Collaborative Knowledge Management System for Eco-Tourism Sector: A Technical Perspective

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ABSTRACT: The role of knowledge management (KM) is significant for acquiring greatest value from knowledge available in an organization. KM roles and other aspects of it could be viewed as a platform to deposit and re-use for the best practice of knowledge among the team members for example in the eco-tourism sector. In this paper, we will discuss the technological and infrastructure requirement aspects of KM and also the other aspects that are related to its environment, equally important in the eco-tourism sector. We will start by discussing the technological aspects of KM as a system which is from the early stage of setting up its initiatives until the end of it as well as how to develop and maintain KM system Eco-tourism is travel to natural habitats to create an understanding of the cultural and natural history pertaining to the environment, emphasizing care not to alter the integrity of the ecosystem, while producing economic benefits that encourage the preservation of the inherent resources of the environment (Alavi and Leidner, 1999). There have been many attempts to define eco-tourism, but at the World Tourism Organisation we feel that many such efforts may be unnecessary and useless, since there are many varieties of nature-related tourism that can legitimately be called eco-tourism. If a strict definition is given, then many practitioners, both on the supply and demand side, may feel that their own form of eco-tourism has been left outside the official definition.

Therefore, we will accept that eco-tourism is tourism practised in relatively undisturbed natural areas, for the main purposes of admiring and learning more about them; intrinsic to this definition is the need for eco-tourism to produce a minimal impact on the area visited. Also a useful definition is by the European Federation of (KMS) in a collaborative environment. Emphasis will also be given to the activities that may concern at each stage in the KM life cycle including the critical success factor (CSF), to ensure KMS initiatives will be delivered the competitive advantage to this sector for the business purposes.

Keywords: Best Practice, Critical Success Factor, Knowledge Management, Knowledge Management System, and Eco-tourism Sector

1.0 INTRODUCTION

National Parks, that defined sustainable tourism in natural areas as: all forms of tourism development, management and operations which maintain the environmental, social and economic integrity and well-being of natural, built and cultural resources in perpetuity. Hence, tourism can be considered as a potential knowledge that has a process on how to manipulate it in a good manner with less effort and produce more output for those that are related to it.

In the context of information system, eco-tourism knowledge is originated from information, which in turn is derived from data processed. Knowledge is information that is contextual, relevant, and actionable. The conceptual of knowledge also could be as information in action as proposed by O'Dell et. al. (1998). The relationship between data, information and knowledge is shown in Figure 1.

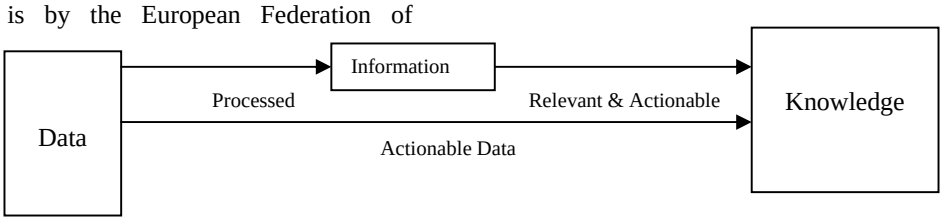

Figure 1: The relationship between data, information and knowledge

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According to Nonaka (1995), knowledge can be categorized into two types that are explicit and tacit. The differences between these two types of knowledgeare shown in Table 1. Knowledge is an asset that should be managed well to be more valuable and more meaningful. The understanding of knowledge is very essential as we are defined about to it. There are many definitions given from many perspectives. Three most important perspectives listed are the management perspective, business perspective and IT perspective.

According to the management perspective, Knowledge Management is 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 knower. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. (*Davenport and Prusak, 1998).* "Knowledge Management is the systematically and organizationally specified process for acquiring, organizing, and communicating knowledge of employees so that other employees may make use of it to be more effective and productive in their work." *(Alavi and Leidner, 1999)*

The role of KM in the business world is very obvious. Here are two most widely cited definitions given by the business perspective. "Knowledge Management is a framework within which the organization views all its processes as knowledge processes. In this view, all business processes involve creation, dissemination, renewal, and application of knowledge toward organizational sustenance and survival." (Majchrzak A., Malhotra, A., Chai, L.,2002).

Knowledge Management is also an audit of "intellectual assets" that highlights unique sources, critical functions and potential bottlenecks that hinder knowledge flows to the point of use. It protects intellectual assets from decay, seeks opportunities to enhance decisions, services and products through adding intelligence, increasing value and providing flexibility.

So far, we have seen definitions from the management and business perspectives. Another vital perspective to be considered is the Information Technology (IT) perspective, as what we propose here. "Knowledge Management (KM) is a system for managing, gathering, organizing, refining, analyzing, and disseminating of knowledge in all of its forms within an organization for certain purposes. It supports organizational functions while addressing the needs of the individuals within a purposeful context."

Table 1: Two types of knowledge

Explicit Knowledge (objective)	**Tacit Knowledge (subjective)**
Knowledge of rationality (mind)	Knowledge of experiences (body)
Sequential Knowledge (there and then)	Simultaneous Knowledge (here and now)
Digital Knowledge (theory)	Analog Knowledge (practice)

The root of KM as proposed by Skryme (1997), can be viewed in different ways as shown in Figure 2. There are a lot of definitions that are given by some people who are involved in this area. For example, Turban (2002), defined KM as a process that helps organizations identify, select, organize, disseminate, and transfer important information and expertise that are part of the organizational memory that resides within the organization in an unstructured manner. This enables effective and efficient problem solving, dynamic learning, strategic planning and decisions making.

2.0 ECO-TOURISM KNOWLEDGE MANAGEMENT INFRASTRUCTURE

In organizations that are involved with computer networks with multiple clients and multiple servers or called the Local Area Network (LAN) environment, the model of infrastructure of the eco-

tourism knowledge management in collaborative environment will be shown in Figure 3. In this figure, stakeholders of eco-tourism may have multiple clients and servers that are linked up to each other using wireless or wired cabling with high bandwidth technology.

The highest bandwidth gives better performance, especially when working in the multimedia environment. This means that clients or users of any server can communicate and they can work in that particular server or go across any servers that are linked up together. This figure also illustrates that people are not only working in the LAN environment, but also in the Wide Area Network (WAN), where they can work at anywhere, and at anytime. This network infrastructure probably happens because they are linked up over the internal network and as well as the Internet or Web technology.

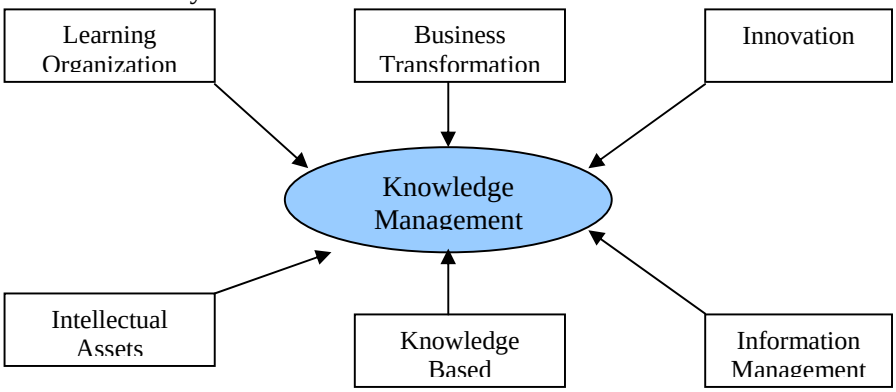
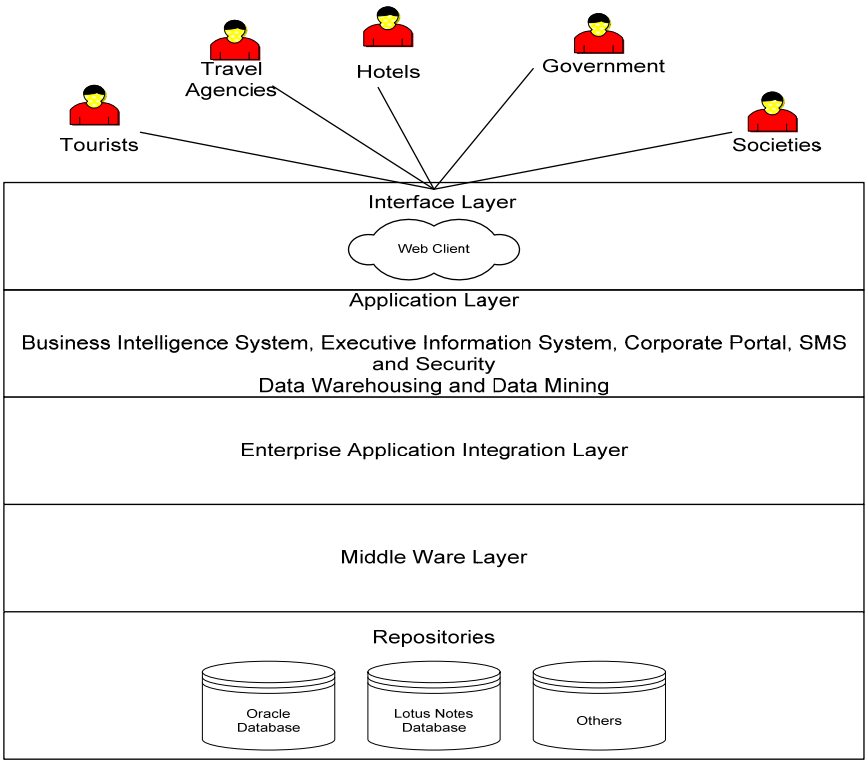


Figure 2: The root of knowledge management



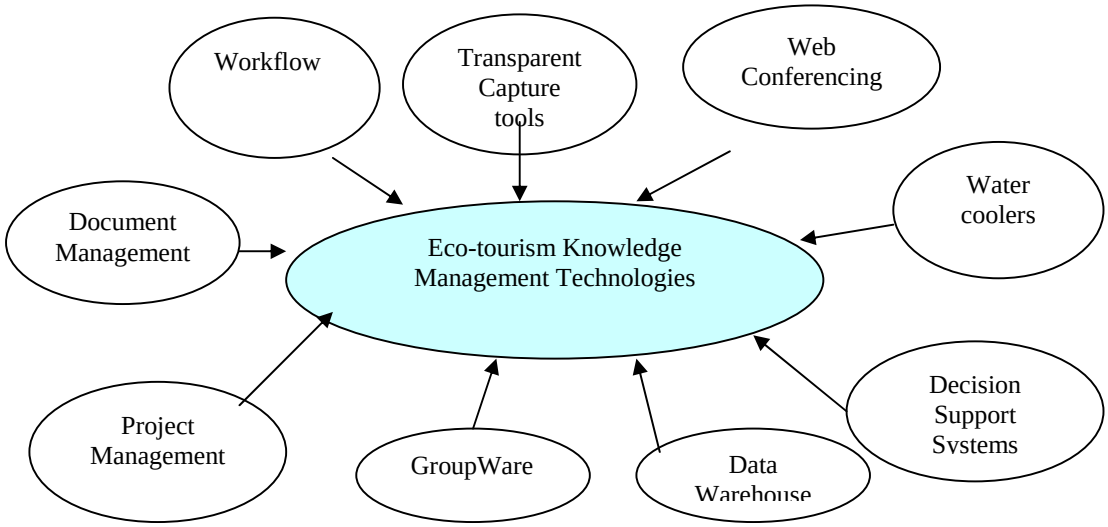
Adapted form Tiwana (2000)

Figure 3: The KM Infrastructure to support eco-tourism community

3.0 TECHNOLOGIES ASPECT OF KMS FOR ECO-TOURISM

The advanced collaborative KM systems should be addressed of eco-tourism technologies issues such as applying agent technology, encryption for security purposes, pattern recognition, biologic models, replication, personalization, location, collaborative filtering, natural language, object-oriented structures, and other methods of electronic information management for knolwedge mining and its dissemination to the relevent members of the eco-tourism sector.

Besides that, the framework of eco-tourism KMs' technology aspect is related to certain areas like collaborative or working together environment at anytime any where of the business transactions such as hotel reservation and many others, especially that involved among the stakeholders in the eco-tourism sector is also proposed and recomendded. Its relationships and its connectivities of the particular elements are depicted in Figure 4.



Adapted from Tiwana, (2000)

Figure 4: The framework technologies that is required for supporting the knowledge management

3.1 Eco-tourism Knowledge Acquisition Technology

For the purpose of implementing the eco-tourism KMS in term of acquiring knowledge in collaborative environment, these involved processes and enablers as described below. In order to make sure that the knowledge could be acquire from the right people, time and place, there are some steps that suggested in the following that to be uses it. These are several steps that need to be followed as suggested below:

i. Identify Knowledge (Determine sources and type of knowledge)
ii. Collect Knowledge (Gather and transform knowledge according to the specifications)
iii. Adapt Knowledge (Categories the knowledge)
iv. Organize Knowledge (Prepare and mapping knowledge into the specific requirements.)
v. Store Knowledge (Keep and indexing the knowledge dynamically)

These processes are involved the technical aspects like Aplication of Intranets, Electronic Document Management System (EDMS), Information Retrieval (IR), Relational and Object Database, Electronic Publishing System, Groupware and Workflow Management System, Agent Based Technology, and Data Mining Tools.

3.2 Eco-tourism Knowledge Dissemination Technology

In the process of disseminating knowledge of KMS in collaboration environment, there are four types of technique that could be considered. These techniques consists of Synchronous Technique (ST), Asynchronous Technique (AT) Distributed Synchronous Collaboration (DSC) and Distributed Asynchronous Collaboration (DAC). These techniques are also based on whether they could be performed at real time or not as shown at Table 2 below.

3.3 Eco-tourism Knowledge Repository Technology

The eco-tourism knowledge technology is connected with how to make sure that eco-tourism knowledge could be deposits very easily from any type of form such as tacit or explicit knowledge.

Beside that, the technologies involved in eco-tourism KMS could be viewed in term of Knowledge Storage (KS) and Knowledge Transfer (KT). This phenomenon is described in Figure 5 below.

Table 2: Techniques for disseminating knowledge

Technique	Applications	Mode of Involvement
Synchronous Technique (ST)	• Meeting room • Discussion • Forum	Same Time & Place
Asynchronous Technique (AT)	• Bulletin Board System • Notice Board	Different Time Same Place
Distributed Synchronous Collaboration (DSC)	• Video conferencing • Tele-conferencing • Chatting	Same Time Different Places
Distributed Asynchronous Collaboration (DAC)	• Email • Short Messaging System (SMS) • Voice mail • Fax machine	Different Time & Places

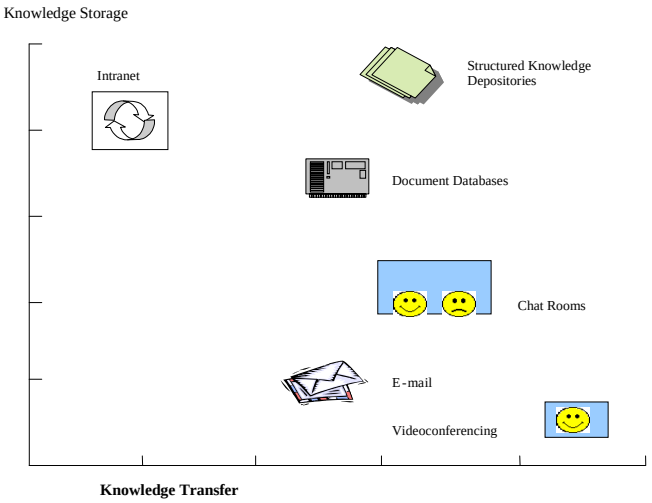


Figure 5: Eco-tourism collaborative knowledge management system technologies

4.0 APPLICATION ASPECT OF DEVELOPING AND IMPLEMENTING COLLABORATIVE KMS FOR ECO-TOURISM SECTOR

The practical technologies implication that has been used for the benefits of stakeholders in term of utilizing the KMS in selected eco-tourism sector can be described in multiple applications. These utilzation of system applications and its related implication are views as shown in Table 3.

Beside that, this application also could be utilized from the principles and method of eco-tourism KMS especially in term of the framework to acquiring and disseminating as well as managing of eco-tourism knowledge in order to keep and share the best practice and achieve good of quality of services, productivity and to gain return of investment (ROI) in eco-tourism sectors.

Table 3: The application and collaboration technology used in Eco-Tourism of KMS

Stakeholders	**Roles**	**Type of Application & Collaboration Technology**	**Implication**
1. Tourists	Internal User	Email, BBS, Forum, Chatting, Video or Tele Conferencing, Portal	Access and perform any facilities and eco-tourism knowledge as a clients via virtual environment
2. Travel Agencies	Internal User	Email, BBS, Forum, Chatting, Video or Tele Conferencing	Monitoring and Coordinating travelers or tourists at anywhere and anytime
3. Hotels	Internal User	Email, BBS, Forum, Chatting, Video or Tele Conferencing, Portal	Open reservation of its hotel facilities which round the clock at anywhere and anytime.
4. Governments	External User	Email, BBS, Circulation, Video or Tele Conferencing, Portal	Supporting and sponsoring eco-tourtism sector activities at anywhere
5. Societies	External User	Email, BBS, Newsletter, Portal	Participating and accessing and getting knowledge as well as perfoming business transaction such as hotel and flight booking at anytime, anywhere & place

5.0 CONCLUSION

The eco-tourism technological opportunities to improve interaction and increase collaboration are expanding rapidly. They will be seized by many organizations, whether or not they amount to 'knowledge management' according to an ideal definition. Collaborative knowledge management system in eco-tourism environment provides a significant rationale for utilizing corporate intranets, which are burgeoning. Organizations that do not deploy that rationale may more quickly experience information overload and other detrimental effects from their intranets.

However, organizations that pursue eco-tourism knowledge management policies are more likely to succeed if they complement technological developments with the development of the collaborative strategies. The encouragement of employee-run networks or communities of practice in these ector seems to be one successful strategy, providing both clients and travel agencies companies with rewards from collaborative knowledge management system within their workspace. Critical success factors for continuing the eco-tourism KMS journey include maintaining committed and involved leadership in any agencies of ec-tourism sector, forming a motivating and consistent vision, developing an evolutionary process (not a "big bang" approach), starting initiatives when and where people are ready, identifying role models, and communicating constantly and effectively about initiatives and business needs.

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[2] http://www.brint.com/interview/maeil.htm

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