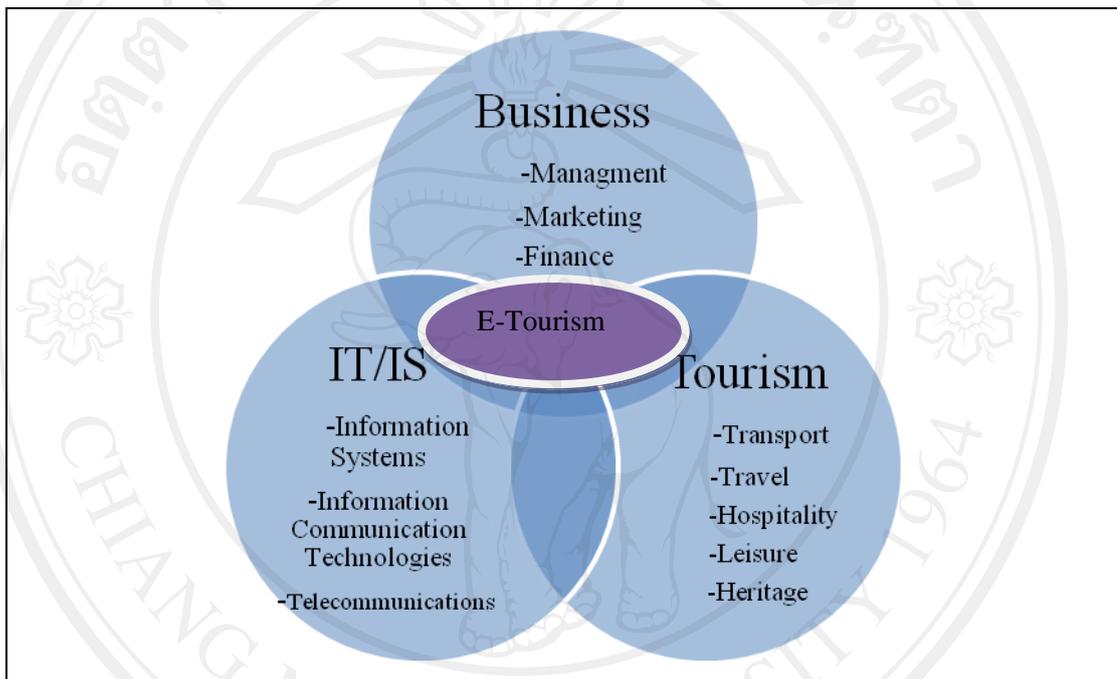


Figure 2.1 the e-Tourism Concept and e-Tourism domains (Buhalis D. , 2003)

Buhalis gives a definition on e-Tourism that e-Tourism integrates all business, IT/IS and tourism. In business aspect, it mainly includes management, marketing and finance. While in IT/IS, information systems, information communication technologies and telecommunications are mentioned. At the last part, tourism is considered as the same as the traditional tourism including transport, travel, hospitality, leisure and heritage.

It is no exaggeration to argue that IT developments have had a liberating effect on knowledge-based innovation in tourism, as indeed in many other economic sectors. Information systems in tourism have been among the pioneers of leading-edge technology applications: global distribution systems (GDSs) have been among the first international inter-organizational systems. Yield management systems are among the most advanced data mining applications. Tourism marketing systems typically represent the forefront of multimedia and virtual-reality applications. The World Wide Web is also profoundly changing the production, distribution and consumption of tourist products. IT is probably the strongest driving force for changes within the tourism industry, while tourism is also of great importance for the IT and e-commerce sector. (Werthner & Klein, 1999). ICTs effectively determine the competitiveness of airlines, as they are embedded in every simple element of the airline value chain. It is hardly surprising; therefore, that IT has become a key area of innovation. The early developments in IT, however, gave few indications of how pervasive these would become in many areas of innovation, only a generation later.

Buhalis and Law (2008) reviewed published articles on e-Tourism over the past 20 years, and projected future developments and critical changes that will influence industry structure (Buhalis & Law, 2008). The authors believed that those organizations that can respond efficiently and effectively to the constant innovation in applications of hardware, software, and network development would outperform competitors and maintain long-term prosperity (Buhalis & Law, 2008). Reports from the “ENTER E-Tourism: The View from the Future” conference discussed research findings and industrial innovations in: hotel electronic distribution; travel technology; managing tourism technology and destination management systems; Web services

and Web2.0; Online communities; dynamic packaging; issues in tourism technology; and user-generated content in tourism (Law, 2008). Clearly, research and industry trends point toward an IT-driven future. Industry professionals and educators must acknowledge such changes and support the education and development of future employees.

And the impacts of e-Tourism can be described as follows (Paudel & Hossain)

- Increase the efficiency and effectiveness of tourism organization
- Increase competitiveness and quality of tourism services
- Decrease intermediaries cost
- Benefit for tourism stakeholders
- Infrastructure development
- Product innovation
- Relationship development among stakeholders

### **2.1.2 e-Tourism industry in Thailand**

Thailand has been positioned by The Tourism Authority of Thailand as a cultural, natural, and historical destination (Rittichainuwat Ngamsom, 2001). And tourism has been promoted in Thailand as a major factor of national income for the country (Rattanasuwongchai, 1998). However, according to Nuchard Rattanasuwongchai (1998), Thailand has also suffered from the negative effects of uncontrolled tourism, which in part has led the Thai government to search for ways to develop a more sustainable tourism product (Rattanasuwongchai, 1998).

In 2006 Thailand generated US\$13,780million from inbound tourism and the travel and accommodation sector accounted for 40 percent of this revenue. About 14.6

million tourists from around the world visited Thailand in the year 2008, generating an income of 848 billion baht (TAT, 2007;2009). According to an Asian Development Bank study in 2005, Thailand had the best tourism resources and facilities in the Great Mekong Sub-region.

E-tourism business in Thailand is facing rapidly development, however, it still got problem that about 70% of all tourism revenue running to foreign tourism agencies (UNEP, 2010) mainly because local tourism industries in Thailand are encountering with more competitive international intermediaries such as foreign travel agencies and tour operators from developed countries. In this situation, an effective e-Tourism education approach should be adopted.

### **2.1.3 Tourism curriculum development**

#### **2.1.3.1 Tourism curriculum**

Over the past years, the tourism and hospitality higher education has witnessed rapid growth in number and increasing diversification in program names and in curriculum design. In curriculum design, the focus once had been to provide travel management, language skill, and tourism administrative regulation training. The travel and hotel management courses were developed to train students about the operation procedures for receiving inbound foreign tourists. The language courses were designed to equip students with the necessary communication skills for delivering hospitality services, while the administrative regulation courses helped promote students' understanding of relevant government policies and regulations.

As Kelly defined, curriculum is about 'all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or

outside the school' (Kelly, 2009). Curriculum development is a highly complicated task, involving not only the teachers' backgrounds and understanding, but also school traditions, administrative systems, and development priorities. However, relying on the teachers for curriculum design can be problematic because the teachers may put a self-center conscious which can put a major constraint on the curriculum design. Moreover, this kind of curriculum design often lacks a systematic development, because personnel changes can cause some changes in the development direction and in the course content. One of the continuous challenges facing hospitality educators is to develop a curriculum that meets the constantly changing needs of the industry and to make a balance between the needs of academic institutions and those of the industrial organizations in order to fill the expectation gap in the industry. Therefore, in addition to academics, the involvement of other stakeholders, including industrial leaders, alumni are also important in curriculum development in order to produce a curriculum that meets the needs of the customers-students. Such a curriculum should be student-centered and process-oriented and one that is regularly reviewed according to industrial demands, graduates' employment status, and economic changes in order to stay in tune with social pluses and the changes of our time (Nelson & Dopson, 2001).

By the mid-1990s, the widespread integration of IT and its increasingly dominant role led Kluge (1996) to confirm that IT and computers had become important components of the hospitality curriculum (Kluge, 1996). The need for IT-literate graduates has become more pressing to meet the demands of new technologies and serve the growth in the hospitality industry (Cobanoglu, 2006). Understanding the changing environment that future students of tourism and hospitality will enter upon

graduation became the main concern of a group of leading tourism educators (Sheldon, Fesenmaier, Woeber, & Cooper, 2008) therefore in 2007 the Tourism Education Futures Initiative (TEFI) was born. The authors called for a redesign of tourism education programs not by incrementally adding new courses or placing them online but by changing the nature and content of what is being taught.

While several studies have identified knowledge gaps between institutions' teachings of these skills and industry's need for them, few have presented an informed process by which this gap can be closed. Given the unquestionable importance of IT, we need leaders in education, research, and technology to work toward the development of a core set of e-tourism teachings for the consideration of educators.

To match the demand for IT-literate graduates, there is the need for sophisticated technology for educational and training purposes. Mills and Douglas (2004) identified IT trends that impact higher education and influence hospitality and tourism curriculum (Mills & Douglas, 2004). O'Halloran and Deale (2006) further underline the need for the integration of technology throughout the hospitality and tourism curriculum (O'Halloran & Deale, 2006). They view IT as a tool to help students and educators increase their technological know-how and enhance their abilities to adopt technology in the future (O'Halloran & Deale, 2006). The demand for changes in hospitality and tourism curriculum is apparent, and educators must answer the call to generate successful leaders for the future of the industry.

Though the number is growing, still relatively few university-level academic institutions offer comprehensive e-tourism curriculum. Some countries seem to have taken a lead in this regard, with the United Kingdom, Austria, the United States, and Hong Kong as examples. These innovative universities have demonstrated leadership

in the subject area of e-Tourism and technology. In Thailand, Prince Songkla University and Suandusit Rajaphat University are recognized for their tourism graduates. And there was no university opened e-tourism program as a major in Thailand. Most universities still focus on traditional tourism and hospitality contents and have not updated their curriculum on ICT field and e-business knowledge.

Table2.1 Examples of University Courses in E-Tourism

Institutions	Courses
Bournemouth University	E-Commerce System & Reception Service E-Commerce & Supply Chain Management
Cornell University	The Law of the Internet and E-Commerce Fundamentals of Database Management & Data Analysis
University of Denver	Strategy Advantage of Technology
Florida International University	Hospitality & Tourism on the Internet E-Commerce for Hospitality & Tourism
University of Hawaii at Manoa	Tools for the Information Age IT, E-Commerce in the Travel Industry

Table 2.1 Examples of University Courses in E-Tourism (Continued)

Institutions	Courses
Hong Kong Polytechnic University	Hospitality Distribution Channels Management Technology Management in Hotel & Tourism E-Business in Hospitality and Tourism Hotel and Tourism Information Management
MODUL University Vienna	Web Mining & Media Monitoring Hospitality Web Information Systems Development Tourism Web Information Systems Development E-Business Computer Reservation & Distribution Systems
New York University	Electronic Customer Relationship Management Management of Technology & E-Commerce
University of Nottingham	Developing E-Tourism
University of Surrey	E-Tourism Applications E-Business Management Information Systems & Strategies
Temple University	Seminar in Tourism Management & E-Business Strategy
Prince Songkla University	IT for Hospitality and Tourism
Suandusit Rajaphat University	Aviation Information

Table 2.2 Present Situation of e-Tourism in Thai Universities (Fu, 2010)

Present Situation in E-tourism Curriculum (Universities in Thailand)				
Universities	Faculties	Location	Core Courses	E-tourism related course
Chiang Mai University	Humanities	Northern Thailand	Tourism management	0
	Business Administration		Hospitality	0
Payap University	Tourism	Northern Thailand	Marketing	0
Khonken University	Humanities	Northeastern Thailand	Business	1 (Computer appliance in business)
Prince Songkla University	International	Southern Thailand	Costal tourism	1 (IT for hospitality and tourism)
Mahidol University	International	Central Thailand	English Communication	0
Kasetsart University	Tourism Management	Central Thailand	Management	0
Slipakorn University	Tourism Management	Central Thailand	Eco-Tourism	0
Suan Dusit Rajaphat University	Tourism Management	Central Thailand	Aviation	1 (Aviation Information)

### 2.1.3.2 Tourism Curriculum Development

The traditional research focuses on tourism work concentrates on areas that are located with the hospitality sub-sector of tourism and, largely, focus on food and beverage and, to a lesser extent, accommodation. Research into wider areas of tourism work, particularly those that have emerged with the expansion of services and functions in the area (front desk, leisure, entertainment, reservation call centers) is much more poorly served.

The characteristics and the organization of the tourism industry are subject to on-going restructuring and evolutionary change. There are major labor markets and skills implications of such change, as businesses re-shape the range of services they offer or respond to fashion and trend imperatives in the consumer marketplace.

Tourism and hospitality is gradually becoming an important industry for Taiwan in the 21<sup>st</sup> century. In order to enhance the competitiveness of domestic tourism and hospitality education in the international community, it is important to construct the knowledge body of tourism and hospitality and to integrate education with industrial needs. Therefore, the industry, government, and academia should work closely to develop and decide on future reform directions for tourism and hospitality education and to carefully examine all the important issues surrounding existing tourism and hospitality education in Taiwan, and make meaningful recommendations for future development.

The skills profile of tourism, in turn, is influenced by the labor market that is available to it, both in direct terms and via educational and training establishments.

With the tourism and hospitality education in Taiwan still on the rise, one cannot but wonder whether the industry has enough capacity for this rapidly increasing number of graduates, and whether the schools are turning out students that

meet the expectations of the industry. Tourism and hospitality education are international by nature; therefore the curriculum will continue to move toward the direction of international hospitality management (Mok & Noriega, 1999) and will focus more on preparing students for a hospitality workplace that is gradually internationalized.

The curriculum design should strive to match the professional and career development of their respective target students. The hospitality higher education in particular should carefully examine its overall strength for development and form a close tie with the industry in order to foresee market trends and demands. Instead of following the fashion blindly, higher education institutions should develop a clear positioning for technical or academic training in their curriculum planning.

The information technology capacity and the extent to which workers who possess knowledge and skills to be competitive in a global sense will be connected to new media will enhance their recruitment.

The primary focus of a curriculum is on what is to be taught and when, leaving to the teaching profession decisions as to how this should be done. The idea of curriculum is hardly new - but the way we understand and theorize it has altered over the years - and there remains considerable dispute as to meaning. The concern is to provide a model for practice - so the book is a bit lightweight with regard to competing conceptualizations of curriculum and alternatives to curriculum thinking.

The curriculum development should analyze the local context within which the tourism curriculum is to be developed; examine the role of the stakeholder in curriculum decision-making. Theuns and Go (1992) note that 'Western' models have been imported without taking sufficient account of needs of the local tourism sector

and the existing social, cultural and economic framework of the host country (Theuns & Go, 1992). Theuns and Go (1992) also argue that what has resulted is a proliferation of course outlines that are geared towards the management of western style hospitality and tourism facilities in a 'Third World' setting, essentially confined to rather narrowly defined business-oriented professional training.

The challenge that presents itself is the development of a tourism curriculum that responds to the challenges and threats posed by globalization and places the curriculum in the socio-economic and cultural context of the destination. The globalization of business firms has a number of implications for human resource management. Knowledge and skilled workers will increasingly become mobile so that the recruitment will be from a global pool rather than a national or local pool. Employers who are unable to provide competitive packages will be confronted with an increasing 'flight' of these types of workers and an accompanying shortage. In order to meet this challenge, a stakeholder-informed approach has been adopted that takes into account the factors influencing tourism curriculum planning and development.

Globalization has major implications for work and employment in tourism and these include (Becherel & Cooper, 2002):

- The need for different skills and competencies in the employees to be able to deal with the widespread use of technology, especially the Internet
- Dealing with employment-related consequences of mergers and strategic alliances
- Issues of relocation of employees and social and cultural sensitivities of those working away from home

- New forms of tourism utilizing natural and cultural environments create a demand for indigenous employees, who could deliver better quality and original products and services
- Meeting the needs of ‘high-skilled tourists’, who are more experienced and demand higher quality products and service.

Under the globalization trend in the 21<sup>st</sup> century, the biggest challenge facing domestic hospitality education is to balance between the need for the cultivation of truly international professionals of hospitality and the demand for promoting the characteristics of the local hospitality culture. To achieve this, Taiwan should set up clear education goals for hospitality education according to the development trends of the 21<sup>st</sup> century, and should learn from past experiences of advanced countries in order to infuse an international element into the hospitality curriculum and to establish standards for quality education.

## **2.2 Knowledge Management**

### **2.2.1 Introduction**

Knowledge management is the process of gathering a firm’s collective expertise wherever it resides- in database, on paper, or in people’s heads-and distributing it to where it can help produce the biggest payoff (Hibbard, 1997). KM is accumulating knowledge assets and using them effectively to gain a competitive advantage (Brooking, 1996). Knowledge management involves the identification and analysis of available and required knowledge, and the subsequent planning and control of actions to develop knowledge assets so as to fulfill organizational objectives (Emin, 2000).

Information practices and learning strategies known as knowledge management are gaining acceptance in the field of education. At the most basic level, knowledge management can be described as a set of practices that helps to improve the use and sharing of data and information in decision-making. Several educational institutions across the world have recently received grants to implement knowledge management practices.

In light of the external and internal demands for accountability and improvement in education, combined with the many demands on the time of teachers, faculty, and staff, educational institutions and systems at all levels are seeking to understand how they can more effectively collect, disseminate, and share information. As organizations dedicated to education, moreover, they understand only too well that knowledge is their key asset-and many educational institutions are seeking better ways to transform that knowledge into effective decision-making and action.

## **2.2.2 Knowledge and Taxonomy of Knowledge**

### **2.2.2.1 What is Knowledge?**

Data, information and knowledge are three often-encountered words that are close together, seem to have slightly different meanings, yet are often used interchangeably as synonyms, leading to continuing confusion (Schreiber, 1999).

#### **DATA**

Data are the uninterrupted signals that reach our senses every minute by the zillions, a red, green, or yellow light at an intersection is one example. Data can be thought of as the expanse of facts or quantitative measures available to and about an organization.

## INFORMATION

Information is data equipped with meaning. For a car driver, a red traffic light is not just a signal by some colored object, rather, it is interpreted as an indication to stop or go. Data become information when humans place them in context through interpretation that might seek to highlight, for instance, patterns, causes, or relationships.

## KNOWLEDGE

Knowledge is the whole body of data and information that people bring to bear on practical use in action, in order to carry out tasks and create new information. Knowledge is the understanding that develops as people react to and use the information that is available to them. Knowledge can be shared with others by exchanging information in appropriate contexts. Simply defined, knowledge is actionable information (Schreiber, 1999). Actionable refers to the notion of relevance and being available in the right place at the right time, in the right context, and in the right way so that users can bring it to bear on decisions, unlike information which simply gives us the facts. According to Nonaka (1994) Knowledge is justified belief (i.e. information) that increases an entity's capacity for effective action. According to (Drucker, 1989), 'Knowledge is information that changes something or somebody, either by becoming grounds for actions or by making an individual (or an institution) capable of different or more effective action.' (Drucker, 1989). This suggests that knowledge is personal and intangible in nature, whereas information is tangible and available to anyone who cares to seek it out. Guus et al. (1999) gave a definition that knowledge is the whole body of data and information that people bring to bear to

practical use in action, in order to carry out tasks and create new information (Guus et al, 1999).

Knowledge is different from information. Information relates to data, while knowledge involves a wider process that involves cognitive structures that assimilate information and put it into a broader context, thereby allowing actions to be undertaken on that basis. Information exists independently of the receiver and transmitter. Knowledge is information that has been translated so that humans understand it. Knowledge cannot be said to ‘flow’ but can be said to be ‘shared’ or ‘transferred’. Almost by definition, knowledge has always been critical to innovation, productivity and competitiveness.

#### **2.2.2.2 Taxonomy of knowledge**

Not only is there a need to differentiate between information and knowledge, but also between different types of knowledge. From a review of the literature, knowledge can be taxonomically categorized in different point of views. Polanyi (Polanyi, 1966) classifies knowledge into two types: tacit and explicit knowledge. Tacit knowledge is difficult to codify and includes that passed from master to apprentice. Tourism organizations and the entrepreneurial community are rich in tacit sources, yet these are often ignored due to a number of challenges. For example, the fact that individuals hold tacit knowledge as the basis of their competitive advantage explains their reluctance to share or communicate it. Moreover, by definition, it cannot be questioned or discussed because it has not been communicated to the rest of the organization. Arguably, as a result, tacit knowledge and its owners are difficult to manage. However, this is not strictly true as it does have objective and tangible

consequences, such as profitability or customer satisfaction. As such, its outputs can be tested for quality; indeed it needs to be understood and managed because, while it is held by employees and entrepreneurs, it forms the fragile basis for the competitiveness and operation of enterprises and destinations. In contrast to tacit knowledge, explicit knowledge is transferable and easy to codify. Thus, it is usually the focus of an organization's interest, and is found in such forms as documents, databases, files, and customer directories. Although estimates suggest that only 10% is explicit (Ahmed, Lim, & Loh, 2002), it represents the knowledge capital that is appropriated by the organization, independent of who works there. Effectively then, the explicit form provides the infrastructure that people work for and within. This classification adds a second important dimension to the application of knowledge management in tourism, the need to identify, capture and convert tacit to explicit in order to transform it into capabilities for the industry (Bukowitz & Williams, 2000).

Table 2.3 Comparing Tacit and Explicit Knowledge (Tiwana, 2002)

<b>Characteristic</b>	<b>Tacit</b>	<b>Explicit</b>
Nature	Personal, context-specific	Can be codified and explicated
Formalization	Difficult to formalize, record, encode, or articulate	Can be codified and transmitted in a systematic and formal language
Development process	Developed through a process of trial and error encountered in practice	Developed through explication of tacit understanding and interpretation of

	information
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Table 2.3 Comparing Tacit and Explicit Knowledge (Tiwana, 2002) (Continued)

Characteristic	Tacit	Explicit
Location	Stored in the heads of people	Stored in documents, databases, Web pages, e-mails, charts, etc
Conversion processes	Converted to explicit through externalization that is often driven by metaphors and analogy	
IT support	Hard to manage, share, or support with IT	Well supported by existing IT
Medium needed	Needs a rich communication medium	Can be transferred through conventional electronic channels

### 2.2.3 A knowledge management approach

It is much more useful to consider educational organizations as adaptive, social systems where people cooperate to achieve common purposes. Organisms recreate themselves through the transformation of matter and energy. Educational organizations grow and revitalize themselves through the knowledge they create, their processes for passing that knowledge on to others, and the exchanges and relationships that they foster among people.

Knowledge management brings together three core organizational resources- people, processes, and technologies-to enable the organization to use and share information more effectively as showed in Figure 2.

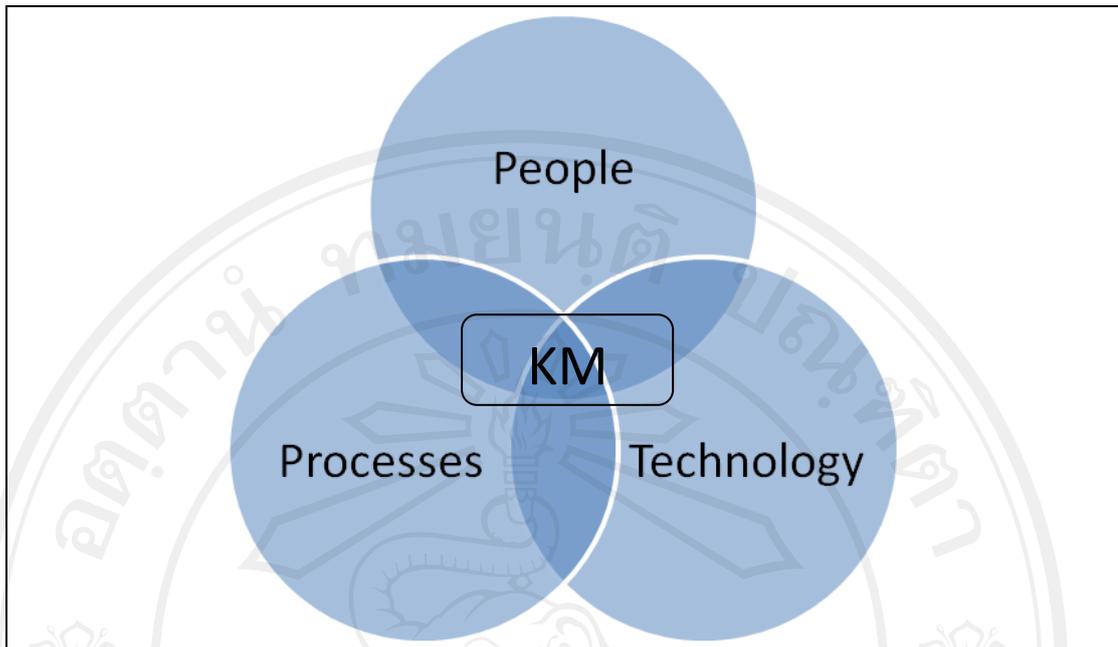


Figure 2.2 KM integrates people, processes, and technology

### **People**

Knowledge originated in human beings; a computer cannot create it. The only sustainable advantage of organization is what people know and what they do with it. It is the most important resource a company has that is worth more than land, labor and capital and unlike those traditional assets, knowledge does not diminish in value (Emin, 2000). People, not system, manage knowledge. But organizations can promote policies and practices that help people share and manage knowledge. Knowledge management builds upon collegial and professional teamwork by actively engaging people at many organizational levels in sharing with others what they know, and what they are learning. In many schools, colleges, and universities, working groups of staff and teachers from across departments have come together by common need and exchange information because it makes their jobs more rewarding and their work

more effective. Knowledge management seeks to foster the development and utility of these “community of practice”, while maintaining their “user” control.

### **Process**

Knowledge management is not only about managing knowledge assets but managing the processes that act upon the assets. These processes include developing knowledge; preserving knowledge; using knowledge, and sharing knowledge (Emin, 2000). Formal and informal administrative procedures, curriculum development processes, information sharing patterns, information silos, and many other work practices affect information flow within every organization. These processes exist whether or not people choose to participate in or pay attention to them. Knowledge assessment, audits, maps, and improvement plans help to establish robust processes that enable people to get the information they need, when they need it, as well as to share it with others who may benefit from it. Knowledge management practices help to promote those processes that lead to more informed decision-making.

### **Technology**

The most effective technologies within a knowledge management framework are broadly accessible to target user groups and promote the tracking and exchange of useful information across departments.

In short, knowledge management is an approach that can inform a wide range of practices within, and can shape the values of, an educational organization.

Integrating knowledge management requires understanding how to align, within a specific organizational context, three core resources-people, processes, and technology-any of which can be ignored, but only at great cost to the organization and to those within it. Those organizations that invest in new technology without

understanding their existing organizational and human patterns of information sharing are not reaching the potential of their investment. Likewise, those that invest heavily in information-sharing processes but do not have effective means for tracking student outcomes are tying the hands of their employees. Improved decision-making, enhanced creativity and innovation, and stronger lines of lateral, as well as vertical, communication are important outgrowths of knowledge management. The ultimate benefit of this, of course, is to students, teachers, and the education community and tourism industry as a whole.

#### **2.2.4 Knowledge Creation Model**

Over the past few years, knowledge creation has become one of the most important issues in business. Knowledge creation is basically a process that produces new knowledge by accumulating and integrating existing knowledge (Shu-Chen, ChienHsing, & Ping-Chieh, 2011). Nonaka (1994) introduced a knowledge creation model, indicating that organizational knowledge creation is derived by the transformation from tacit knowledge to explicit knowledge (Nonaka, 1994). By doing so, tacit and explicit knowledge can be concurrently enhanced in both quantity and quality. In support of knowledge creation, Nonaka & Takeuchi (1995) propose the SECI model (socialization, externalization, combination, and internalization) to spiral the process of interactions between explicit and tacit knowledge, and in consequence new knowledge can be created.

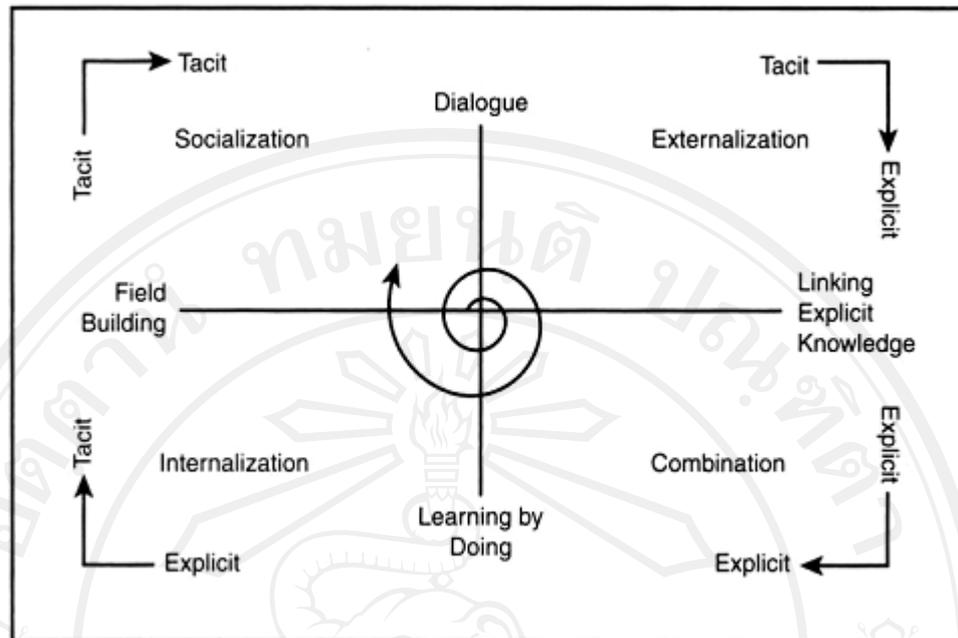


Figure 2.3 SECI Model (Nonaka & Takeuchi, 1995)

Nonaka and Takeuchi (1995) provided a classic statement on the nature of knowledge management within firms, which they conceptualized in terms of the need to transfer knowledge between individuals and the organization, and also between tacit and explicit forms (Nonaka & Takeuchi, 1995).

### **Socialization**

Socialization is a process of creating mutual tacit knowledge through shared experiences or social interaction. To make it successful, a “field” or “place” of interaction is required. The term socialization is used to emphasize that tacit knowledge is exchanged through joint activities such as being together, spending time, joining in the same environment in both formal and informal rather than through written or verbal instructions (Nonaka, Toyama, & Konno, 2000). For example, new workers who work with old experienced workers may acquire skills through observation, imitation and practices. Discussion, criticism, and creative dialogue are

also medium of sharing experience. This certain kind of environment is termed as “Ba” which can be virtual or physical spaces in Japanese context. In this context, socialization may occur among curriculum designers, lectures, students and industry agent to share tacit knowledge for curriculum development.

### **Externalization**

Externalization is a process that relates to the expression and translation of tacit knowledge into explicit forms that can be easily understood by others. People are able to externalize their tacit knowledge through dialogue and sharing of perspectives, often via symbolic language. When tacit knowledge is made explicit, knowledge is crystallized and becomes the basis of new knowledge.

### **Combination**

Combination is a process of assembling new and existing explicit knowledge into a systemic explicit knowledge. Combination activities include a wide range of procedures such as meetings, conversation, document exchange and analysis in both physical and virtual environments. Information technology plays a significant role in this process because it is quite beneficial using software to create, modify and even combine explicit knowledge among business functions and across organizational boundary.

### **Internalization**

Internalization is a process of absorbing explicit knowledge into tacit knowledge through “learning by doing” or “practicing”. Once tacit knowledge is accumulated at individual level, a new knowledge is created.

However, if people only conveniently provides and/or receives knowledge/information/opinions, this development process does not ensure creation

success. It is mainly because socialization and externalization are only two of the important processes to express knowledge/information/opinions. Generally, the knowledge creation occurs, if it does, at the stage of combination and internalization. This happens at the time when the receiver combines and internalizes (e.g. relation and reconstruction) the received knowledge/information/opinions, and finally generates new knowledge. Therefore, the knowledge creation process should not only depend on the characteristics of the individual, but it should rely on the environment or creation modes that can help stimulate creation intention with respect to the thinking behavior and thinking space (e.g. defined goal vs. free goal; degree of freedom vs. pressure). For example, which mode, goal-free, goal-driven, or others, would be more likely helpful for knowledge creation. In support of this, knowledge creation is not only a process of knowledge stimulation, but a model for deriving behavior that results from existing knowledge.

### **Spiral of Knowledge**

The spiral of knowledge is the movement through the four modes of knowledge conversion process and organizational knowledge is created. In general, the spiral starts from socialization and move along the SECI model. Of course, transfer can happen informally, but knowledge management does not leave it to chance and creates a structured and disciplined approach where the key element is the imperative of transmission plus absorption (Davenport & Prusak, 1998). In four ways transfer occurs through the interaction of individuals and groups: one, tacit to tacit, achieved through a process of socialization via meetings and team discussions; two, tacit to explicit, externalized through brainstorming and the use of developers, which is a priority for tourism; three, explicit to explicit, by moving knowledge around a

network from one organization to another, which is relevant for destinations; and four, explicit to tacit, taking explicit knowledge such as a report and generating new ideas (Nonaka, 1991).

### **2.3 Knowledge Management System**

One of the greatest challenges facing any firm is the management of knowledge transfers. Knowledge management systems attempt to capture, store and disseminate an organization's know-how and intellectual assets. Knowledge management is a systematic process for acquiring, organizing and communicating the knowledge of employees so that other employees may make use of it to be more effective and productive in their work. The management of knowledge creation and of knowledge transfers is also critical to innovation, which is essentially about ideas generation, evaluation, development and testing, as part of a process of commercialization. Fundamentally, knowledge may come from either within the organization or from without.

For tourism, barriers to transfer are related to its very nature. It is dominated by small enterprises, fragmented across a variety of activities, and has vocational reinforcers such as poor human resource practices militating against the continuity of absorption. As a result, there is a lack of trust between the knowledge creators and those who might use it, due to the different cultures and vocabularies of differing communities of practice (Davenport & Prusak, 1998)

Alavi & Leidner (1999) give a definition on KMS as an emerging line of systems targets professional and managerial activities by focusing on creating, gathering, organizing, and disseminating an organization's "Knowledge" as opposed

to “Information” or “Data” (Alavi & Leidner, 1999). Maier (2002) expanded on the IT concept for the KMS by calling it an ICT (Information and Communication Technology) system that supported the functions of knowledge creation, construction, identification, capturing, acquisition, selection, valuation, organization, linking, structuring, formalization, visualization, distribution, retention, maintenance, refinement, evolution, accessing, search, and application (Maier, 2002).

Information technology may play an important role in effectuating the knowledge-based view of the firm. Advanced information technologies (e.g., the Internet, intranets, extranets, browsers, data warehouses, data mining techniques, and software agents) can be used to systematize, enhance, and expedite large-scale intra- and inter-firm knowledge management (Alavi & Leidner, 1999). Early IT-based knowledge management systems (KMSs) have been difficult to implement because they have either been too narrow in scope as in the case of experts systems, or with a too broad and shallow scope that requires extensive human interaction. (Kevin , J. Eduardo , & John , 2006). And Knowledge technologies should encourage users to think beyond their current boundaries, facilitating organizational activity, promoting continuous knowledge creation and continuous improvement (CI), and supporting growth through innovation (Moffett, McAdam, & Parkinson, 2004). A successful KMS also needs to create an environment that encourages users to seek knowledge for themselves and pull it out from sources both within and beyond the boundaries of the company (Kluge, Stein, & Licht, 2001).

By developing an effective knowledge management system (KMS), knowledge can be captured, shared, and exchanged to promote new knowledge creation in organization.

In order to design a valuable KMS, it is important to consider three key issues (Moffett, McAdam, & Parkinson, 2004)

- (1) Users should not have to learn completely new technologies to use their knowledge more efficiently but, instead, they should use already known tools to create and process knowledge.
- (2) Information awareness, accessibility, availability, input and maintenance must be taken into account to facilitate decision-making through the KMS (Offsey, 1997)
- (3) Effective interaction between individuals and the IT system must be considered in the functionality of the KMS (Preece, Sharp, Benyon, & Holland, 1994)

The key to knowledge creation lies in the way it is mobilized and converted through knowledge management system.

- **Tacit to tacit communication** (Socialization): Takes place between people in meetings or in team discussions.
- **Tacit to explicit communication** (Externalization): Articulation among people through dialog (e.g., brainstorming).
- **Explicit to explicit communication** (Communication): This transformation phase can be best supported by technology. Explicit knowledge can be easily captured and then distributed/transmitted to worldwide audience.
- **Explicit to tacit communication** (Internalization): This implies taking explicit knowledge (e.g., a report) and deducing new ideas or taking constructive action. One significant goal of knowledge management is to create technology to help the users to derive tacit knowledge from explicit knowledge.

## **2.4 Knowledge Engineering**

### **2.4.1 Knowledge Engineering**

Knowledge engineering and knowledge-systems have to be viewed and embedded in this perspective: knowledge engineering as a methodology to be used as one of the instruments, and knowledge systems as one of the important products to be used in knowledge management.

Knowledge engineering theory is growing up and their techniques are used increasingly not just for knowledge based system development but also for knowledge analysis and structuring in general knowledge management. Knowledge capture, as a knowledge engineering technique, is an imperative key in a business world where vast numbers of data are available on the Internet. Knowledge, understood as usable information, is an essential constituent in the success of any company.

The former knowledge captured from documents, files and other media is straightforward; however, capturing the tacit knowledge cannot adopt the same methods. Among the tourism industry and education institute, capturing tacit knowledge is one of the major challenges and to date has not been formally addressed by researchers. This is critical because technology has traditionally depended upon explicit sources.

CommonKADS which stands for Common Knowledge Acquisition and Design System is to support structured knowledge engineering. It provides the methods to perform a detailed analysis of knowledge-intensive tasks and processes. The methodology aims to support structured knowledge engineering. It indicates the opportunities and bottlenecks in the organizations, distributes and applies their knowledge resources, and so gives tools for corporate knowledge management. It

also provides the methods to perform a detailed analysis of knowledge-intensive tasks and processes. CommonKADS supports the development of knowledge systems that support selected parts of the business process (Schreiber, 1999).

CommonKADS methodology offered a structured approach to break down and structure knowledge engineering process. It provided CommonKADS model suite for creation requirements specifications for knowledge system. The method enabled a top-down approach and provided handles for quality control and feasibility assessment.

#### **2.4.2 Human roles in the Knowledge Engineering processes**

It is important to identify a number of roles that humans play in the knowledge management and engineering processes. We distinguish six different roles, which we briefly discuss below. Note that a certain individual can play several roles. in particular in smaller projects.

##### **Knowledge provider/specialist**

An important role in the process is played by the human “owner” of knowledge. This is traditionally an “expert” in the application domain, but could also be other people in the organization that do not have the “expert” status. One important problem for a knowledge engineer is to find the “real” experts.

##### **Knowledge engineer/analyst**

Although strictly speaking the term “knowledge engineer” points to workers in all phases of the development process, the term is usually reserved for system-analysis work. Therefore, “knowledge analyst” could in fact be a better term. CommonKADS

offers the knowledge engineer a range of methods and tools that make the analysis of a standard knowledge-intensive task (such as assessment) relatively straightforward.

### **Knowledge-system developer**

In a small project, system implementation was often done by the person who did the analysis. As systems are now produced routinely, this is not true anymore. The role of knowledge-system developer has its special characteristics. The knowledge-system developer is responsible for design and implementation. The developer needs to have a basic background in the analysis methods, so she can understand the requirements formulated by the knowledge analyst.

### **Knowledge user**

A knowledge user makes use directly or indirectly of a knowledge system. Involving knowledge users from the beginning is even more important than in regular software engineering projects. Automation of knowledge-intensive tasks invariably affects the work of the people involved. For design and implementation it is important to ensure that they interact with the system with their own interface representations. The knowledge engineer also needs to be able to present the analysis results to the potential knowledge users. This requires special attention. One of the reasons for the success of CommonKADS has always been that the knowledge analysis is understandable to knowledge users with some background in the domain.

### **Project manager**

The knowledge-project manager is in charge of running of a knowledge-system development project. The typical project is small to medium-sized with four to six people working on it. The project manager is likely to benefit from a structured approach such as CommonKADS. The model suite gives a powerful and flexible

instrument for project planning and control. The main risk the project manager runs is the elusive nature of knowledge-related problems. Therefore, requirements monitoring is of prime importance during the lifetime of the project.

### Knowledge manager

The knowledge manager is not directly involved in knowledge-development projects. The knowledge manager formulates a knowledge strategy at the business level. The knowledge manager initiates knowledge development and knowledge distribution activities.

### 2.4.3 Knowledge model and Its Components

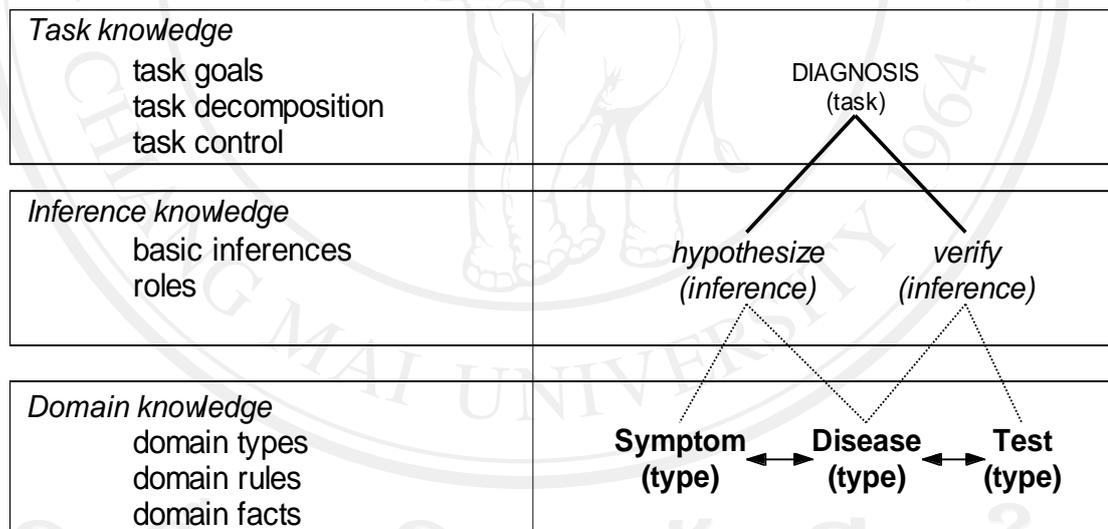


Figure 2.4 Knowledge model overview (Guus Schreiber, 1999)

The purpose of the knowledge model is to explicate the types and structures of the knowledge which is used in a task. And it describes the implementation role of different knowledge components play in problem-solving, in a way that is easy for human to understand. This makes the knowledge model an important vehicle for

communication with experts and users about the problem-solving aspects of a knowledge system, during both development and system execution.

A knowledge model has three parts, each capturing a related group of knowledge structures. We call each part a knowledge category.

The first category is called the **domain knowledge**. This category specifies the domain-specific knowledge and information types that we want to talk about in an application. Domain knowledge specifies the domain-specific knowledge and information focused on the particular task. The knowledge modeling allows experts in the industry cluster to present their knowledge in graphical form, also called the knowledge map. The domain knowledge was symbolized by the oval shape and linked with their parent concept node. These processes will be repeated until all domain knowledge about the specified task is modeled.

The second part of the knowledge model contains the **inference knowledge**. The inference knowledge describes the basic inference steps that we want to make using the domain knowledge. Inference knowledge describes the basic inference steps required for making use of the domain knowledge. The inference level is also employed by the inference engine for retrieving required knowledge. Finally, the relationships between task and domain knowledge were designated as the inference.

The third category of knowledge is the **task knowledge**. Task knowledge describes what goal(s) an application pursues, and how these goals can be realized through decomposition into subtasks and (ultimately) inferences. Task knowledge describes what goal an application pursues, and how these goals can be realized through the decomposition into subtasks and inference. In this case, task knowledge is how to plan an e-tourism curriculum. The task knowledge was symbolized by the

hexagonal shape. This type of knowledge was modeled as the parent node of the knowledge model.



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