A study on the critical success factors for corporations embarking on knowledge community-based e-learning

Ruey-Shun Chen *, Chin-Hsiao Hsiang

Institute of Information Management, National Chiao-Tung University, 1001, Ta Hsueh Road, Hsinchu city 300, Taiwan

Abstract

Corporations have felt the pressure for fast-paced innovations and knowledge transfer as major driving forces in raising their sustainable competitive advantage and organizational total productivity. Thus, the development of the knowledge community through e-learning is an important strategy in implementing knowledge management policy. This paper illustrates an empirical study with which to conduct qualitative research of learning organization. From the case company's real progress and practical experience, some core principles were extracted from four managerial aspects, such as: strategy, technology, process, and personnel. These aspects were analyzed in order to understand the value chain framework and the major concerns of knowledge community development. Further, the main benefits are addressed and certain critical factors are proposed and shown in this paper to ensure the success of corporations embarking on knowledge community-based e-learning.
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Keywords: e-Learning; Knowledge management; Knowledge community; Sustainable competitive advantage; Learning organization

1. Introduction

The learning capacity of a company's members determines its organizational competitiveness in this age influenced by a growing knowledge-based economy [20,30,37,43]. Since results generated from training and education programs, including company e-learning system establishment efforts, are often far from ideal [1,18,26,27,34], many companies have failed to achieve desired results. However, corporate competitiveness may be determined from the content of e-learning and social learning groups [32,33,41]. Therefore, it may become an essential corporate strategy to connect with the rapid development of knowledge communities surrounding e-learning while in the process of promoting knowledge management [16,17,19].

The primary goal of this study is to explore e-learning systems in the virtual communities associated with knowledge transfer. These systems are usually aimed at reducing costs and increasing efficiency (e.g., an

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effective use of long-distance education can reduce travel and other expenses). However, the primary objectives of training and development are to transform individual professional capabilities and to enhance overall the competitive advantage of the organization. Therefore, the focus points of this research are as follows:

- What differences are there between knowledge community-based e-learning systems and ordinary e-learning systems?
- How is a company to handle its social learning groups in order to facilitate organizational effectiveness and transform groups into active knowledge communities?
- What are the prominent points of procedural design and system planning necessary for establishing an organization climate of knowledge transfer?
- What are the benefits of knowledge community-based e-learning?
- What are critical success factors for knowledge community-based e-learning implementation?

This research exams an empirical study to conduct qualitative research for learning organization. In Section 1, basic concepts about e-learning and knowledge management were demonstrated, and then in Section 2 related literature reviews were presented. In Section 3, four aspects of the core principles drawn from the case company's real progress and practical experience were analyzed, namely strategy, technology, process, and personnel so as to understand what value chain framework and major works will be met with further development of knowledge community-based e-learning. The final section illustrates some critical factors to ensure the success of corporations attempting to create a knowledge community-based e-learning system. Last of all the main conclusions are summarized.

2. Literature review

2.1. Goals of e-learning

e-Learning [25, p. 28] is defined as, "[T]he use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance." The e-learning goals are to establish a learning organization and nurture a corporate culture based on knowledge sharing [20,23,28–30]. Hopefully knowledge innovation can be promoted through the learning of an organization, the sharing of knowledge, and the creation of a knowledge community. This way knowledge dominance can be achieved more speedily and consistently maintained. This in turn can hasten the collaborative climate of higher intellectual capital, organizational creativity, innovative business models, and raise the overall company value and efficiency [15,21,31,36,38,39].

2.2. Knowledge management and e-learning

Davenport and Prusak [6] point out that knowledge 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. Jennex [13] defines knowledge management as the process of selectively applying knowledge from previous experiences of decision making to current and future decision making activities with the express purpose of improving the organization's effectiveness. O'Dell and Grayson [22] see knowledge management as a strategy to be developed in a firm as a way to ensure that knowledge reaches the right people at the right time and to share the information to improve the overall function of the organization. However, since there is no universal definition of knowledge management, it is often recognized in a generalized sense, for example: as a generic process through which organizations generate value from knowledge and also as the creative and innovative capacity of human beings [2,4,9].

Knowledge management can also be relevant to the use of e-learning systems within a company, systems which are extremely beneficial to company growth. Hammer and Champy [10] use four important aspects of business – cost, quality, service and speed – to demonstrate the value of e-learning systems. Rosenberg [25] points out four critical success factors for implementing an e-learning strategy which includes culture, champions, communication, and change. In addition, since knowledge management is regarded as an important part of developing e-learning, finding a way to successfully transfer ordinary e-learning to

knowledge-based e-learning will be necessary in order to remain competitive. It will be through necessity that a company place great importance on the operations of a knowledge community during a critical period when an enterprise wants to advance its practices of knowledge management or hopes to accelerate corporate innovation.

2.3. Benefits of developing a knowledge community

When a company embarks on knowledge community-based e-learning, it needs to consider several issues: how to develop knowledge strategy, how to use information technology, how to carry out a knowledge procedure, and how to operate a knowledge community. These issues must be addressed in order to achieve organizational effectiveness and aggressive focus when working towards desired goals. Benefits an efficient knowledge community can bring to an organization environment include: learning curve improvement, quick response and efficient customer satisfaction (QR/ECS), increased experience sharing within an organization, a decrease in repetitive work, enhanced communication and innovation, efficient resolution of practical problems, and increased learning overall in relevant areas of growth [5,14,35,40,42].

3. Case study on knowledge community-based e-learning

This section introduces an empirical study embarking on knowledge community-based e-learning. An analysis is drawn from the case company's real progress as well as a variety of related practices to outline the four different managerial aspects, namely: strategy, technology, process, and personnel.

3.1. Corporate profile

Established in 1967, Applied Materials (AM Company) is the world's largest provider of semi-conductor manufacturing equipment and services. Aside from the company's headquarters in Santa Clara, Silicon Valley, it has R&D centers in the US, Japan, Europe, Israel, South Korea, and Taiwan. The company has over ninety sales service points in thirteen countries including the US, Europe, Israel, Japan, South Korea, Taiwan, Singapore, Malaysia, and China. In order to support the worldwide flourishing semi-conductor industry these points were established in places close to major customers or main semi-conductor manufacturing centers of the host country. Currently, the company has more than 16,000 employees around the world.

3.2. Challenges

The AM Company has set up a global system (an SAP e-learning system) for supporting the communication between different group members in subsidiaries around the world. Because of inadequate interface of regulations between company teams in different locations, some challenges have arisen:

- New systems are continually being established, resulting in complicating management.
- Overlapping investments of financial and human resources.
- Different procedures are difficult to integrate due to varying regional requirements.
- There are a large number of employees, but dissemination of specific information is inefficient or ineffective.
- Information systems developed by each region are needlessly expansive and time consuming, making it difficult to respond quickly and satisfy customer needs.

For the above reasons, the AM Company hopes to achieve a new business operation model and to establish closer relationships with its customers and partners by improving the efficiency of communication and reengineering the structure of the organization. It decided to establish a project to promote a shift towards the knowledge community-based SAP e-learning from the original system. The knowledge community was established whose members came from the company's sections of R&D, marketing, customer service, and other departments. The following analysis is based on data extracted from relevant managerial practices of the case company.

3.3. Strategic issues

The e-learning strategy of the AM Company is to establish a global mind-set among its various branches, as well as foster a corporate culture and leadership style which emphasizes sharing knowledge. Thus, the AM Company has outlined a number of strategic issues to effectively implement the goals related to knowledge community-based e-learning:

3.3.1. Forming the value chain and planning the promotion blueprint of SAP e-learning

The value chain is composed of elements from each of the four managerial aspects outlined above (strategy, technology, process, and personnel). Concerning the personnel aspect, the AM Company plans to facilitate the knowledge communities at the core and to provide employee training geared towards creativity and personnel satisfaction. In terms of the strategy element, the company is committed to developing a knowledge strategy (blueprint) that supports its new business model and a closer partnership between its branch offices. For the process aspect, the focus is on quality and efficiency. Plans for redesigning the processes related to creating, organizing, sharing, applying and renewing knowledge development have been made. Finally, in regards to the technology aspect, the company decided to provide the necessary tools and services to assist communities in fulfilling strategic objectives, meeting the relevant requirements of speed and information integration. The value chain framework of SAP e-learning is depicted in Fig. 1.

Fig. 2 shows the promotion blueprint of SAP e-learning which was drawn up according to the business goals of the organization as well as its knowledge strategies. It outlines the steps required to reach knowledge community goals by using the four managerial aspects (strategy, technology, process, and personnel) as the basis for organizational knowledge strategies and identifying stages of progress.

3.3.2. Planning SAP e-learning project

The SAP e-learning project was divided into five stages. Fig. 3 details the major work items in each stage:

(a) *Preparation stage*: This stage included building a project team as well as delimiting their roles to achieve SAP e-learning goals. It also involved determining the critical factors of the project such as identifying positive and negative features of the system and finding potential obstacles.

(b) *Plan and design stage*: The mission of this stage included establishing basic personnel relationship networks, developing knowledge framework and management procedures, defining the functional requirements of the SAP e-learning system, and creating a flexible structure which could be applied worldwide to every SAP work team.
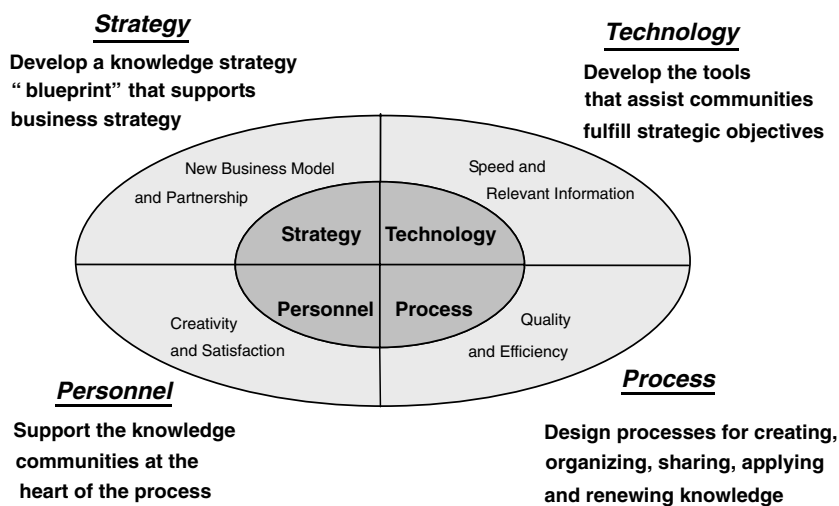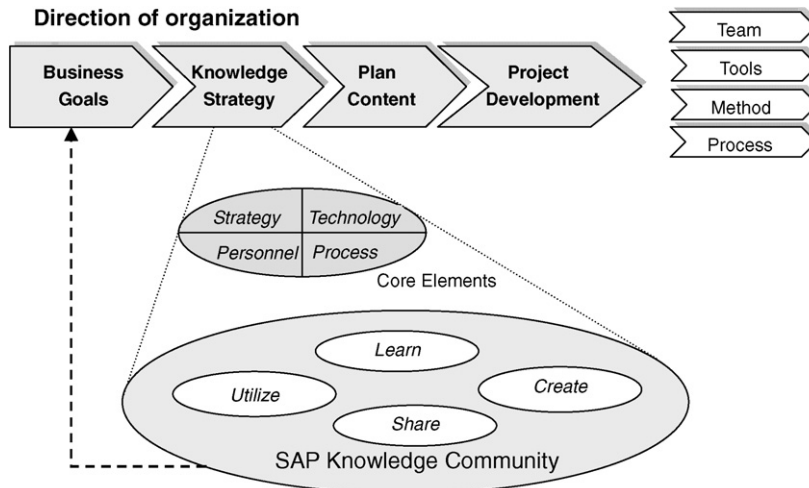

Fig. 1. Value chain framework of SAP e-learning.
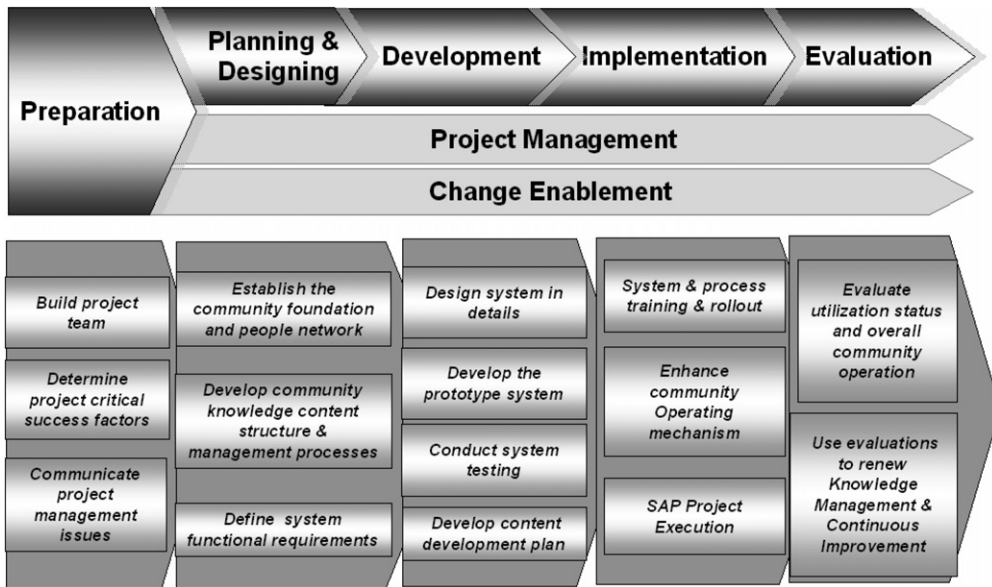
Fig. 2. Promotion blueprint of SAP e-learning.

Fig. 3. Major work items in each stage of SAP e-learning project.

(c) *Development stage*: The activities of the development stage included designing the functional details of the system, developing a system prototype, initiating system testing, and developing plans for entering and transferring e-learning knowledge content (including Project Change Request (PCR) workflow control). Planning transformational activities for actual personnel groups was included which assisted with designing reward and incentive plans.

(d) *Implementation stage*: Focus included the training and use of the system/procedures, strengthening system supervision mechanisms and observing the status of the knowledge community operation.

(e) *Evaluation stage*: The task of this stage was to evaluate the status of system use and the overall operation results of the knowledge community as well as to update knowledge management practices and identify areas of potential improvement as related to SAP e-learning operations.

3.3.3. Constructing the SAP e-learning framework

The SAP e-learning comprehensive conceptual framework was constructed in three parts: community sharing, knowledge procedure, and systems integration (shown in Fig. 4). The knowledge procedure of the community operations was the core of this conceptual framework and allowed members of the knowledge community to search for information, absorb knowledge, and achieve organizational goals within the framework.

3.4. Technological issues

Information technology is the main topic of the technological aspect. It is not only focused on the system designs but also on the information services provided. Delimitating system goals and designing services which meet operation requirements of the knowledge community as well as requirements demanded by organizational knowledge procedures are more important. Related issues of the AM Company are detailed below:

3.4.1. The system goals of SAP e-learning

The goals of the SAP e-learning system include the prudent use of information technology, lowering training costs, and providing the appropriate information and services at the right time in order to achieve knowledge sharing and innovation.

3.4.2. The system service framework of SAP e-learning

As shown in Fig. 5, the SAP e-learning system was built on the concept of the knowledge community. Knowledge community-based e-learning should provide different system services according to four different modes:

(a) Services for facilitating e-learning include: a guided e-learning portal and the flexible SAP KM and Business Train system.

    The e-learning portal, SAP KM and Business Train system are online training programs that use information technology such as transmission tools, allowing users to acquire the latest information via Internet. The flexible non-simultaneous learning services allow employees to structure their online learning according to individual needs and the system is available at anytime, anywhere in the world.
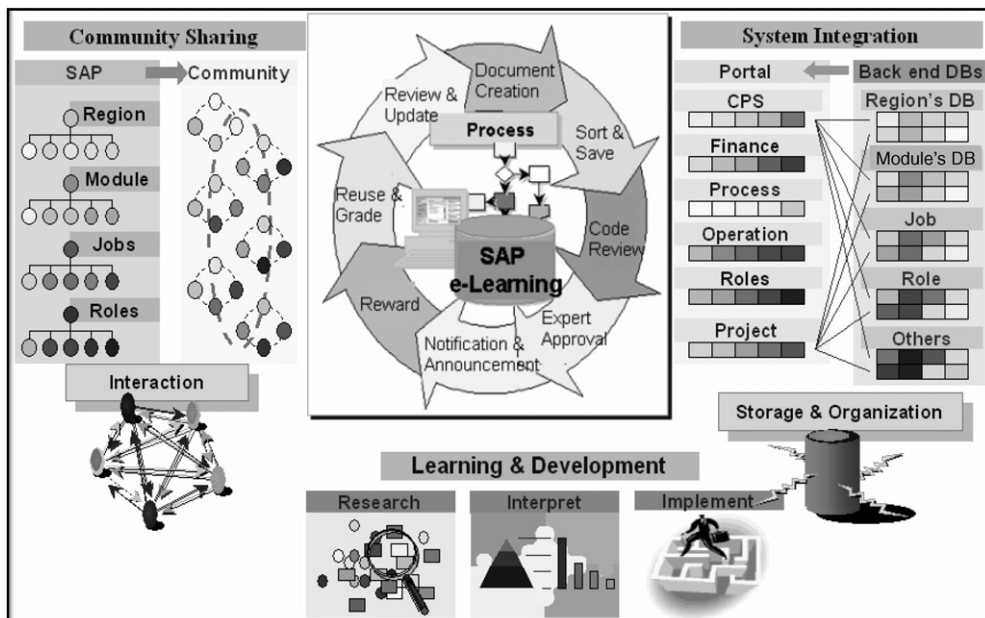

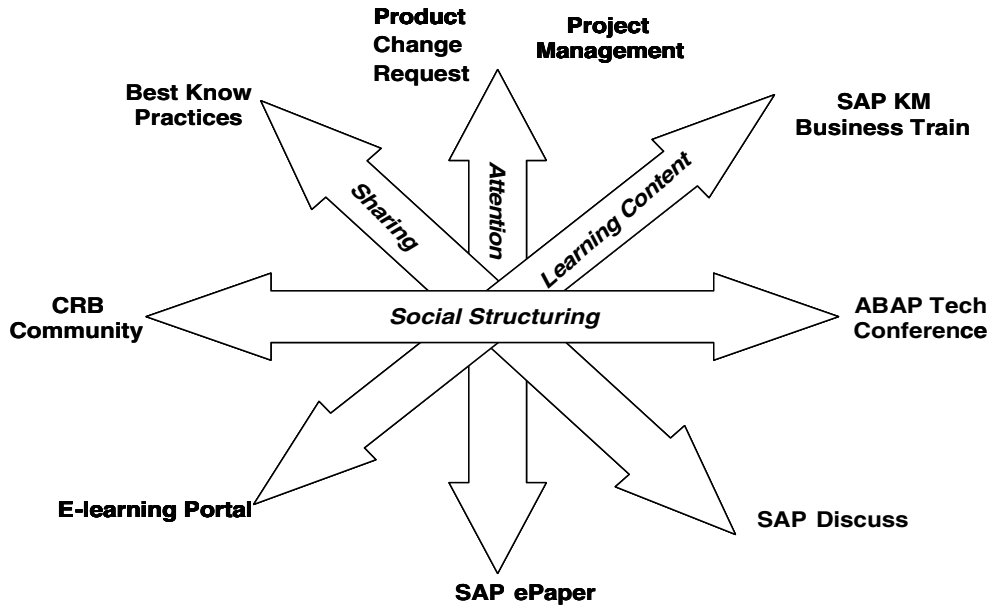Fig. 4. Comprehensive conceptual framework of SAP e-learning.

Fig. 5. System service framework.

(b) Services for disseminating knowledge sharing include: the guided Best Know Practices and the flexible SAP Discuss.

Best known practices should be reviewed in a CRB (Change Request Board) meeting where all project development documents will be collected and reviewed. This meeting allows information to reach personnel so they can better understand potential problems and solutions encountered during actual SAP e-learning project development. SAP Discuss is the system each SAP worker will most often come into contact with. Problem discussions around the worldwide sales points of AM Company are collated in this system.

(c) Services for improving organizational communication include regular CRB meetings and intermittent ABAP Tech conferences.

The weekly CRB community meeting produces the latest SAP ePaper. This meeting allows each SAP worker to be up to date with current information bulletins and to be able to identify individual knowledge experts in a variety of fields. Through this meeting personnel will be briefed and discuss the latest work related issues. The ABAP Tech conference allows SAP workers to effectively complete their organizational tasks through knowledge sharing, and to better achieve their organizational goals.

(d) Services for concentrating the members' attention span include: the Product Change Request (PCR)/ Project Management (PM) and bi-weekly SAP ePaper.

The PCR/PM combines work procedures and system documentation which are recorded according to the principle of specification designs utilized by social group members. The SAP ePaper is composed of information on activities organized by the knowledge community, the latest SAP-related news updates, and the highlighted technical documents referenced in CRB meetings.

3.5. Procedural issues

Company core procedures can be categorized into four elements: information accumulation, interactive sharing, skills learning, and process management. The related tasks of each element are listed below:

(a) Information accumulation
- Plan and execute a strategy to integrate the gathered information with system platforms.
- Search for important knowledge items.

- Define the knowledge objects of the knowledge management system.
- Define knowledge object attributes and map out a search framework.
- Unify the classification and contents of each knowledge object.

(b) Interactive sharing
- Organize engineer social groups.
- Conduct screening and update knowledge content.
- Evaluate social group operations.
- Improve the system's functionalities.

(c) Skills learning
- Assist in teaching users the system operations and the regulation of regulations for technical operations.
- Enrich the content of the knowledge classification.
- Gather feedback and recommendations of engineers and formulate action schemes for improvement.

(d) Process management
- Plan out knowledge strategies and directives for the engineer social groups.
- Draw up procedures for content management.
- Confirm the list of experts from each department on every field.
- Establish a security mechanism and the ranking levels for social groups.
- Supervise and observe the system status of SAP e-learning.

3.5.1. Knowledge transfer

Knowledge transfer has been considered a relatively important work as part of the knowledge management activities. Different types of knowledge require different modes of transfer [8]. Considerations for transfer modes are as follows:

(a) Issues to be considered when choosing a transfer mode
- Who is the target receiver? How similar are the original knowledge team and the receiving team in terms of the nature of the job and background environments? Does the receiving team have the ability to absorb the imparted knowledge? Can the receiving team perform as well as the original team?
- Nature of the task or operation: Is the task official or unofficial? How frequently does it occur? How often must the tasks be carried out? Daily, monthly, annually? Are the steps clear and fixed for each task?
- What type of knowledge is to be transferred? Is the knowledge of the original team tangible or intangible? How many units within the organization have been influenced by this knowledge? Has a single team been influenced by this knowledge or an entire department? Or has the whole organization been affected?

(b) Different types of knowledge transfer
According to the knowledge transfer modes proposed by Dixon [8] the company directs practical business issues to the knowledge transfer flow. SAP e-learning has five different modes of knowledge transfer as shown in Fig. 6.
- *Serial transfer*: This is knowledge acquired by any team from works, which can be transferred and used by other teams when implementing the same task even under different circumstances. An example of serial transfer occurs in CRB meetings when company personnel share knowledge with each about their practices and results.
- *Near transfer*: This is tangible knowledge gained by a team in repeating the same task, which can copied to the other teams carrying out similar missions (i.e., Business Train/SAP KM, SAP ePaper, and PCR/PM process, making knowledge tangible to be utilized by other teams carrying out similar tasks).
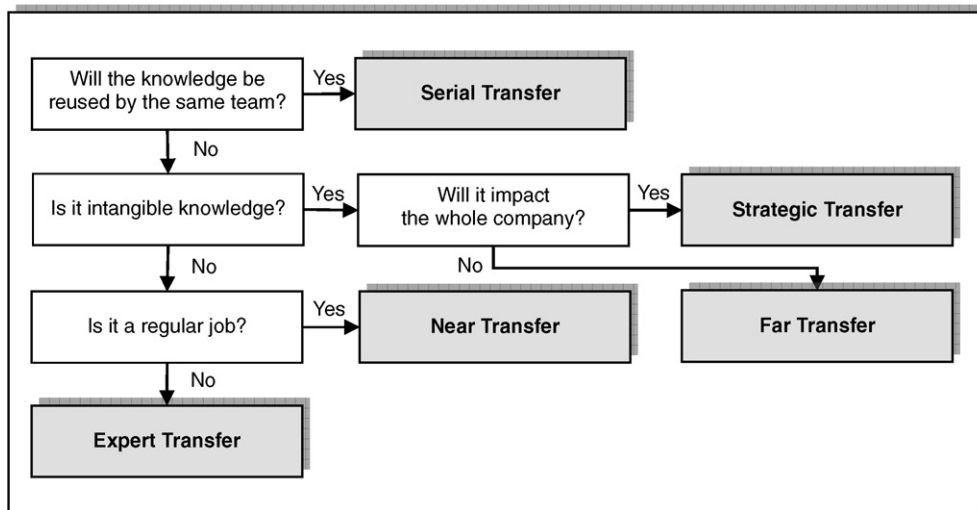
Fig. 6. Five modes of knowledge transfer.

- *Far transfer*: The intangible knowledge gained by a team while implementing a unofficial mission, which may be transferred to other department teams that are carrying out similar missions. An example of this is the use of SAP Discuss and APAB tech conference to transfer intangible knowledge through member interaction.
- *Strategic transfer*: Occasionally the team will have to take collective team member knowledge acquired after completing a strategic task and transfer it to the entire organization, as in issues related to PM operations.
- *Expert transfer*: The technical knowledge needed by a work team. This type of knowledge goes beyond the team's scope of knowledge. However, assistance can be acquired from other departments through SAP Discuss and APAB tech conferences.

3.5.2. The two-loop knowledge transfer procedure

The main target of SAP e-learning is to allow the members of the knowledge community to learn the core skills of their work using information and materials from a database or from experts within the company. Under the base foundation of knowledge sharing we can establish a framework for two-loop knowledge transfer procedure since the transfer of knowledge depends on the focuses of "learning capability" and "innovative business operation". Through continuous use of this knowledge and constant innovation, the members are able to share knowledge and transfer it to other members. This two-loop knowledge transfer procedure is shown in Fig. 7.

Loop 1 includes Best Practices, SAP KM, Business Train, Production Change Request, and Project Management. These five subsystems use a structuralized method to organize knowledge into training materials which are easy to understand and allow trainers of personnel groups to teach other members how to learn core skills/capabilities related to specific tasks (shown in Fig. 8).

Loop 2 includes SAP Discuss, SAP ePaper, CRB meeting, and ABAP Tech conference. Innovative knowledge is activated through interaction between members and experts as shown in Fig. 9.

3.6. Personnel aspect

It is actually a mistake to put learning and training together and view them as a single topic. Learning is a social behavior; it only happens during group interactions. Materials from the American Society of Training and Development [3] have shown that the new trends in training and development have shifted from being "Activity Based" to being "Result Based". In other words, emphasis has shifted from enhancing individual employee knowledge skills to prioritizing the work performance of each employee as a part of a team. For
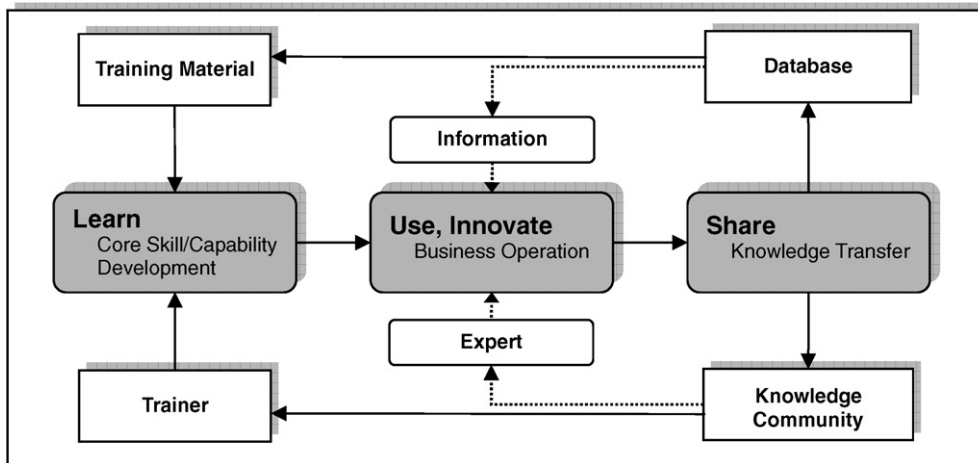
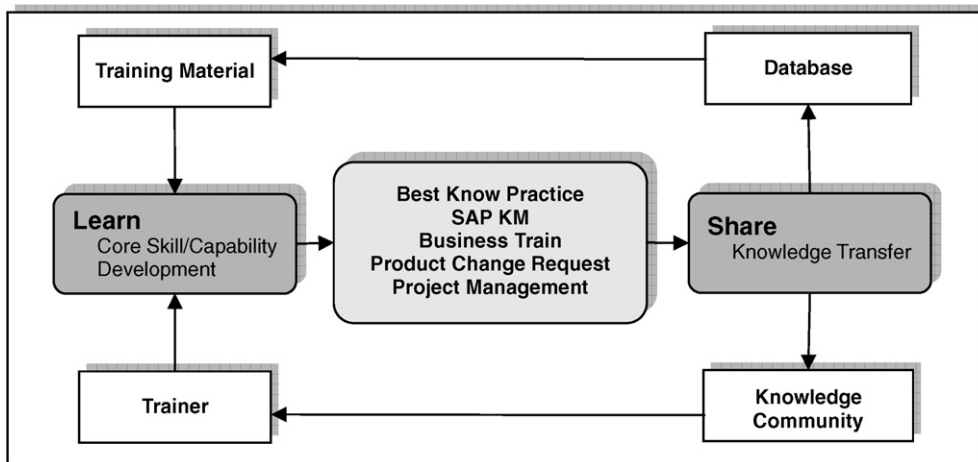Fig. 7. Two-loop knowledge transfer procedure.

Fig. 8. Knowledge transfer – loop 1.

this reason, AM Company needs to realize the dynamics of social learning groups and clearly define goals for their knowledge community.

3.6.1. The social learning groups

Each social learning group in this company setting is a type of small team formed around specific tasks and missions. It is a highly efficient project team that is purely task-based and professionally oriented. The AM Company has different virtual teams within their R&D, marketing, customer service divisions and other departments.

3.6.2. Transforming the social learning groups into a knowledge community

(a) An important step in the formation of a knowledge community is to define the boundaries of the knowledge community and to identify all personnel involved.
(b) Define the goals of the knowledge community. Is the community designed to improve company procedures? Increase profits? Formulate system improvement schemes? Evaluate opportunities for the company to enter a new market? Or is the knowledge community designed to formulate strategic directives in order to keep the company competitive in changing market realities? Only by defining
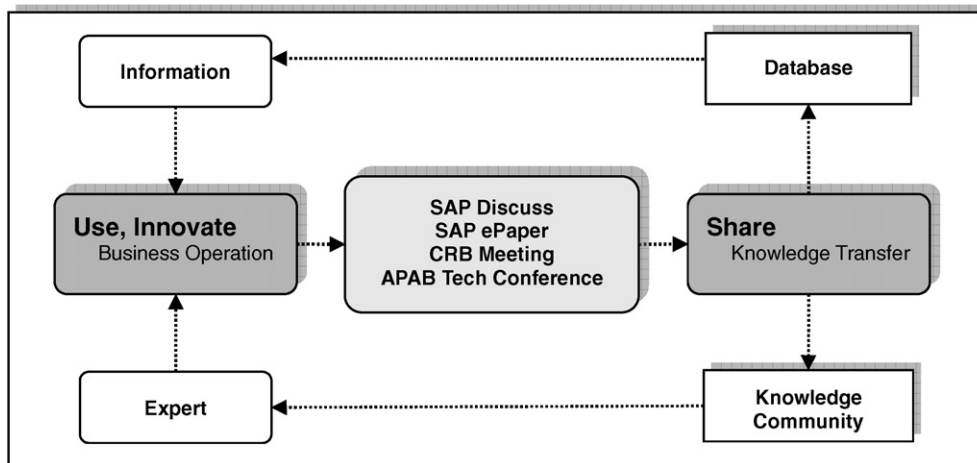
Fig. 9. Knowledge transfer – loop 2.

concrete goals can the members of the social group be able to concentrate their efforts and resources into relevant issues.
(c) Draw up a strategy for the general operation of the knowledge community. Successful strategies for social learning groups are not based on "interference" or "dominance." Elements like "support" and "positive influence" are much more important. A successful strategy is one that forms informal social learning groups among personnel and encourages these groups to establish the knowledge community.
(d) Concrete methods for personnel management transformation:
  • Provide abundant hardware resources: the necessary space, equipment, and system environment for social learning group members to carry out discussions.
  • Integrate contributions of the social learning groups into performance assessment practices.
  • Respect the achievement of social learning group members and give special honor and recognition to groups and individual members.
  • Guide the direction of the group work and revision processes to be compatible with the company's business goals.

3.7. Benefit analysis

After successfully implementing a knowledge community-based SAP e-learning project, the AM Company ran four pilot plans: Global Spare Parts Logistic Center Integration Plan (GSPIP), Logistics Center Grade Card Plan (LGCP), Tripartite Trade Plan (TTP), and Customer Service Procedure Integration Plan (CSPIP) over the next 7 years. The GSPIP is used for decreasing stocks of spare parts in Asia. The LGCP is designed to reduce financial risks. According to the successful experiences of sales points in Europe, the TTP has helped guide branch personnel in Asia with customer services as well as links with the GSPIP. In a similar way new business practices were given trial periods at the Taiwan branch offices, then and expanded to the branches in Japan, Korea, and China which were all a part of the CSPIP. Through the implementation of these plans and the subsequent activity of the newly formed knowledge community, the challenges mentioned in Section 3.2 are being effectively addressed. The performance of the knowledge community-based SAP e-learning system can be evaluated from four points of critical analysis: finance, customer satisfaction, internal procedures, and learning and growth (shown in Table 1).

(a) Financial aspects
  • Systems were integrated and procedural efficiency increased: the GSPIP and CSPIP are some of the best cost-cutting solutions of the company. These two systems have generated revenues equivalent to US$16 million.

Table 1
Benefits of SAP e-learning

	Problems before implementation	Benefits after implementation
Financial aspects	• Financial resources are mismanaged during system development • Different systems require that each branch train its own personnel, causing manpower to overlap	• Systems integrated and procedural efficiency increased. GSPIP and CSPIP have generated revenues of US$ 16 million • Overlapping system investment is reduced. CSPIP makes Taiwan branch for a 94% training cost saving
Customer satisfaction	• The systems development is drawn out and time-consuming. It is difficult to quickly meet the needs of customers • The organization is large and cumbersome. It is difficult to serve customers with the best service standards	• Paradigm learning of the consignment service of Taiwan branch was transferred to other Asian branches thereby strengthening customer loyalty • By incorporating TTP with CSPIP, the customer services are coordinated, making the company more competitive • Knowledge community cooperation is done on a global scale, jointly solving customers' problems and raising levels of work efficiency
Internal procedures	• It is difficult to find a unified procedure that meets the needs of different regions. Management becomes needlessly complicated	• The knowledge community becomes a communication channel, and the procedures are integrated progressively • Doubts are eliminated one by one and management work becomes easier • Speed up the knowledge innovation
Learning and growth	• SAP knowledge is difficult to acquire which weakens employee performance • Experts do not know each other, making it difficult to disseminate knowledge	• The learning resources are enriched • The employees' job satisfaction and work achievement are enhanced • A common interface for communication is provided • All employees are encouraged to continue learning and innovating • A learning organization is formed

• Overlapping investment has been reduced: Outsourced services and global cooperation have replaced the characteristically solitary methods used by branch companies to do business. For example, customer service profits are the main income of the Taiwan branch, and due to the lack of contract management systems the branch would need millions of dollars to be properly established. However, through the knowledge community of the CSPIP a joint endeavor between the service departments in Japan, India, and the US head office reduced the implementation costs dramatically, leaving only the travel costs of employees. GSPIP assisted the Taiwan branch to save 94% of its original costs, a cost saving of US$250,000 on contract management system development investments.

(b) Customer satisfaction

In the past there were no smooth channels of communication, which made it difficult to use the TTP to achieve performance goals focused on both increasing the speed of deliveries to customers and at the same time reducing the inventory targets of each branch company, so through the operations of the knowledge community, good communication channels were established. Customer problems were solved efficiently and overall service has improved.

(c) Internal procedures

Through innovation and integration with the company's global procedures, the AM Company has been able to restructure its pricing procedures. The procedures now provide customers with more flexible pricing and allows for profits to be calculated accurately with each order. Also as a whole, the operation of the knowledge community has raised the company's overall competitiveness.

(d) Learning and growth

In general, SAP knowledge is considered a highly valuable resource. Usually, rare valuable pieces of information are acquired through outside purchase or private channels, but the SAP e-learning system

has introduced new organizational work procedures that have reduced the need to purchase outside information. This system provides a way for employees to communicate with each other thus allowing all employees to benefit from the intellectual advancements of each branch company. Through programs called benchmark learning, employees are also encouraged to continue learning and innovating.

4. Implementation discussion and critical success factors analysis

4.1. Implementation discussion

Improving organizational effectiveness can result in performance improvement and an increase in organization value. The AM Company implements a knowledge community-based e-learning system to improve information accumulation, interactive sharing, skills learning, and process management with the expectation that it will improve learning and overall performance within the company. This case study looks at an organization that manages and uses a knowledge community to determine if an e-learning system truly does improve company productivity. The general measurement of productivity means the ratio of resources used to products generated, however this does not readily apply to knowledge community-based e-learning. Instead, effectiveness was used as a measure of knowledge community productivity where effectiveness is a function of quantity and quality of knowledge community work accomplished. Like the project work of practical issues done in this case, the GSPIP and CSPIP makes cost-cutting, TTP achieves tripartite trade, LGCP which reduces the financial risks, and SAP e-learning to bring about organizational procedure reform. The organization's performance matched the expectation of its business plan.

Businesses which promote organizational learning should not merely stop at becoming a learning organization but should concentrate on how to implement essential activities [7]. Actually many people over simplify the methods of knowledge management and the majority of businesses hang back because knowledge management is not easily measurable. Davenport [6] says "to begin knowledge management with a focus on organizational learning would be a good idea, but firms rarely do so." O'Dell [22] underscores the point, "The number-one reason knowledge management initiatives may not function in an organization is that the 'evangelists' fail to connect with the real business issues." Dixon [8] indicates that the real goal of knowledge management is to deal with the organization's most pressing issues and to use knowledge management where it's appropriate to do so. She also points out two things need to be tracked in the measuring progress: outcome/process measure [11]. From the progress of the case company's project implementation we can make further observations as to how it reconstructs the business operation on the basis of focusing on the knowledge community as a primary subject, leading practical business issues into knowledge transfer, using the e-learning system as a communication tool, and utilizing business processes as an interface of knowledge community operations. The validity of this approach is positive comparison with research suggestions made by scholars. The hidden agenda business goal of this implementation is shown in the proof of improvement and measurement within the beneficial analysis of financial affairs, customer satisfaction, process restructure, organization learning, etc.

4.2. Critical success factors analysis

The critical success factors can be observed as a few variables. It is also regarded as some key areas of business operations. The decisions and efforts of an executive manager to deal with these critical factors will affect the performance of business operations and its sustainable competitive advantages [12,24]. In order to build a successful knowledge community within a company, a variety of factors must be considered. Most of these factors involve organization and management of personnel, and others concern system planning to make use of a functioning knowledge community. When effective personnel management is combined with knowledge strategic planning, they support each other and create an e-learning environment that clearly enhances productivity. Therefore, from the promotion of a knowledge community-based e-learning in our case company this investigation can probe the development of key factors to success and hopefully quickly promoting a working method of knowledge management for businesses as well as providing a few suggestions and debates.

4.2.1. Participation of key personnel and the development of a knowledge strategy

Each project requires the participation of key personnel in order to acquire adequate resources. It is paramount for all employees to clearly understand the company's development goals and work to support new objectives or procedural changes. Successful corporate strategies are also good for growth. The success of a company's knowledge management practices is closely related to the strategies it formulates to manage this knowledge. Companies may determine what strategy to use according to their customer service styles, overarching business practices, and recruiting policies.

4.2.2. Procedural design needs to complement current work and help to establish a loop of knowledge-sharing

The design of personnel management policies can incorporate e-learning knowledge procedures making it easier to more thoroughly categorize knowledge and preserve this knowledge within the organization. This kind of comprehensive design approach also makes it more convenient to construct knowledge maps and training materials. Presenting organizational knowledge in an accessible manner enables others to quickly learn new information or skills, and gives employees the tools with which to fully utilize knowledge community resources. These tools also allow employees to innovate past experience and think critically.

4.2.3. Technology should be learner-focused

The company must find an optimum balance of training tools while incorporating online learning within the employees' overall training program. Based on the requirements of a particular task, the training program must be able to draw on a variety of training methods. Disregard myths that assert information technology can be used to its fullest capability solely by using electronic tools. Focus on innovative learning modules and allow employees to be involved in their own training programs. It is important that a company provides training programs designed to work in tandem with employees while also considering the current company needs. In short, companies should be able to provide the right training program at the right time in the right manner. The core of integrated learning is centered on its diverse, integrated training system. It emphasizes individuality and learner-focused training methods in order to emphasis continued training and learning on the job that in the end improve employee performance.

4.2.4. Prudent use of the knowledge community to complement company business goals

The knowledge community's existence is not solely focused on knowledge management. Rather it is one element that contributes to innovation within the company as a whole. Enterprises should guide their own knowledge communities so that they complement company business goals.

The operation of a knowledge community should include three major considerations:

- *Manpower*: Through the formation of small teams, each member of a personnel group should be provided with necessary emotional and intellectual support resources.
- *Procedure*: Systems must not be focused solely on organizational structures but rather encourage and incorporate the opinions of personnel as an integral part of the process. Moreover, feedback and encouragement should be provided at appropriate times.
- *Technology*: Provide a complete set of IT tools to company personnel – for example e-mail, electronic newspapers, video conferencing equipment, space for team coordination meetings, Groupware systems or Web Log programs. These tools help team members share knowledge with each other anytime, anywhere as well as effectively gather and collate all related sources of knowledge into an accessible database.

4.2.5. Implementation of new strategies and marketing

e-Learning should not be perceived simply as the use of technology, but rather as a part of training and development that is aimed at adjusting previous business practices. For this reason, the beginning stages of implementation may be met with resistance. Reasons for this resistance among employees may include not knowing the reasons for the change, challenges implanting the new policies and procedures, or simply unwillingness to change. Managers should use their marketing skills and activities to encourage employees to fully participate in this new knowledge community and to involve themselves in the organizational changes.

Active problem-solving in real-life situations is the only way for team members to learn to cooperate effectively. This approach is also the only way to successfully utilize the knowledge community as employees search for innovative business practices, share knowledge on a large scale, and integrate the e-learning systems into larger company business goals.

4.2.6. Establish a culture of learning and provide concrete rewards

Appropriate management rules and regulations are able to create the culture appropriate for successful knowledge management within an organization. This includes emphasis on the value of communication, the value of learning, trust and cooperation, as well as emphasis on a culture that supports innovation. Many people consider knowledge to be a significant source of power. Individual incentives from company management with overemphasis on "knowledge production" will encourage employees to view their innovative ideas as resources and refuse to share with others. Therefore, organizations should provide incentives and rewards for knowledge creation and sharing, as well as support personnel with innovative knowledge work.

4.2.7. Provide learning time and space within the company

One of the biggest advantages of online learning is that employees can enjoy the flexibility of learning anytime and anywhere. However, this mode of learning requires a certain level of self-direction among employees and thus carries a few disadvantages. For the company, providing online learning does not necessarily mean employees will learn online. Although creating a virtual classroom online and providing specific learning time and space within the company may reduce the issue of inefficient use of online resources.

4.2.8. Establish mutual trust between members of a team

As globalization becomes the dominant trend in business, and information technology grows tremendously, more and more companies are completing their work requirements using virtual self-directed work teams (SDWTs). Managers should help virtual team members overcome feelings of isolation. Establishing a stable work model can allow employees to be able to trust one another. Once this trust is effectively established virtual teams working as a part of a broader knowledge community can work together more effectively.

5. Conclusion

The goals of e-learning are to establish an organization climate for the knowledge community. Previous research focused on the production, transmission, and gathering of knowledge as it related to learning programs has shown, however, that many current e-learning systems overemphasize personal achievements. On one hand, this structural bias inherently values such achievements over those that benefit the company as a whole. On the other hand the value of e-learning within a knowledge community is that systems are designed to emphasize innovation and knowledge sharing. In this context, fulfilling organizational achievements becomes the ultimate goal.

For this reason, the analysis of this research has centered on questions of how to guide the transformation of social learning groups into a functioning knowledge community. By extension, then, this includes programs that transform previous e-learning systems into knowledge community-based e-learning systems. Many companies have been looking for guidance in these areas because the results of the e-learning systems they currently employ do not produce desired results. Many managers struggle with the challenges of combining theory with practice and responding to trends in knowledge management in order to benefit from new advances in the field. These are some of the reasons why this study was conducted, and why it was designed to be relevant to current business challenges.

Clear planning and organization, ranging across elements such as strategy, technology, procedure and personnel, are fundamental to corporate success. Analysis of the subject company, which has already expanded its e-learning systems into knowledge community-based operations, has shown positive results in areas of finance, customer satisfaction, internal procedures improvement, and organizational learning (as addressed in Section 3.7). The subject company in this paper is an example of the potential transformation to knowledge community-based e-learning system has for any enterprise that wishes to maximize its knowledge management

practices. Hopefully this paper will be useful to any corporation embarking on the project of building knowledge community-based e-learning systems.

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