

# The Prospect of Knowledge Creation-Laurea SIDLabs

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Creation-(Laurea SIDLabs)**

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Human Resource Management: The Prospect of Knowledge Creation

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The world is now considered to be a knowledge economy in which organizations' sharing and creation of knowledge form an important role in integration and innovation. Knowledge creation is recognized as strategically important organizational learning and innovation tool.

Knowledge can be created through a continuous dialogue process between tacit and explicit knowledge, as well as through four patterns, namely; interactions or socialization, combination, internalization and externalization. The research problem was based on the fact that knowledge can become obsolete, so it is imperative that knowledge creation and management is a continuous process enabling efficient and effective business practises. Moreover, the theoretical understanding of knowledge creation was also considered.

Laurea Service Innovation & Design Labs knowledge creation strategy is examined. The working environment and enabling conditions for knowledge creation are key factors for organisational effectiveness, as the need to adapt to external forces accelerates. The international nature of the Labs and the growing importance of research and development means Knowledge creation is a key strategic resource and core competency. Individual employees are the primary source of knowledge creation, and the nature and management of this knowledge is facilitated via regular exchanges in a variety of one to one and group formats.

This research finds that the environment supports knowledge creation and that individual employee's are willing to share their knowledge. The working 'spirit' and organisational culture is a core competence. The flat hierarchy of this environment facilitates the transmission of knowledge across the organisation at all levels from management to researchers and students. Effective knowledge creation combined with effective means of dissemination indicates that Laurea SIDLab's knowledge management policies have effective foundations.

Key recommendations include ensuring that the management hire strong knowledge based researchers by redefining the mode of recruitment. There should be more much needed support and cooperation from management to ensure that the body of knowledge is transferable to any new entrants to this environment. There should be continuity of research on the Labs knowledge management strategy to ensure best practice and that knowledge, once created, is retained.

**Keywords:** Knowledge management, explicit & tacit knowledge, knowledge creation, Interactive culture, innovation, competencies and prospect.

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## 1 Introduction

### 1.1 Presentation of the Concept

In this contemporary world, the sharing of knowledge plays an important role in innovation, and development of organizations' integration. The Knowledge-intensive organizations, knowledge creation serves as a strategic resource and key factor representing the core competencies. When knowledge-intensive organizations do not have good knowledge-sharing platforms and advanced methods, it will be very difficult to achieve knowledge assets effectively.

The recent globalization or internationalization of businesses has caused many organizations' management to establish creative knowledge and enabling work environment. This is in order to help meet future challenges, remain productive, and competitive as possible. Esko Kilpi on their mission statement indicated "organizations should be seen continuously reproduced and transformed in the ongoing processes of interaction". Innovations and the working life of organizations are all within the context of socializing and interacting. In recent times work is getting more and more knowledge intensive and there are more variations to products and services. According to Esko Kilpi, "more parties are interacting in creating the offering utilizing technological work environments and that the result is often a creative solution personalized to meet the requirements of a single customer" (Kilpi, E. 2007)

The conceptual idea is that, organizations have to be creative, innovative, and effective, while shift from the traditional paradigm of working life. Traditionally, work was much confined within an organization's internal boundaries. Nowadays, there is much more systematic, interactive and socialization of employees who serve as organization's knowledge creation base. Esko Kilpi gives another clear view of the introduction of the different interface working tools which support organization's knowledge creation and business processes. These are Enterprise Resource planning (ERP), an innovative tool (SAP R/2) in 1992, group work programs and in-house email 1997 (Lotus Notes 4.5), 1995 (AltaVista & Lotus 5.0) which are portal technologies. Others are the browser as the user interface to programs (1997 Slashdot, 1999 Google, 2001 Wikipedia, 2003 MS SharePoint) and IT interaction technologies (2002 web services). There are also the current social network software services or Web 2.0 approaches which support the working culture, such as; YouTube (2005), Delicious and Skype (2003), Flickr and Facebook (2004), iTunes (2003) and Ajax (2005), Google maps in 2005 and recent SharePoint of 2007. All these social network tools supporting organizations and employees in creating networks, interactions, generating new ideas leading to problem solving etc . More importantly, knowledge sharing, creation, transfer and management form an integral part of these technological advancements (Kilpi, E. 2007)

Nowadays, doing business is by adding new value and ideas in the form of innovation and design. There is a greater competition, change in consumers' preference and perceptions, increase in the demand of products and services etc. The current business world is to have needed information, increased transactions and communications, hence, the challenges of companies adapting into system of information flow. The introduction of blogs and social networks (e.g. Facebook, Google, and MySpace), has enabled people to be working outside their confined zones while remaining productive. In context, people wouldn't like to be limited to the confined working places or in the office buildings, which, nevertheless, are of necessity (Esko Kilpi Oy, 2007).

According to Esko Kilpi Oy, (2007) "The good stuff spreads, and the bad gets ignored but then in both cases, feedback from the audiences, and interaction with peers improves work". This explains the fact that, the current trend of work output and productivity improvement is more of interacting, socializing internally and externally. There may be variations of organizations, but the idea is that this is also a strategic knowledge creation process. Nonaka & Takeuchi (1995. 25) recognized knowledge creation as strategically important organizations learning and innovation tool. It is also as a core to organization's success, survival, and adaptability to the international environment. Nonaka (1994. 14-15) in his knowledge creation theory stated that "organizational knowledge is created in a continuous dialogue between tacit and explicit knowledge through four patterns; interactions or socialization, combination, internalization and externalization".

Knowledge creation is recognized to be in two dimensions namely; tacit and explicit. The concept of tacit knowledge is dated back in Michael Polanyi (1967) era who stated, "we know more than we can tell". It consists often of habits and culture that could not be recognized within a person. It is of importance to manage and transform for the benefit of the organizations and can then be expressed in the explicit knowledge form. Tacit knowledge can be captured and managed by three different approaches; by interviewing knowledge experts, learning by being told, and learning by observation.

The explicit knowledge can be codified, stored and articulated in the form of manuals, documents. Also could be procedures in certain media such as books, software, and other electronic media for immediate or future use of an organization. It is the knowledge which is expressed, distributed and communicated for an organization's usage and for effective and efficient performance. It also helps to create new knowledge and increase the organization's future. (Wikipedia, 2007)

The world is fast changing with manufacturing and other office work being transferred across geographical boundaries. Therefore, knowledge management of organizations needs to be

aware of this 21<sup>st</sup> century changes in business contracts and commitments. If companies want to remain successful and competitive, then there is the need for entrepreneurs/leaders to develop an intellectual capital base through knowledge creation and knowledge-sharing (Ichijo & Nonaka 2007, 3).

Again, Nonaka and Ichijo (1996) on Knowledge Creation and Management suggested that, for companies to compete successfully there is the need to hire, develop and retain excellent managers who can accumulate valuable knowledge assets. More so, attract competence, talented people to help raise a level of intellectual capabilities and competencies. The important fact is that knowledge creation as a resource can become obsolete and therefore needs to be created continuously (Ichijo & Nonaka. 2000, 4). Therefore, at the end of this research project the concepts of the 'Prospect' will be considered in line with the knowledge creation.

Socializing and interacting to create an enabling environment is an important factor for knowledge sharing and support the knowledge flow within an organization while considering work efficiency and effectiveness. Therefore, Organizations' Management should not lose their focus of the vision and strategy and remain objective as possible while considering the enabling conditions of knowledge creation.

## 1.2 Objectives and Structure of the Project

From the past to this 21<sup>st</sup> century, knowledge is increasing and technology is advancing therefore business transactions are also changing drastically. Globalization and internationalization have caused a change in the trend of business and most organizations are emphasizing on innovation and design. There is also increase competition in business, change of preferences and increasing change in the demand of clients. This research is to serve a dual purpose, as the researcher's thesis and also as research and development project for SIDLabs taking into consideration their knowledge management strategy. There will be the theoretical and practical understanding of the nature of how the SIDLabs are managing knowledge creation in order to adapt into the changing nature of the international environment. The collaborating partners are all the coordinators of the various SIDLabs, supervisory lecturers, interns working in the Labs and facilitators of the knowledge-sharing tools.

## 1.3 Problem of the Research

As stated in the introduction, 'knowledge creation as a resource can become obsolete and therefore needs to be created continuously' (Ichijo & Nonaka 2000, 4). Therefore, the basic concept is how the SIDLabs are improving the internal working environment, the business processes, information flows, and communication services within its core business. This is to



help make use of the concept of knowledge creation in order to meet future challenges. This will also serve as the reason for this research to be undertaken.

During the initial stages of the research a discussion was necessitated among the researcher, SIDLabs-International coordinator, and one of the senior Lecturers of Laurea institute to help create the understanding of the current organizations working culture which ensures knowledge creation. Using Esko Kilpi's views on working life some of the areas considered were the following;

- To analyse the aim of organizational knowledge creation, challenges, suggested ideas and how to implement them for future growth
- To create an awareness of the current and new working life in an organization and how to adapt into the internationalization environment for productivity

However, with further collaborations the project objective was established as to 'how the management of SIDLabs are managing knowledge creation in order to adapt to the changing nature of the international environment'. This was the basis upon which the research questionnaire, as well as interviews designed. Another concern is how this knowledge creation could ensure effective performance and future growth in this environment, taking into account the working culture and the suitable conditions appropriate for the knowledge creation.

#### 1.4 The Research Structure

The research project has been divided into six sections. The first section is the introduction that helps to give the general background of the project. It also includes the objectives and the mode of research methods to be adopted. The research method constitutes the questionnaire design and the interviews as well as the personal observations. Section 2 is more of the theoretical information of knowledge creation (definition, processes, principles, and challenges etc).

The section 3 describes the SIDLabs, business activities, the knowledge management style, the prospect of the knowledge creation in this environment, and the basis for the prospect of SID in relation to its knowledge creation. The fourth section is more on the electronic survey, interviews and personal observations while the section number 5 is the presentation of the findings, description of the findings, charts and summary. The finally section 6 is the research summary, limitations, recommendations and the project reflection.

Figure 1 is a brief summary of the research structure as described above.

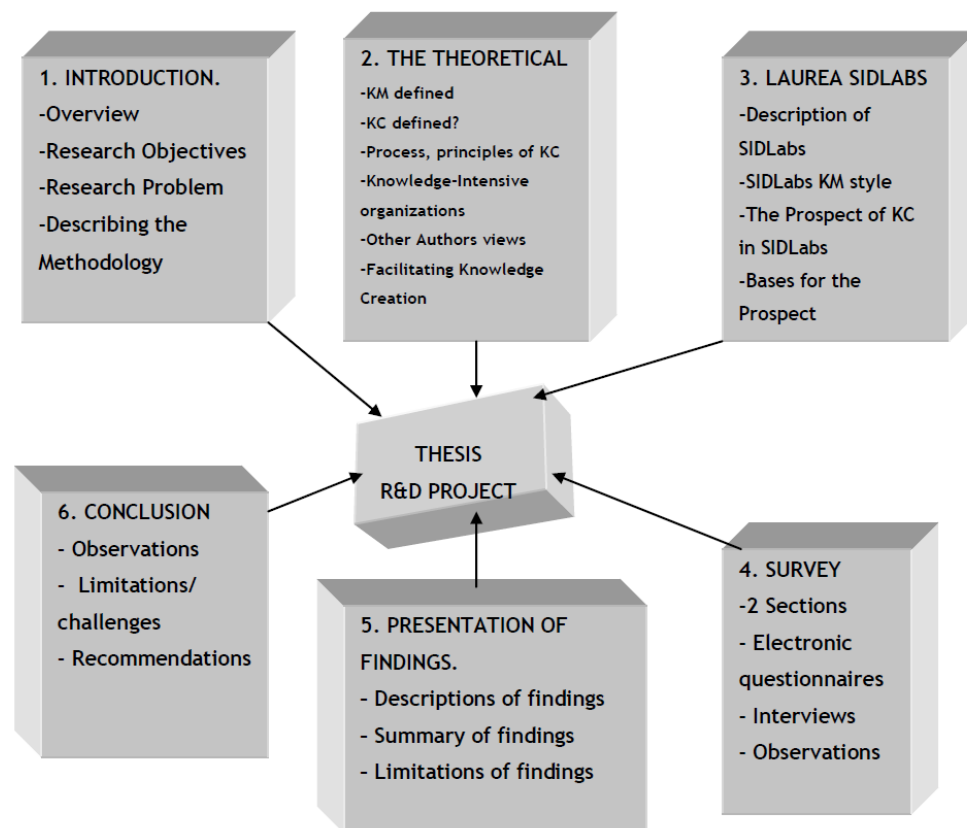


Figure 1: The research structure

### 1.5 Describing the Methodology

Knowledge can be created among individuals or individual environments. These individuals vary from one to another and it could be a challenge to the organization's knowledge creating process. Ikujiro & Nonaka (2007. 35) categorize the process into four as socialization, externalization, combination, and internalization which focuses on two-dimensional dialogue theories of knowledge creation (tacit and explicit).

Gurteen D. (1999), on knowledge sharing culture mentioned that "today's survival of businesses is essential to the creation and application of new knowledge" and that creating the knowledge sharing culture is a challenge, he stated "changing culture is tough". Therefore, management of organizations needs to encourage their employees to work together, be of more effective in collaboration, and create an idea sharing opportunities which ultimately will help make organizational knowledge more productive.

To ensure that such practical issues are adhered to, knowledge creation research could be approached by using Cameron, N. (2000) knowledge creation principles. Cameron uses these basic approach questions "what are we trying to do, why are we doing it, and how are we

going to do it". He went further to state that "it is not only the best methodology for an enabling knowledge sharing. That it is also the best catalyst for increasing the creation of new knowledge" in an organization. Knowledge creation cannot be effected and effective without the willingness of individuals to share their knowledge. These three basic questions can be redesigned by any organization as 'what are being produced', 'why are they being produced' and 'how is it being produced'? These questions can help to create in the mind an understanding of knowledge-intensive organization's strategic direction and focus. It can again help in ascertaining the type of knowledge and approach being adopted for the organization's effective performance. (Neil Cameron Consulting Group, 2000. 1)

These principal questions are the basis for the researcher's questionnaire and interviews design and interviewing process. Therefore, in this project, 27 electronic optional questionnaires were designed to target the employees (interns) and coordinators of SIDLabs. Another 14 questions were designed for interviews that were targeted to the management members, coordinators, facilitators, and other personnel of the case company. Therefore, the quantitative and qualitative methodologies were employed as the research approach for this project.

According to Peter, M. (2005, 25), quantitative research method is basically "the systematic scientific investigation of range magnitude of properties and phenomena or observable occurrences and their related events". Some people are of the view that quantitative method does not give an in-depth analysis of whatever is being researched. Moreover, it depends on what research is being investigated. The Quantitative method is more of statistical base tool, numerically measurable, and the data can be obtained through surveys. The reason to use this approach is based on the fact that knowledge is in the mind of each individual of an organization. To ascertain the fact of the research on 'the prospect of knowledge creation', there was the need to investigate the "knowledge carriers" of the case company, Laurea SIDLabs. The other aspect is the environment in which the knowledge is shared and created which is very important. There was therefore the need to obtain the opinions and understand the work environment from the individual employees. (Peter M. Chisnall. 2005, 25)

The qualitative method is a form of diagnostic approach which is used to seek deeper understanding of factors. It is also in the form of interviews directed to individuals or groups of people. It helps direct questions in a deeper dimension as compared to quantitative method and also more subjective and personal. A means of contacting respondents by granting interviews in order to established an in-depth fact of situation or events. (Peter, M. Chsinall. 2005, 25)

Research from business marketing has it that, qualitative research is about investigating the features of a business process through in-depth research that explores the background and

context for decision making. The idea is that interviews form the main qualitative research approach. (Tutor2u.net webpage: accessed on 26.06.2009).

The reason for using this method is to help obtain and establish the reason for setting such a research environment within a school premise. Further, to help identify the strategy for sharing, creating and managing knowledge. The other reasons were to identify the network platform being created internally and externally in this environment as well as the communication flow among the management, coordinators, and individual employees (interns). Aside the quantitative and qualitative methods, the researcher relied also on weekly feedbacks from internal presentations during the period of the research. There were also feedbacks from the SIDLabs'09 seminar. Finally desk analysis was also taken into consideration obtain other authors and researchers views on knowledge creation.

## 2 The Theoretical Background of Knowledge Creation

This section is the theoretical bases of this project on the prospect of knowledge creation, the processes involved and how it is managed for effective performance in today's business processes in an organization.

### 2.1 Definition of Knowledge

The definition of knowledge is in many contexts and according to Andre Boudreau (2007) it is "things that are held to be true in a given context and that drive us to action if there were no impediments". Nonaka & Takeuchi (1995) define knowledge as a "justified true belief that increases an entity's capacity for effective action". The great old Locke, John stated that knowledge is "the perception of the agreement or disagreement of two ideas". In general knowledge is considered as a human faculty resulting from interpreted information, an understanding that germinates from combination of data, information, experience, and individual interpretation. (Business dictionary webpage: accessed on 27. 6. 2009)

Knowledge is defined as an "expertise; skills acquired by a person through experience or education which is the theoretical or practical understanding of a subject". It can also be "what is known in a particular field, facts and information, the awareness or familiarity gained by experience of a fact or situation". In an organizational context, knowledge is said to be "the sum of what is known and resides in the intelligence and the competence of people". It is therefore an important aspect in the organizations' establishment or business processes. (Wikipedia webpage: 10.07.2009)

#### 2.1.1 The Four Stages or Types of Knowledge

This section is a background of the knowledge stages or types as described by Belenky, M.; Clinchy, B.; Goldberger N. and Tarule J. (1986. 1-2) in their project work.

There is received knowledge that is 'knowledge as objective fact'. This is knowledge that helps to guide people by giving information, facts, etc for them to commit to memory and reuse in problem solving. The other type is known as procedural knowledge and it is based on 'discipline' and 'methodology'. This knowledge helps by giving instructions to people with the right methodology for systematic analysis of problem solving and to give them the evidence to solve complex problems. Belenky, M.; Clinchy, B.; Goldberger N. and Tarule J. (1986. 1-2)

The other types of knowledge are subjective knowledge that is based on subjective experience. This knowledge helps to identify and appreciate different opinions or theoretical understanding as a means of obtaining information. Practically it helps people to think and support opinions. The last type is the constructed knowledge which is based on 'creative knowledge'. It is by guiding people with a critically-informed appraisal of facts, experiences and methods to be in a position to make the right choices. People become self-committed through exploration of complex situations and problem solving. Belenky, M.; Clinchy, B.; Goldberger N. and Tarule J. (1986. 1-2)

## 2.2 Definition of Knowledge Management

This is a brief concept of knowledge management in relation to the research on knowledge creation. There have been different views of the definition of Knowledge management. It is considered to be "the process that continually ensures the development and application of all kinds of knowledge that is pertinent to a firm, with the objective of improving its problem-solving capacity and thus contributing to sustaining its competitive advantages" (Andreu & Sieber, 1999. 68). Another school of thought define KM as "the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities (Quinta. 1997, 387; Stamm, B. V. 2008). Knowledge management requires the understanding of an organization's strategy under which knowledge can be developed and exploited, the content and type of knowledge. The other dimension is the advertisement, technological context of the organization that supports the planning of knowledge in the organization (Martín & Casadesús. 1999, 73 and Zack 1999).

Knowledge management can also be referred to as "the systematic organization, planning, scheduling, monitoring, and deployment of people, processes, technology and environment, with appropriate targets and feedback mechanisms, under the control of a public or private sector concern, and undertaken by such a concern, to facilitate explicitly and specifically the

creation, retention, sharing, identification, acquisition, utilization, and measurement of information and new ideas, in order to achieve strategic aims, such as improved competitiveness or improved performance, subject to financial, legal, resource, political, technical, cultural, and societal constraints” (Lehaney, B; Coakes, E; Clarke, S; Jack, G . 2004, 26).

KM is the management of knowledge in relation to “activities of creating, organizing, sharing and using knowledge in order to create value for an organization”. “It is promoted as an essential cornerstone for companies to develop sustainable competitive advantage and to remain at the forefront of excellence in a level playing market field” (Yew & Aspinwall 2004, 44). Also KM “is a discipline promising to maximize innovation and competitive advantage for organizations that practice knowledge capture, documentation, and retrieval for reuse”. This is becomes “organization’s knowledge asset in a measurable way, integrated in its operational and business processes” (Dayan & Evans 2006, 69).

Other authors have acknowledged the fact that Knowledge management is further than technology management or information management. Human intervention, learning and tacit knowledge, among others, are indispensable development out of knowledge. Information technologies are necessary for knowledge management but should not be the basis on which processes of knowledge creation and transfer are sustained (Martín & Casadesús 1999, 11; McAdam & McCreedy 1999, 93; Sarvary 1999, 5).

Knowledge management is a broad concept, and there are different activities involved. All the activities are related to the benefit of knowledge of the organization. Among the related activities, there can be an underlining identification, creation, development, sharing, transformation, retention, renovation, diffusion and application of knowledge usage. Knowledge is principally identified in people and it is developed through learning. Effective knowledge management implies that knowledge is beyond being a human asset or the organization’s. “Knowledge management seeks to facilitate knowledge flows and sharing to enhance the productivity of individuals and hence the enterprise” (Guns & Välikangas 1998, 287).

### 2.3 Definition: Knowledge Creation

Ichijo & Nonaka (2007) identified that “knowledge creation differs from general knowledge management as it focuses on the tacit aspect of knowledge”. They defined it as “a discipline arising from the general field of knowledge management”. It also describes “the processes, tools, and techniques to provide organizations with new knowledge and to engage in a process of knowledge socialization, combination, externalization, and internationalization” (Nonaka & Ichijo 2007, 287)

Knowledge creation has been described as “a process of sharing among individuals in a narrow corporate context, and that rely concretely on individual experiences and personal relationships”. However, how relevant it is to the broad range of people as a part of the organization; the management, the employees, customers and other external partners is the issue (Krogh, V.G; Ichijo, K & Nonaka, I. 2000, 16). This knowledge can be actualized and reproduced in order to address specific tasks or issues according to Nonaka & Takeuchi point of view. (Krogh, V.G; Ichijo, K & Nonaka, I. 2000, 149)

An organization’s innovation is not only by information dispensation to solve existing problems or adapting to the changing environment. It is also to create new knowledge and information from all of the organization’s business activities in order to redefine both problems and solutions while creating an enabling work environment (Krogh, V. G. et al. 2000, 14; Daft and Weick 1984; Weick 1995). Tim Travers, (Stuhlman Management Consultants, 2008), in defining knowledge creation stated that “it is the process resulting in new knowledge, or the organizing of current knowledge in new ways making the techniques of using existing knowledge, and that once knowledge is created the organization has a knowledge flow, which is the way knowledge spreads, grows, accumulated and retrieved” for reuse. Further knowledge flows up and down from management and within circles of sharing as shared interests between staff performing similar or complementary roles. It can also be through planning, investigation, training, and through common sources such as; books, reports, database or any form of knowledge base. Pentland (1995) described knowledge creation as involved in developing new content or replacing of existing content within organization's tacit and explicit knowledge (Gupta, S. Bostrom, R. 2006. 175).

Organization’s knowledge creation should follow a continuous process approach that can support the main business processes. This can help management to have a competitive edge, win bigger market share and be able to meet the growing needs of its customers. Therefore, according to Krogh, V. G; Scharmer, C. J. et al. (2000, 37) explicit concepts have to be communicated and explained to others who do not share this concrete experiences in the organization. According to Nonaka and Takeuchi (1995) “today’s fundamental research is both knowledge creation, and applied knowledge management in companies that revolved round the interplay of tacit knowledge and explicit knowledge”. There are two dimensions of tacit knowledge, but in this research the focus will be on the two main dimensional knowledge creation theory of tacit and explicit.

## 2.4 Two Dimensional Theory of Knowledge Creation

Nonaka & Takeuchi (1995); Polanyi (1967) categorize knowledge creation under ‘tacit’ or ‘explicit’. In reality more and more researchers and consultants have given their views on the

two dimensional theory of knowledge creation. In this research the focus will be on the opinions of Michael Polanyi, Nonaka, Scharmer, etc.

#### 2.4.1 Tacit Knowledge

Michael Polanyi (1967, 4) in his opinion describes tacit knowledge as “only known by an individuals and that it is difficult to communicate to the rest of an organization”. He continued to “We know more than we can tell” and that tacit knowledge consists often of “habits and cultures that cannot be recognized easily in people”. Therefore, the knowledge management team has to create an atmosphere of trust and good working culture to ensure the willingness for knowledge transfer and sharing.

Thus, it is important to manage or transform the acquired knowledge by the organization which is later expressed in terms of explicit knowledge for the benefit of all members. It is valuable to people, places, ideas, and experiences, as well as manage or capture tacit knowledge. This could be in three approaches; interviewing experts, learning by being told and learning by observation. (Infed.org webpage: accessed on 20.6.2009)

According to Scharmer, O. (1998), (Polanyi, 1966; Nonaka & Takeuchi, 1995) mentioned that “tacit knowledge denotes knowledge which is embedded and embodied in everyday practices”. As this knowledge is in the mind of individual employees and even customers, there is the need to have a knowledge creation management system tool to help store and transform ideas usable in future as explicit knowledge, and as an organization’s future knowledge assets. As already noted there are “embodied-tacit knowledge and not-yet-embodied tacit knowledge which are based on the former or criteria of self-transcending or hierarchy of imagination” Hamel (1998). This helps the organizations to logically actualize emergent market opportunities and processes which allow them to generate in the form of know-how. The different perspectives embodied in tacit knowledge is being an action based on experience and not-yet-embodied also based on aesthetic experience (Krogh et al. 2000, 37)

#### 2.4.2 The Management Approach of Tacit Knowledge

Tacit knowledge is based on the nature of personal belief and it is difficult to presume or express it from the heads minds of individuals, but it embraces the dissemination of organizational knowledge. Therefore, its best accomplishment is by transferring the people who are termed as “carriers of knowledge” from one part of the organization to another. “Learning that leads to the creation of new knowledge occurs in an organization when the individual ‘knowledge carriers’ come together under any situation and they are encouraged to share ideas and insights”. Other researchers and consultants have suggested that the organization’s



knowledge management using this approach has to manage the individual knowledge carriers on a larger scale. More so, they should do well to identify the knowledge acquired by the individuals, and create an interactive relationship among the knowledgeable employees. This will help benefit the organization in its business operations, transfer knowledge as well as to create new knowledge. (Sanchez, Ron .2004)

#### 2.4.3 Barriers to the Sharing of Tacit Knowledge

According to Kotelnikov, Vachim (2009) knowledge organization managers could face challenges in the tacit knowledge sharing process. Examples, when the management implicit and assume the knowledge accrued are from only those with the most impressive organizational positions. When there is no reality to support employees but rather management give strong preferences for analysis over intuition, “this discourage them from offering ideas.” There are also at times forms of penalties for failure and this may even discourage experimentation. There is also the tendency to give strong preferences for a particular type of communication within working groups, and the fear of failing to express the inexpressible when trying to convert tacit knowledge into explicit knowledge. Furthermore, the “inequality in status among employees is a strong inhibitor to tacit knowledge sharing, especially when intensified by different frameworks for accessing information”. At times employees have the uneasiness expressing their emotional life experiences rather than intellectual disagreements. (Ten3 Mini Business e-coach. 2009)

#### 2.5 Explicit Knowledge

Polanyi, M. (1967) described explicit knowledge as “that which has been codified, stored and articulated in the form of manuals, documents, and procedures in a certain media”. It could be in the form of books and other electronic media for immediate or future use of an organization. Explicit knowledge is expressed, distributed and communicated for an organization’s usage and supports efficient and effective performance. Nonaka & Takeuchi (1995); Polanyi (1966) expressed that “explicit knowledge captures activities completed daily and that the data accumulated is enacted on reality based on the action of experience”. This type of knowledge requires “reflection-on-action” or “reflecting on one’s actions” (Krogh, V. G et al. 2000, 37).

Knowledge management authors such as Nonaka and Takeuchi (1995), according to Platts and Yeung (2000), explain that “explicit knowledge is seen as a management tool which is to be exploited for managing the organizational knowledge” (OR Society webpage.2000). These tools are groupware, intranets, list servers, knowledge repositories, database management and knowledge action networks that support the sharing of organizational knowledge (Swan,

J., Newell, S., Scarborough, H. and Hislop, D. (1999). The perception of managers is that these tools can help retain knowledge within the organization after employees are out of the organization. It can also encourage learning and improvement of interested communities across organization's functional boundaries. The management tools such as coordinated databases, groupware systems, intranets and internets are seen as vital knowledge management systems which help initiating and supporting discussion forums and communities of practice to express the explicit knowledge.

#### 2.5.1 The management Approach to Explicit Knowledge

Contrary to the tacit knowledge approach, the explicit knowledge approach is assumed to be as a result of the useful individual knowledge expressed in the organization and articulated and made explicitly. Also it is that which can be explained by individuals and might need the management assistance or guidance. The explicit approach is the dissemination of "knowledge assets" within an organization through documents, drawings, standard operating procedures, manuals of practice etc. The effectiveness of the approach is "when managers focus on initiating and sustaining the organizational processes of generating, articulating, categorizing, and systematically leveraging the knowledge assets".

(Sanchez, R. 2004. 6)

The objective of the tacit knowledge approach is for managers to manage the individual 'knowledge carriers', for the organization's business competences. While the explicit knowledge is for the managers to disseminate the already codified knowledge as 'asset' in the organization through knowledge management tools Sanchez, R. (2004). In whichever approach to be considered, the importance is for management to initiate and create an enabling work culture that is suitable for continuous learning which leads to the creation of new knowledge. Further, there is the need for management to build a sustainable trust in individual employees, guide them to believe in themselves and be willing to offer their knowledge acquisition for the organization's business processes and growth.

Table 1 below is the comparison basic beliefs of tacit and explicit knowledge management approaches.

Tacit Knowledge Approach	Explicit Knowledge Approach
Knowledge is personal in nature and very difficult to extract from people.	Knowledge can be articulated and codified to create explicit knowledge assets.
Knowledge must be transferred by moving people within or between organizations.	Knowledge can be disseminated (using information technologies) in the form of documents, drawings, best practices, etc
Learning must be encouraged by bringing the right people together under the right circumstances.	Learning can be designed to remedy knowledge deficiencies through structured, managed, scientific processes

Table 1: Basic beliefs of Tacit vs. Explicit knowledge

## 2.6 Advantages & Disadvantages of the Two Approaches

The management approaches of managing both tacit and explicit knowledge have advantages and disadvantages according to Sanchez, R. (2004, 10-14). One of the main advantages of the tacit knowledge approach is its easiness and inexpensive way to begin managing knowledge. The first approach is to identify each of the individual 'knowledge carriers' in the organization. This can help the managers to assign key tasks to the individuals or the composition of teams with the right sets of knowledge to accomplish their projects, research. More so, improve activity performance and help create new knowledge in the organization. This can lead to improvements in the employees' satisfaction and motivation level as their knowledge is "officially" recognized and visible in the organization. Further, this approach can help avoid some of the practical and motivational difficulties which may be encountered in trying to secure the cooperation of individuals in making their respective knowledge explicitly. Finally this approach can help prevent the organization's information leakage as compared to the explicit knowledge which increases the risk of leakage. This approach helps to protect the organization's proprietary knowledge from other competitors. (Sanchez, R. 2004, 10-11)

The tacit knowledge approach has some disadvantages and limitations, and that individuals in the organization may claim to have knowledge or been more knowledgeable than they really are which might not be true (Stein and Ridderstråle 2001). The individual knowledge may be obsolete over a period of time and may require frequent updating for better communicating among each the individual knowledge members. More so, when knowledge remains tacit and in the mind of people the only means to make it available to all parts of the organization is to be moving the people from location to another which is costly and time consuming. There can also be resistance by these individual knowledge carriers who may have the fear of family and career threats as they are made to move from one location to another. This is can cause limi-

tation to the speed at which the organization's knowledge has to be transferred and therefore the desired knowledge transfer may not take place or may occur partially. Finally, leaving the knowledge as tacit in the minds of individual knowledge carriers may create risk that the organization may lose that knowledge in case any of those carriers becomes incapacitated, leaves the organization or when they are recruited by competitors.

The explicit knowledge advantages and disadvantages is "a mirror image" to the tacit knowledge approach (Sanchez, R. 2004, 12). The suggested view is that the tacit knowledge approach is easier to start and use. It has long term limitations while the explicit knowledge approach is more challenging to start but considers having lasting benefits to the organization. In general, the approach by management to ensure its sustainability is importance.

The first advantage of the explicit knowledge approach is the possibility for its usage or dissemination through information systems in the organization. The environment that supports articulated by individuals through documents, drawing, process description or any other form of explicit knowledge asset is important. In effect its availability for the organization as knowledge assets without limitation of time or space is an advantage. When knowledge is made explicit, its codification does not become burdensome but more effective in leveraging than the tacit knowledge assets. "Codifying knowledge is an important form of categorizing and keeping the knowledge in other forms so that its important interrelationships among the different kinds of knowledge within the organization's internal set will be identified and used". The knowledge codified explicitly can be easily leveraged through information systems to the employees in the organization and to other groups of people elsewhere. (Sanchez, R. 2004, 12)

Further, this approach helps management to identify the individual capable employees who are contributing significantly to the performance and progress of the organization's knowledge source through the organization's learning processes. Moreover, the systematic articulation and codification of the knowledge base of the organization helps to make the knowledge more visible and analytical and helps to identify any deficiencies in its knowledge assets. This knowledge visibility helps give focus, structure and managed learning processes and to remove any deficiencies. Finally, the process of articulating, codifying and leveraging explicit knowledge assets through the disseminating systems helps to minimize the risk of the organization to lose vital knowledge. Despite the knowledge carriers can be unavailable or might leave the organization. (Sanchez, R. 2004, 12-13)

Despite the long term importance of this explicit knowledge approach, there are some major challenges. The first challenge identified is that these individual 'knowledge carriers' may not have the needed or sufficient knowledge articulation skill or motivation. The organizational

support for the individuals to articulate their knowledge may require significant financial resources and time consuming. One other delicate issue is the fact that there is resistance of employees to articulate their knowledge due to job insecurity or position of influence. Another challenge is when these individuals realized that the tacit knowledge is being use by the organization; their willingness is affected. Some of the employees belief that after revealing their knowledge they might be dismissed or lose the confidence of management. This fear can be overcome by creating a thoughtful organizational relationship, instituting and defining new employment norms in the form of rewards for individual learning processes and contributions to the explicit knowledge in the organization. (Sanchez, R. 2004, 14)

There is also the challenge of an organization to have an adequate evaluating principle of the individual's knowledge which has been made explicit as they may have different cultural backgrounds, and educational levels. This may reduce the sharing of ideas causing varying organizational knowledge set roles, and can also inhibits the most effective process of work execution. The best approach to deal with such issue is for managers to establish a process for evaluating individual knowledge made explicit to resolve any conflict knowledge beliefs of individual 'knowledge carriers' has it that some organizations have the belief that involving these expertise in evaluating explicit knowledge processes is time consuming, costly, and often in short supply, however, the resulting benefits may outweigh the costs involved. (Sanchez, R. 2004, 15)

According to Sanchez (2004) the most important approach overcoming the challenges of implemented knowledge, articulated as explicit knowledge which cannot be rejected or ignored is when "applied in action". The reason is that employees prefer to stay close to their organizational familiar knowledge base therefore one approach is to manage the implementation of the "best knowledge" and "best practice" procedures.

The knowledge process evaluation expert team has to examine both the theoretical knowledge and practical applications of this articulated knowledge within the organization. Define the "best knowledge" and "best practice" in applying the current available knowledge within the organization. The knowledge practices in the organization must be adopted and demonstrated as a convincing character to committee of experts about their current defined "best knowledge" and "best practice". These can lead to modification of the original knowledge and the process continuation. The knowledge team of experts has to be objective, impartial and transparent to help build confidence in the individual employees involved. Finally it is important that such explicit knowledge assets acquisition remains within the organization boundaries to avoid copying by competitors. Database security must be enforced to protect the organization's explicit knowledge data base (Ron Sanchez, 2004, 16)

The table 2 below shows the advantages and disadvantages of tacit verses explicit Knowledge management approaches.

<b>Tacit Knowledge Approach</b>	<b>Explicit Knowledge Approach</b>
<b>Advantages</b>	<b>Advantages</b>
Relatively easy and inexpensive to begin	Articulated knowledge (explicit knowledge assets) may be moved instantaneously any-time anywhere by information technologies.
Employees may respond well to recognition of the (claimed) knowledge	Codified knowledge may be proactively disseminated to people who can use specific forms of knowledge.
Likely to create interest in further knowledge management processes.	Knowledge that has been made explicit can be discussed, debated, and improved.
Important knowledge kept in tacit form may be less likely to “leak” to competitors.	Making knowledge explicit makes it possible to discover knowledge deficiencies in the organization.
<b>Disadvantages</b>	<b>Disadvantages</b>
Individuals may not have the knowledge they claim to have.	Considerable time and effort may be required to help people articulate their knowledge.
Knowledge profiles of individuals need frequent updating.	Employment relationship with key knowledge workers may have to be redefined to motivate knowledge articulation.
Ability to transfer knowledge constrained to moving people, that are costly and limits the reach and speed of knowledge dissemination within the organization.	Expert committees must be formed to evaluate explicit knowledge assets.
Organization may lose key knowledgeable people.	Application of explicit knowledge throughout organization must be assured by adoption of best practices

Table 2: Advantage & Disadvantage of Tacit vs. Explicit Knowledge Approaches

Source: Sanchez, R. 2004

## 2.7 The Differences between Tacit & Explicit Knowledge

The information above helps to deduce defined differences between the explicit and tacit knowledge. Explicit knowledge may be easily encoded or articulated, transferred or shared, communicated, documented or codified. The explicit knowledge is abstract in nature and can be expressed in an experienced capacity. This knowledge is based on the separation of the knower and the known (Krogh, V. G et al 2000, 38). This is based on the fact that when the tacit knowledge is embedded and embodied or codified from the individual carriers it is then available and applicable for use within the organization.

Tacit knowledge, however, is developed through direct experience and action, highly pragmatic and situation specific, subconsciously understandable and applicable. However, it is difficult to articulate and can mainly be shared through highly interactive conversation and shared experience. “The embodied tacit knowledge is related to the reality which is signified from within the organization and it helps the experience (knower) to produce and bring into existence the known and developed into a continuous process. In this report the effects of the tacit and explicit knowledge on the organization will also be considered. (Krogh, V. G et al 2000, 39)

Table 3 below shows the forms of the differences of tacit and explicit knowledge

Explicit Knowledge	Tacit Knowledge
Can be articulated or encoded easily	Difficult to articulate
Easily transferred or shared, communicated, documented or codified	Shared through highly interactive conversation and shared experience
Abstract and can be moved from direct experience	Developed from direct experience and action
	Highly pragmatic and situation specific
	Subconsciously understood and applied
Separation of knower and the known	Helps the knower to produce and bring the known

Table 3: The explicit and tacit knowledge differences

## 2.8 Nonaka & Takeuchi “SECI” Knowledge Spiral

Nonaka & Takeuchi (1995, 63-69) use the four modes of socialization, externalization, combination and internationalization (SECI) to discuss these two types of knowledge. Nonaka, (1994, 20-21) in his theory of organizational knowledge creation, stated “organizational knowledge is created through a continuous dialogue between tacit and explicit knowledge through four modes”. The diagram below gives a graphical representation of these four modes of knowledge creation.

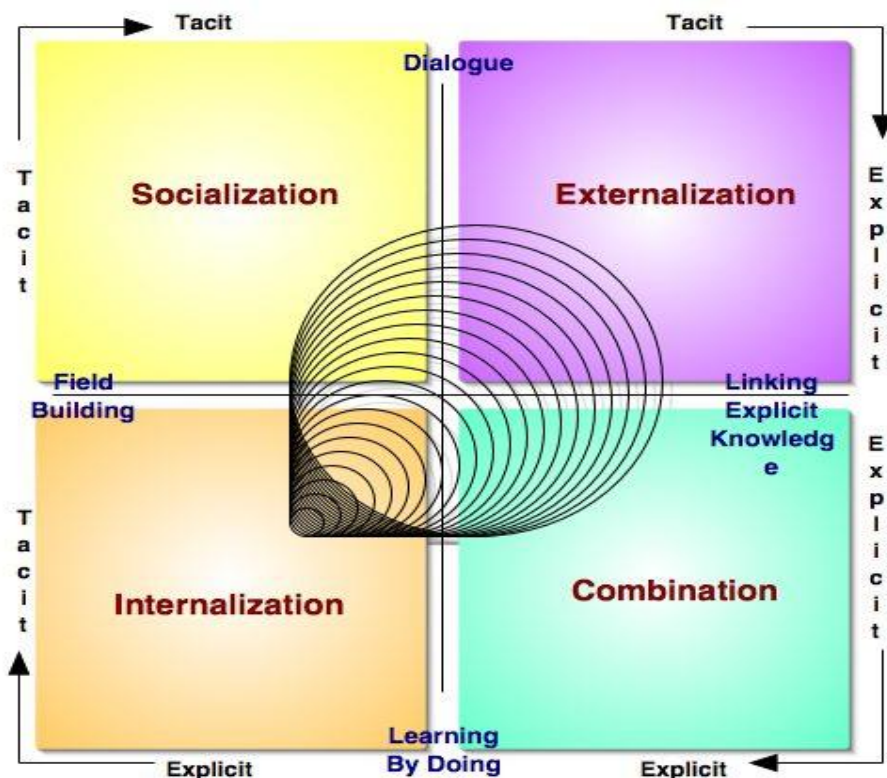


Figure 2: The knowledge spiral  
(Nonaka & Takeuchi 1995, 62)

Figure 2 above describes the four dialogue modes of ‘tacit to tacit’, ‘tacit to explicit’, ‘explicit to explicit’ and from ‘explicit to tacit knowledge’. All these four modes are essential for organization’s knowledge creation process. The four modes could further help create an understanding process of “self-transcendence”-(the desire for self improvement). This conversion transcends beyond the individual members, teams or the organization. Socialization is the first expanded key word of the SECI spiral that is explained as from ‘tacit to tacit’, the process of sharing experiences to create tacit knowledge, and understanding other ways of thinking and feeling (shared mental models) and technical skills. It creates opportunity for interaction among individuals through observations, imitation, and practice (apprenticeship). The emphasis is on the experience of the involved personalities who are made to become part of the organization. (Krogh, V. G; Nonaka, I. & Patrick, R. 2000, 90)

The other key word internalization is identified as ‘explicit to tacit’, embodying explicit knowledge into tacit knowledge and closely in relation to "learning by doing", “training and services”. This type of knowledge is verbalized or diagrammed into documents or oral stories. That is, on-the-job training, simulations or experiments are used to induce the internalization of new knowledge. The externalization in the SECI model is also identi-



fied as ‘tacit to explicit’, an essential process by articulating tacit knowledge into explicit thoughts through metaphors, analogies, concepts, hypotheses, or models and translating it to understanding to others. The combination mode involves explicit to a more complex explicit. The process of decoding is through systemizing, fragmenting and editing concepts (ideas) into knowledge or information systems through individual exchange. The other aspect of decoding combination of knowledge is through media, example documents, meetings and conversations (Nonaka and Takeuchi 1995. 8)

In general, organizational knowledge creation takes place when all these four modes of knowledge conversion form a continuous cycle generated with actions as team interactions, dialogue, metaphors, coordination, documentation, experimentation and learning by doing, etc. This is viewed in an upward spiral process from individual level to collective group level, the organizational level, as well as to the inter-organizational level (Jin, 2005, 1-2). “The process of innovation is not simply information processing, but a process to capture, create, leverage and retain knowledge” (Krogh, et al, 2000. 44). Knowledge is therefore developed in cycles between explicit and tacit knowledge in an evolving ‘knowledge spiral’ (Nonaka and Takeuchi.1995; Nonaka 1996)

#### 2.8.1 Benefits and Limitations of the Spiral

Geytere (2007) identified the benefits or strengths as well as limitations of organizational knowledge creation spiral. Example of the benefits is the appreciation of the dynamic nature of knowledge creation and the provision of a framework for the organizational management to support relevant knowledge processes. The limitations, recognized from the spiral are that Nonaka and Takeuchi (1995) based their study on Japanese organizations, which heavily rely on tacit knowledge and often permanent employees. The concept is also considered linearity that can be “jumped-steps or counter-clockwise” (Geytere, De T. 2007)

#### 2.9 Effect of the Spiral on Organizations

According to Krogh, et al (2000) “Organizations are not only undergoing rapid changes” but experiencing a “fundamental change in the rules of competition and the way it is played”. In order to manage any change “companies have to have a well defined goals and targets, and that will be the direction of the companies’ imagination hierarchy” (Scharmer, 2000). Therefore, knowledge creation should “revolve round the dialogue between the tacit and explicit knowledge” (Nonaka 1994; Nonaka and Takeuchi. 1995).

Vadim (2007) describing how to manage tacit knowledge, stated “organization’s success or failure depends on how the internal generated tacit knowledge is located, leveraged, and

blended with the available explicit knowledge". Managing this knowledge is a challenge to organizations and requires much more than having awareness of barriers. Further, development processes are required, especially during the concept generation and divergent thinking stages whereby challenging views could be addressed. This will help create varying perspectives and creativities promoted to channel intellectual conflicts into creating new ideas. The organization's form of relationships, norms, values and the standard of operating procedures are all part of the knowledge required for business operations. The tacit or implicit knowledge is far less tangible and deeply embedded into an organization's operating practices termed as "organizational culture" (Vadim Kotelnikov. 2007)

The experience stored often reaches consciousness in the form of insights, intuitions, and inspiration and that the capacity of the mind to make decision of previous collection experiences is connected as patterns from past, present and future, essential to innovation processes. "Managing tacit knowledge or the individual 'knowledge carriers' serves as a source of organization's competitive advantage" (Vadim, K. 2007)

## 2.10 The Processes of Knowledge Creation

The process of knowledge creation varies from one organization to another and knowledge management experts have to be "objective, impartial and transparent" taking the individual "knowledge carries" into consideration. Rigidity may not be in the interest of the organization, employees and willingness to share their knowledge might be inhibited. (Sanchez, R. 2004)

According to Krogh (2000, 42), Scharmer (2000) recognized the Knowledge management history as generating from three stage knowledge capturing processes focusing on the outcome of knowledge creation. How to manage the "primacy of explicit knowledge" as a stock of knowledge asset remains a question. Another is focusing on the shifted knowledge to the process of knowledge creation emphasizing on the flow of knowledge, and leverage conversion from tacit to explicit and explicit to tacit knowledge known as "primacy of tacit-embodied knowledge" (Nonaka, I. 1991. 96). The last stage focuses on the change toward the source and originating fields of knowledge creation, the need to tap into the origins of knowledge creating processes known as "primacy of self-transcending knowledge" (Nonaka and Konno, 1998. 53). The above is the 'epistemology concept' (the theory of knowledge) creating relationship between a knower of knowledge and known (Krogh, G. & Roos, J. 1995).

"Knowledge develops as it cycles between explicit and tacit forms in an evolving "knowledge spiral" (Nonaka and Takeuchi 1995; Nonaka 1996). It is important to organize composition for leading and creating of knowledge by building periodic schedules weekly, monthly, or

quarterly meetings. Project clinics and semi-annual offsite leadership workshops could also be organized. This helps to share, capture, reflect and leverage ongoing experiences throughout the organization. It can also help to create free flow conversations, interactions, and dialogues environment to support new knowledge creation process.

Nonaka and Takeuchi (1995) stated “Knowledge is a living process”. Therefore, according to Krogh, V. G. et al (2000. 3), the theory of knowledge creation is increasing important by collecting, gathering and utilizing customer knowledge (feedbacks). That helps to create new knowledge with clients. In this regard it is important the customer is seen as part of the knowledge creation process and as a key element for achieving successful innovations. Knowledge in the minds of customers should be accessed as a source to develop new product and service concept of the organization’s business process. The knowledge expert managers ought to be creative, focused and develop a knowledge base relationship with customers. “The role of management is to take the firm into a situation of creative disorder which generates new capabilities for evolution”. This means the knowledge creation process involves the clients who in a way seen as an outsider to the organization’s knowledge process (Vicari, S. and Troilo, G. 1999. 56)

The Process of knowledge creation in organization is categorized into five dimensions which are a) information and knowledge acquisition, b) networks of interaction, integration of external and internal knowledge, c) the creation of new knowledge application of information. Others are d) knowledge to problem solving, impact of new knowledge on firm innovation performance, and e) the role of specific individuals and organization factors. They reviewed that previous studies of by other researchers had limitations on the overall knowledge creation processes. They mentioned inter-organizational knowledge transfer, organizations’ knowledge flow, interplay of tacit and explicit knowledge as original study concepts. The assumption is that the environmental and organizational factors are important elements. (Soo, W.C; Devinney, M. T. and Midgley, F. D. 1999. 1)

Each of these processes is important to the organization’s knowledge creation process and the result helps to develop efficient and effective performance for future growth. The knowledge expert team should recognize the importance of the process in order to help position the organization in a competitive advantage level. According to Nonaka (1994) the “individual commitment to knowledge creation is a key to the process, and that the organization, as a whole must support this effort”

Figure 3 below was developed by the researcher depict the process of knowledge creation (Stuhlman, D. 2008).

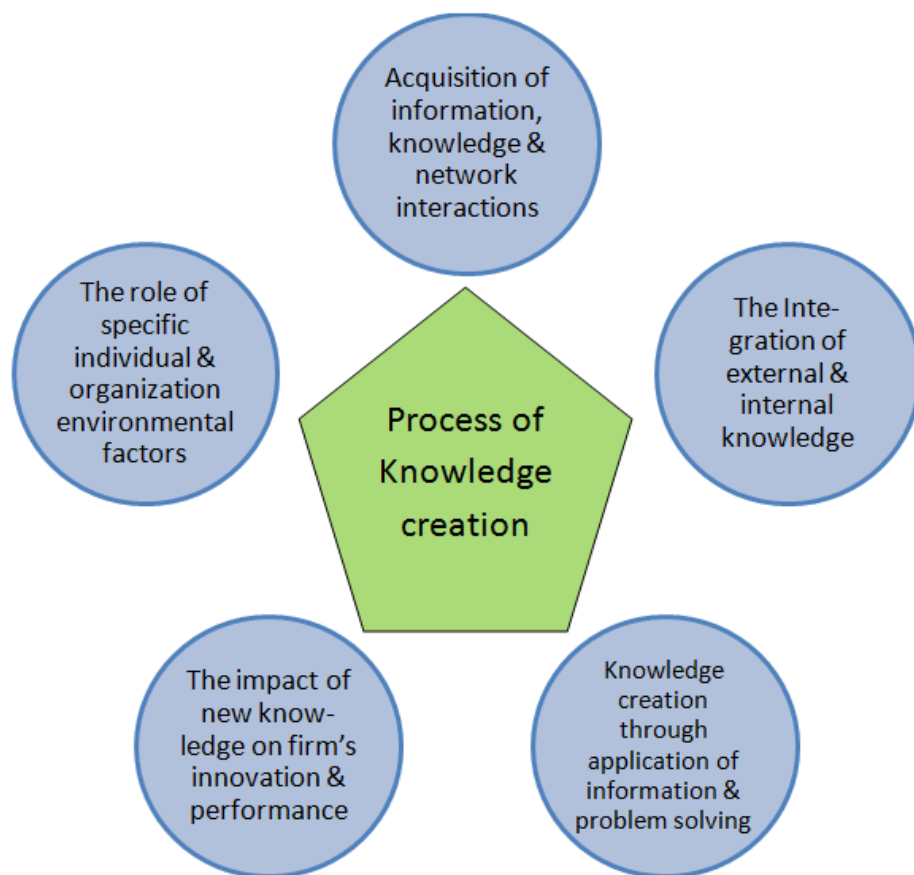


Figure 3: Showing the process of knowledge creation  
(Adopted and created: Frank N. 2009)

Another important factor of the knowledge process from observation of the researcher in the working environment is what Stuhlman (2008) described as “community of interest”. In creating, sharing or managing knowledge, the community of interest is important to be considered. Communities of interest include the people within the organization and those outside who share interests in one aspect of the organization’s business activities. Example could be visiting professionals or experts who share common interests and offer support to employees. According to Stuhlman (2008), it is important to organizations that have few people as working staff and may share the interests of the organization separate from their own professional interests. Members of the community do not have equal levels of expertise, but they are associated by the desire to share and learn from others. This helps the management to create expertise of knowledge creation for the organization’s benefit.

## 2.11 The Principles of Knowledge Creation

As described earlier in this research during the introduction of the research methodology, Tim Travers (2000) mentioned that the basic principles of knowledge methodology is based on these key question terms “what, why and how”. Therefore, the basic concept principle of

knowledge creation is that knowledge should be shared and managed to ensure efficient and effective performance while creating new knowledge in continuous flow. The principle of knowledge creation serves as opportunity catalysts of increasing the possibility of new knowledge creation. (Travers, T. 2000. 1)

“In any organization, the flow of knowledge is constantly changing” Tim Travers (2000. 1). Therefore, the role of management is to provide appropriate environment meaningful to support the knowledge creation. This organizational knowledge flow according to Nonaka (1995) in the SCEI spiral is from tacit to tacit, tacit to explicit, explicit to explicit or explicit to tacit. Travers (2000) quoted Nonaka and Takeuchi (1995, 71) by mentioning that “existing tacit knowledge is converted into new explicit knowledge, and existing explicit knowledge is converted into new tacit knowledge”. This can be identified as “organizational knowledge creation spiral developed with the concept of interaction between tacit and explicit knowledge”. Another basic principle is when the organization selects the best knowledge creation approach in order to meet any future challenges. The approach could either be by managing people as individual knowledge carriers in the form of tacit Knowledge or management initiating and sustaining the knowledge process asset in the of explicit knowledge. The knowledge asset is dynamic to enable new knowledge assets to be created from existing ones.

The “interplay of knowledge and knowledge can generate knowledge in organizations and the focus is on the ability of knowledge action, connoting action, doing and practice, rather than knowledge connoting things, elements, facts, processes and dispositions” (Jin, J. 2005). An organizational knowledge is constituted and reconstituted in practice. People engage in organizational practices, reproduce the knowledge generated in those practices and reconstitute knowledge ability over time and across contexts. The view concerning knowledge in practice suggests a mutual constitution of knowledge and practice that is depicted by “the metaphor of drawing hands” (Orlikowski 2002). Each hand will be drawing the other while being drawn to indicate that “knowledge is an ongoing social accomplishment constituted and reconstituted in everyday practice”. It also depicts the interaction of managing the individual knowledge carriers and management initiation of the existing knowledge assets in organization’s business processes (Orlikowski 2002).

## 2.12 Enabling Conditions for Organizational Knowledge Creation

The success of a company in 21<sup>st</sup> century is determined by the extent to which the members can develop their intellectual capabilities through knowledge creation. Knowledge constitutes the competitive advantage of an organization. Therefore successful knowledge creation and management requires viable conditions. (Nonaka and Ichijo. 2007, 83)

Organizational knowledge creation mentioned that “the capability of a company as a whole to create knowledge, disseminate it throughout the organization, and embody it in products, services and systems” (Nonaka & Takeuchi 1995). “Organizational knowledge creation often is through crises, forcing companies to break away from the past and moving into new and untried territories of opportunities” (Oxford University Press, 1995 3). However, to facilitate effective, efficient, and fast sharing of knowledge, companies encourage employees to be creative and support the creation of new knowledge. This is through the sharing of tacit and explicit knowledge to help create new knowledge “knowledge conversion” that ensures an organization’s competitive advantage (Oxford University Press, 1995, 5). According to Nonaka & Takeuchi (1995) the knowledge conversion process brings the knowledge of individual staff members into the organization. This is to ensure effective means to achieve the organizational vision, strategic objectives and performance expectations. The following are the enabling conditions described by Nonaka and Takeuchi, intention, autonomy, fluctuation/creative chaos, redundancy and requisite variety.

#### 2.12.1 Intention

This refers to an organization’s aspiration that leads to its objectives. This aspiration is a point of simulation of the knowledge spiral and directs to the organizational knowledge creation. The organization is to create purposeful knowledge and strengthen employees’ commitment by formulating the purpose (intention) and make proposal to them. Normally this is in the form of values and visions of the organization. There should be an acceptance and sharing of the intentions by the employees and can be achieved when the management facilitate constant dialogues and practices to spread (Nonaka & Takeuchi 1995, 74)

Knowledge is all about human actions and it depends on the outcome. Therefore, the intentions of an organization provide a standard that allows the individuals to evaluate the values of the knowledge created. New knowledge creation in an organization is justified by checking whether it follows the organizational intentions. In practicality, to achieve the intention takes the form of organizational management strategy. One of the critical aspects is to conceptualize a vision about the knowledge which is to be created (Nonaka & Takeuchi 1995, 74 and Oxford University Press, 1995, 3)

#### 2.12.2 Autonomy

According to Nonaka and Takeuchi (1995), this second aspect of enabling condition for knowledge creation is whereby all members of an organization should be allowed to act autonomously in all circumstances. This will help increase the flexibility of acquiring, relating and interpreting information. Further, it increases individual’s motivational level of knowledge

creation in the organization. Nonaka and Takeuchi (1995, 76) stated “autonomous individuals and groups in knowledge-creating organizations set their task boundaries themselves to pursue the ultimate objective expressed in the higher intention of the organization”. The general concept is ‘trust’ in the individual employees as a “key word for knowledge creation” in an organization (Oxford University Press, 1995. 4)

#### 2.12.3 Fluctuation and Creative Chaos

The third enabling condition for knowledge creation is fluctuation causes. The organization members experience an interruption of routines, habits or what is called cognitive frameworks. Having such an interruption in an individual’s comfortable state allows the questioning of their mental models and their previous way of thinking. This process requires a deep personal commitment of the involved persons in the organization. Winograd, and Flores (1986) stated that “periodic interruptions are important for the development of human perception”. This is an old presumption that intensifies organizational knowledge creation. Nonaka & Takeuchi (1995, 79) mentioned that “competitive situation fluctuation often triggered by the changes in an organization’s operating environment”.

Further, fluctuation whether economic, output or business fluctuations can trigger an organization’s state of chaos. This state of chaos induces and strengthens the commitment of the management and individual employees generated when an organization is in crises. It can also be created intentionally by proposing challenging or ambiguous objectives. This intentional chaos is referred to as “creative chaos” by researchers of the theory of organizational knowledge creation. The creative chaos focuses on the attention of the organizational members on defining the problem and resolving the crises situation. It may also be independently intuitive because individual members of the organization set challenging objectives for themselves. (Nonaka & Takeuchi 1995, 80)

Finally, these fluctuations can be beneficial if the members of the organization have the possibility to reflect upon their actions. Schön (1983. 26) stated that “When someone reflects while in action, he becomes a researcher in the practice context. He is not dependent on the categories of established theory and techniques, but constructs a new theory of the unique case”. Most importantly if the members do not have the possibility to reflect upon their actions, fluctuation can lead to destructive chaos (Nonaka & Takeuchi 1995)

#### 2.12.4 Redundancy

Redundancy is the fourth enabling condition for organizational knowledge creation and is a theory of how employees receive information beyond their immediate operational require-

ments. The information received is business activities, management responsibilities, and the organization in general even though such information may not immediately be needed to perform any task. The sharing of redundant information promotes the sharing of tacit knowledge, as the individuals view what others are trying to articulate and accelerate the organization's knowledge creation. When these individuals possess redundant information, they are also in a better position to understand their role in the organization and help them to control their own directions of thinking and action. It also increases the visibility between an organization's own units which provides self-control mechanism that controls the directions of knowledge creation. However, redundancy of information can also lead to the problem of overload information, and increase cost of knowledge creation in the short-term as the organization's operational efficiency may decrease. (Nonaka & Takeuchi 1995. 82)

#### 2.12.5 Requisite Variety

This enabling condition of organizational knowledge creation is the fifth dimension. This is based on the term 'variety' introduced by Ashby, R. W. in 1956. This theory indicates how organization's internal diversity must match the variety and complexity of its environment. By changing an organizational structure frequently or rotating personnel among different units can help maintain their internal diversity. At the individual level, employees should be assured of access to the broadest variety of the necessary information available (Numagami, Ohta & Nonaka 1989). Information differentials between the individual members in an organization may disable them to interact on equal terms, which might as well hinder the emergence of alternative interpretations of new information (Nonaka & Takeuchi 1995)

There is another concept that resembles the elements of requisite variety and that is creative fusion. It is familiar that the sources of different expertise are separated functionally, physically, geographically, and cognitively in an organization. This could be harmful for knowledge creation as diverse perspectives are essential for creativity because diversity perspectives generate creative abrasion. This means that intellectual disagreements allow groups to identify basic assumptions. The creative fusion occurs when the mental worlds of different individuals join together to create new concepts. When groups of individuals work together for a longer time they become efficient in their operational tasks likely for increment. But simultaneously, their mental models become more and more similar, which likely decreases creative fusion. Ichijo & Nonaka (2007, 57, 279)



Table 4 below shows a summary of an organisations knowledge creating conditions.

Intention	Shows how an organization's must have a clear direction for the future. Expressed the vision, long-term objectives, critical principles & performance expectations.
Autonomy	Embracing individual members freedom to act, make decisions and have influence on the organization. To help lead the organization into a new territory or future
Fluctuation & Creative Chaos	Knowledge creation thrives in times of crises and this is either that which is created within the operating environment or a crises generated by organizational intent
Redundancy	This shows the intentional overlapping of information about business activities, management responsibilities and the organization as a whole. "There are no secrets".
Requisite variety	This shows that "diversity enhances knowledge creation" and organization's internal diversity will match the complexity of the environment.

Table 4: Organization's enabling conditions for knowledge creation

Source: Nonaka & Takeuchi 1995

### 2.13 Defining the Knowledge-Intensive Organizations

The background to these knowledge-intensive organizations according to Alvesson, Mats (1995) was in recognition late 1980's in both practical and academic circles in Sweden and other parts of the world. Mats, Seabee and Riesling (1986), regarded all companies sophisticated in their operations as knowledge-intensive organizations. But Gambeson, Edberg (1990), and Starbuck (199. 29) characterized knowledge-intensive organizations from the following factors a) significant incidents of problems solving and non-standardized production b)creativity on the part of the practitioner and the organizational environment c) heavy reliance on individuals and high degree of independence on the part of practitioners d) high educational levels and a high degree of professionalization on the part of most employees e) traditional concrete (material) assets not a central factor as the critical elements are in the minds of employees. There are also networks of a) customer relationship, manuals and systems for supplying services and b) heavy dependence on the loyalty of key personnel as considerable vulnerability when personnel leave the company. Alvesson (1995) is of the view that the factors are much of labor-intensive or capital-intensive organizations but the main dominant factor is the human capital. (Alvesson, M. 1995, 6)

According to Alvesson, Mats (1995, 7), mentioned that there is distinct variation of organizations category and operations. Eskstedt (1990) stated in “pure knowledge companies and high technology companies, personnel with high degree of competence and experience are the central factors”. In high technology companies, knowledge and innovation are embedded in products and technology that transmit and incorporate the knowledge. But in the ‘pure’ knowledge organizations, the individual employees are the primary source of the knowledge in whichever way it is collected, centralized, or localized.

(Alvesson, M. 1995)

The recent trend of business emphasizes on competitiveness, bigger market share, customer satisfaction etc. The impression is that every company desires to be seen as a knowledge-intensive company. Alvesson (1995, 7), describes “knowledge-intensive as a term that sounds good rather than its satisfactory important phenomena and that fact is due probably as the important reason for the success of the concept of knowledge-intensive organization at least in Scandinavia countries rather than its descriptive value”. “Knowledge workers are understood to be highly qualified individuals who belong to, or form core component of a group of professional and managerial employees”. The difficult understanding is to label companies that applies relatively standardized methods based on “science and proven experience” as knowledge-intensive organizations (C.F. Mintzberg’s professional bureaucracy). This is because they are not concerned with creative solving-problems.

Alvesson, M. (1995, 8) defines knowledge-intensive organizations as “all firms based on some sort of knowledge”. The knowledge-intensive organizations are primarily related to individuals who are experienced, skilled with the right expertise and are associated with organizations routine business activities. Therefore, there is no specific definition of knowledge-intensive organization. The Centre for Research on Innovation and Competition (CRIC) identifies that the knowledge-intensive organizations rely on professional knowledge and supply of service products, which primarily as information and knowledge resources for clients. Examples are measurements, reports, training, and consultancy and may generate knowledge, or translate knowledge resources from other sources. (Cric webpage: accessed on 13.6.2009)

Another view is that knowledge-intensive organizations are reflection of the knowledge society and that they represent the rise of knowledge and the growing importance of service sectors. (Vuori, K. E. 2007).

#### 2.13.1 Knowledge-intensive organizations’ working culture

Defining culture Stuhlman, D. (2008) stated that “it is a combination of organizational history, shared experiences, group expectations, unwritten or tacit rules, ethics, and social interac-

tions and that it affects the behavior of everyone in the organization". Culture is developed within an organization through the organizational rules and statements from upper management level and is based on shared experience. It is viewed as complex social structure which sometimes evolves slowly on worker actions and change is enacted by management. There are many cultures such as families, localities, religious groups, nations, and organizations and one culture may permit an action, while another forbids it.

Culture can be defined as "commonly held beliefs, attitudes and values", known as "institute of personnel development" (Skyrme, J. D. 2002). Geert Hofstede (1991) in his model on culture and organizations describes culture as "the collective programming of the mind that distinguished one group from another". In many other ways "culture embraces rituals, artifacts and other paraphernalia of the work environment of the organization". The simple but effective definition which can be applied to the organization is "the way we do things around here" (Skyrme, J. D. 2002). This means that organizational working culture is not static but something that is defined by each organization on the bases of the business environment. It may be a result of a particular field of work and difference in working culture. The geographical location or environment of the organization has a role to play on work culture. (Skyrme, J. D. 2002)

The organizations' culture can be consciously changed when a new rule is set from executive or management level. There could be a change due to external stimuli or factors (for example a new law or government regulation that affects business practices). The challenge is that culture can caused hindrance to sharing of knowledge, therefore, actions are to be taking to ensure an atmosphere that will reduce the barriers to give a more supportive and collaborative approach to sharing and creating of new knowledge. The enabling conditions for organizational knowledge creation are therefore valuable to the knowledge management experts in the organization. Organization's culture is concurrently with structure (roles and responsibilities) at every level within the organization. There must be congruence between objectives, structures, processes, the people and supporting infrastructure which revolves around the knowledge management approach. The organization's work culture can further be defined as "the specific collection of values and norms that are shared by people and groups in an organization and that control the way they interact with each other internally and with stakeholders outside the organization". (Stuhlman, 2008)

The management of the knowledge-intensive organizations encourages the individual "knowledge carriers" to help establish a knowledge assets base and to create a needed interactive atmosphere internally and externally. There should be an enabling working trust for each individual employee in the organization. According to Etienne, W. (2004) knowledge from any field is too complex for any individual to access, therefore the need to interact with colleagues as a benefit from stimulation and thus creates a community of practice.

## 2.14 Facilitating Knowledge Creation

Facilitating knowledge creation is part of organizations' knowledge management strategies, and the use of information technology system tools that supports the knowledge creating process. Etienne (2004) describes the knowledge creations strategy by using what he termed "Doughnut model" in relation to community of practices. There is also the use of information communication technology tools to support the knowledge creation.

Reymann (2008, 63) explains the 'doughnut model' as "organization's created research communities cover its internal and external capabilities". The functioning communities of practice are seen as "social fabrics of knowledge". The communities of practice support the knowledge creation process to its advance level and help create an understanding to the world in its suitability. The community represent the basis of organization's knowledge management and therefore important to understand the knowledge advancing process of these communities in order to support and facilitate the effectiveness of knowledge creation. (Etienne, W. 2004.1).

Etienne, W. (2004. 2) argues that knowledge management can be seen as a 'doughnut' and that knowledge is primarily the business of the practitioners (daily knowledge users). He continues to suggest that to be able to manage knowledge there is the need for proper organizational planning. Suitable approach should be adopted to help coordinate the management of knowledge and integrate it into business processes and example is technology to support information flow. Others are interpersonal connection, and documentation repositories, as well as institutional and cultural norms of paying attention to the knowledge.

The "doughnut model" is knowledge creation strategy concept that helps to create enabling conditions of the organizational knowledge creation. Etienne (2004) suggests that, the challenge of the community of practice is to create environment that is conducive and enabling for practitioners acting as knowledge managers. There should be dialogues among executives in the organization, other communities of practice, and experts outside the organization to help manage the knowledge created. This can also be in the form of networking and partnership collaborations as one part of knowledge sharing, creating, managing strategies. He uses three elements 'domain', 'community' and 'practice' to define and connect this community of practice and knowledge strategy. He stated that "the combination of these three elements is what enables a community of practice to manage knowledge".

#### 2.14.1 Domain

This is the first element according to Etienne (2004) is the area of knowledge that creates relationship between the community and network partners. It helps to identify, streamline, and define the key factors that members need to consider and address. This type of network does not help identify and solve problems of individuals or team only, but in a wider perspective of knowledge that needs to be explored, shared, developed and managed. (Reymann, D. 2008. 63)

#### 2.14.2 Community

The community is defines as the group of people for whom the domain describes. The relationship among the individual members is relevant and of value because it defines the boundary between the internal and external environment of the community. A community of practice is not only a website or a library but involves people who interact and develop relationships that enable problem to be solved as well as sharing of knowledge. (Reymann, D. 2008. 63)

#### 2.14.3 Practice

This is the last dimension which Etienne (2004) defines as “the body of knowledge experts in the community or in organization, the methods, tools, stories, cases and documents, which individual members share and develop together”. This aspect brings together all involved members who accumulate practical knowledge in their field of work and the difference is the ability to act individually and collectively. (Reymann, D. 2008. 63)

The three elements are connecting the community of practice and organizations' knowledge strategy. The domain defining the knowledge that brings the community and partners together; the community defining the relationship between the partner networks developing interactions in solving problems and the practice which identifies the knowledge experts and methodology in the environment for problem solving are interconnected. These inter-related three elements for knowledge management strategy leads to the sharing, creating and managing organizational knowledge. Figure 4 below was adopted and created from Etienne's concept by this researcher to express the relationship or connectivity of the communities of practices and organization's knowledge strategy.

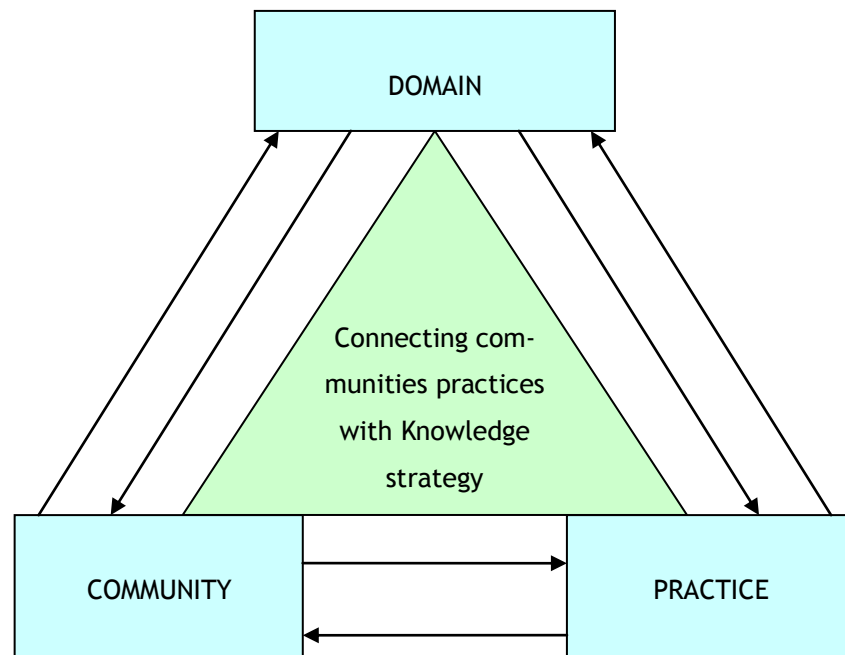


Figure 4: Connecting the three elements & (KS)  
(Adopted & created by Frank, N. 2009)

According to Ettiene (2004) “there is the need to have in place processes in order to coordinate the management of knowledge and integrate it into the business processes”. The technology for information flows, interpersonal connectors, and document repositories, as well as institutional and organization culture norms create members attention to knowledge being created. These processes are good enablers but practitioners (knowledge expertise) should be involved in managing organizational knowledge assets. These practitioners are people who use knowledge in daily activities and are in the best position to help manage the knowledge. But then Wenger, put it as that “The knowledge of practitioners is not merely the knowledge of the individuals”. Therefore, there is the need for interaction of individual knowledge “carries” to build a simulation to solve complexity of knowledge and thereby developed the concept of community of practice. (Reymann, D. 2008. 63)

Reymann (2008, 45) mentioned that Laurea University of Applied Sciences has developed a conceptual idea known as “Laurea Village” based on the LbD (2001) concept which was to begin in summer 2009. She stated “this is a platform of community of networked expertise”. In brief this community of networked expertise is focused on community thinking and the optimization of services for research work, education and integration of foreign students and researchers. The “Laurea Village” concept is also based on learning by doing which in essence is related to learning and work life. The effect of this concept is sharing, creating and managing knowledge.

Figure 5 below describes how Etienne (2004) relates knowledge management as a “doughnut”. He suggested that, knowledge management is a strategic activity and it starts with strategy and ends with strategy and connects this strategy to performance through knowledge. Moreover, the doughnut model should not be seen as a chronological sequence of steps. The development of communities of practice is a bottom-up process as well as a top-down process. In brief, this model can also be used to explain the enabling structure in which an organization can manage its created knowledge

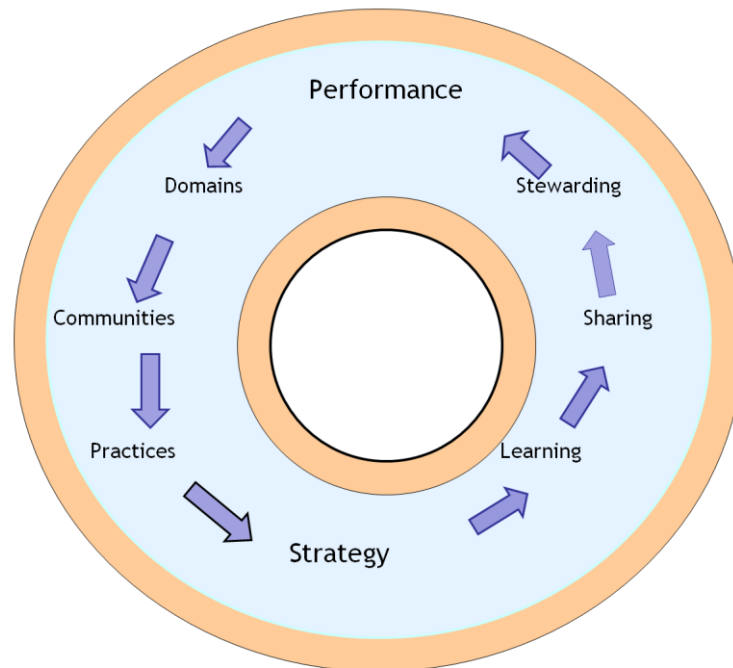


Figure 5: Doughnut model of knowledge management

Source: Etienne, W. 2004, knowledge management strategy as a “doughnut”

#### 2.14.3.1 Strategy to Performance

According to Etienne (2004. 2), the knowledge management process begins with a strategy defining organizations' objective needed to be achieve and the steps to be taken. The practice is to engage experts in the field of work in support of business processes. Such an action helps in the creating of new knowledge domains as network, education, cooperation, and collaboration. It is suggested that management and members should support the knowledge creating team in order to create enabling work environment for the strategic knowledge creation and management.

#### 2.14.3.2 Performance to Strategy

This concerns the cooperation and collaboration of the community of expertise or practitioners in support of continuous learning, development of skills, and sharing of ideas in solving problems with the knowledge creation team. The communities of expertise use their knowledge to help the sharing of knowledge to bring a positive impact on the organization's business processes. The important aspect is members themselves been charge of managing their knowledge with support from management and practitioners. Organizations' management has to recognize the achievements of the research team including partners to enable the translation of their individual knowledge to be extended into use by the network of experts (Etienne, W. 2004; Reymann, D. 2008. 2, 64)

"If the members are actually in charge of the knowledge production and management, they are able to understand the strategic value of knowledge" Reymann, D. 2008. 65). In addition, close contacts to clients or practitioners from working life provides employees and management a unique perspective about the future development of new business opportunities. It is therefore "important to practice a two-way strategic conversation between an organization and its partner community of practices". The system should be interactive to provide integration, management support, and the enabling working environment. In so doing, sharing, creating, and managing knowledge for problem solving, and, developing of organization's business processes in the future becomes effective (Etienne, W. 2004

#### 2.15 Information Technology for Knowledge Creation

Information technology is the field of computer systems which also is in the form of information system (IS). This could be system people, data records and activities that help data and information processing in an organization. It includes the organization's manual and automated processes. In essence, the term information system (or computer-based information system), refers to specific application software which is used for storing data records in a computer system and automating information-processing activities of an organization. (Wikipedia, 2009)

According to Nonaka & Ichijo (2007, 97) "information technology (IT) is perhaps the single most important intervention in managing knowledge, from both the individual and organizational levels over the past decades". Davenport, T. H. (1997), mentioned that "with the advent of IT systems, knowledge workers can now create, share, and use information and knowledge almost everywhere and at any point in time. It is beneficial to the organization as it helps with the ability of reusing stored knowledge, to locate, access, and exports stored knowledge". In recent times there has been a new dimension of IT known as information



communication technology (ICT) which in effect is used to support an organization's communication and knowledge exchange. This is a community framework to facilitate collaboration in knowledge building or creation. The new interface of these ICT platforms really supports learning, socializing, communication, researches etc. "This ICT learning environment is not a centralized and enterprise-wide platform but consisting of simple personal and team publishing tools, such as blogs, forums, and wikis" (Reymann, D. 2008, 66)

There is also "social software which is used to support the conversational interaction between individuals and groups" (Reymann, D. 2008, 66). This software is a network for productive conversations, such as instant messaging and collaborative team spaces. Others are virtual knowledge fairs, large scale video chats, digital suggestions and simulation in this practical world. This will help with the improvement of communication, interaction, innovation and connectivity of members in an organization. Most importantly these software tools or social nets support organizational knowledge creation and management. Nonaka & Ichijo (1997, 98) stated that "today many knowledge management applications contain data and information and the emphases is on providing tools that enables 'one-stop shopping' for all forms of knowledge context by the user".

In application of IT or ICT tools, it is appropriate knowledge workers having different types of jobs or tasks not to use the same technologies for all knowledge management environments. The different interface working or interactive tools "should be seen continuously reproduced and transformed in the ongoing processes of interaction" in organizations. "These system or software tools are supporting innovation" and knowledge creation, in the final analysis effective and efficient performance of the organizations. (Esko Kilpi 2007)

Figure 6 below shows the pictorial form of the different software interfaces modes within the years in chronological order.

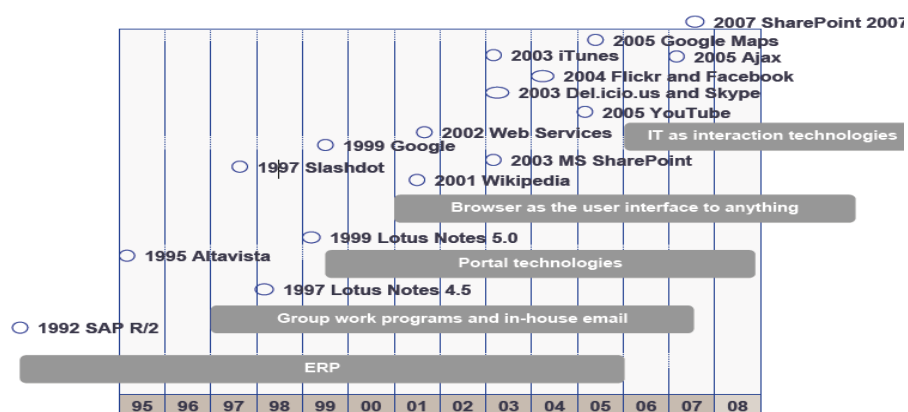


Figure 6: Kilpi, E. (2007) interactive software modes

Despite the benefits of these ICT systems, the challenge is not to assume that they have or will always enhance knowledge workers productivity or effectiveness. Another challenge is that it is assumed most organizations do not perform tasks by measuring and managing the benefits of knowledge management, one reason why this concept has not been effective (Nonaka & Ichijo 2007, 97).

## 2.16 Theoretical Framework of Project

A framework is simply the structure or form of an idea or a concept and how it is structured, whilst a theoretical framework is a composition or collection of interrelated concepts interrelating theories involved in a particular research. It is a guide to the researcher in determining what needs to be measured, and what statistical relationships might be helpful to the research. In other words, a theoretical framework creates a sense of logical reasoning to the reader concerning the relationships of the variables and factors that have been deemed relevant to the problem. It provides definite relationships between all the variables so that the reader can understand the theorized relationships between them.

(Analytic tech webpage: accessed on 30.6.2009)

Therefore, figure 7 below shows the framework structure of the theoretical background of this project.

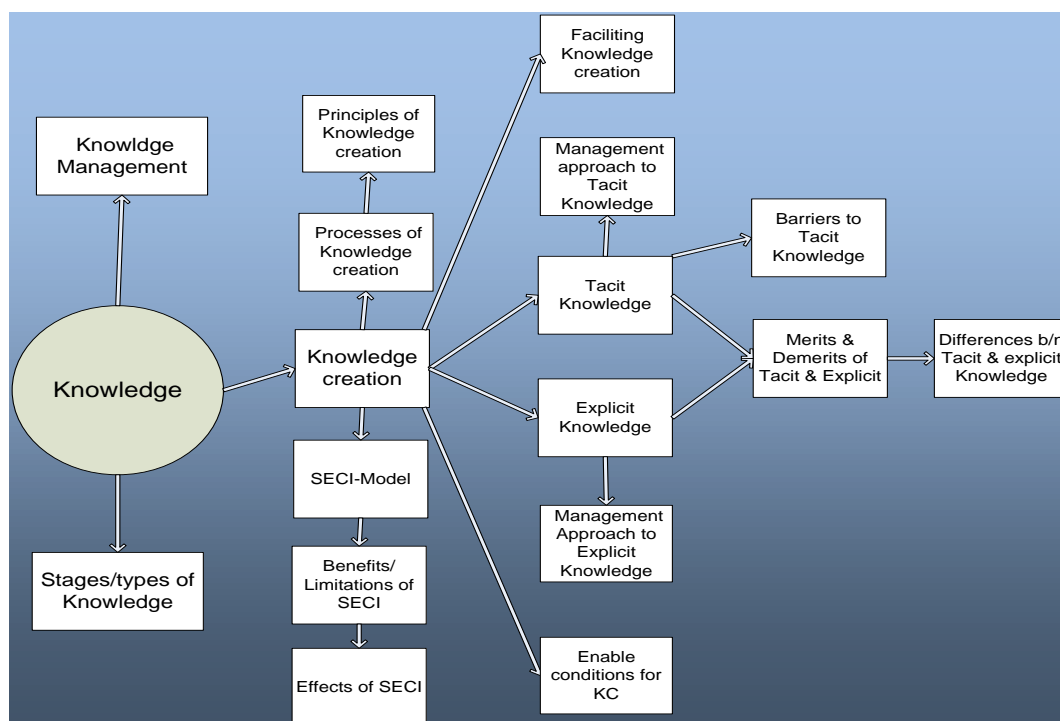


Figure 7: Theoretical framework

### 3 The Case Company

This section in brief describes Laurea University of Applied Sciences, the institute which established this environment SIDLabs (Service Innovation & Design Labs, 2007). Furthermore, since this research and development (R&D) project is based mainly on the SIDLabs, the background to the establishment will be considered. In addition the Labs knowledge management strategies comprising of the knowledge creation process, the management approach to knowledge creation, the supporting work environment, the prospect of knowledge creation, as well as the basis for the prospect will also be considered.

#### 3.1 Introducing Laurea University of Applied Sciences

Laurea University of Applied Sciences is a higher educational institution located in the Helsinki metropolis, the heart of Finland's business and cultural life. Helsinki is identified as having 20 percent of the total Finnish populace of 5.2 million. This institution has an advantage of being situated in the Finnish capital and focuses on Research and development orientation, service innovations. In 2007, the institute introduced a pedagogical innovation strategy, learning by developing (LbD) model which was conceptualized in (2001). This model is aimed at producing new practices and creating a progressive collaboration among lecturers, students and various experts from the field of work. It is also an operating model that supports project development for working life, problem solving or innovative-based starting point. The model further serves as a tool for integrating three main areas of education, R&D strategy (2004) and regional development strategy (2005) (Laurea webpage 2009)

Laurea University enriches itself in the area of international networks (e.g. living lab network. 2006). The school is also supporting the promoting of internationalization of the broader metropolitan community of Finland. They also focus on strategic pedagogical approaches such as (learning and knowledge), regional development (applied research and development work) and research and development (economic and social welfare in the European Union and Finland). These are elements in the LbD which also focuses on helping to meet challenges of the ever increasing globalization economy. The rapid development in information and communication technology increase in competition and customer demands for products and services are also important factor for this institution.

Operating as part of an International Service Design Network and also as a member of other partner networks, the institution saw the need to emphasize on the multidisciplinary nature of service innovation and design issues. "Research and development of new innovations and services is becoming increasingly important for industrialized economies to maintain their knowledge on a high standard. People should be creative with knowledge, have networked

competences base on social capabilities which will bring about a collaborative work for knowledge sharing” (Sitra. 2005, 54)

The Institute therefore, began the establishment of the SIDLabs (Service Innovation and Design in, 2007) labs which has been increased to current size of eight. The following are the current Labs in operation BarLaurea, BEC, International, Neon, Networks, RedLabs, Security, T-Lab and Balance Labs. (Laurea brochure. Service innovation and design, harvest. 2007.4)

As any other institution of applied sciences in Finland, Laurea is currently spread across seven units in the Helsinki metropolitan area. It is the fourth largest University of Applied Sciences with approximately 500 personnel and 8000 students respectively. Figure 8 below shows the current seven locations of Laurea within the Helsinki metropolitan region. These units are indicated with the red spots indicating the locations as well; Hyvinkää, Kerava, Tikkurila, Porvoo, Leppävaara, Lohja and finally Otaniemi. The green lines indicate the train links to these Units (Laurea webpage. 3.6.2009).



Figure 8: The Units of Laurea UAS  
(Laurea webpage 2009)

The basic organizational structure of Laurea can be seen from figure 9 below. Laurea University of Applied Sciences operates as a limited liability company (Laurea-ammattikorkeakoulu Oy) and has shareholders. The board of directors constitutes the chairman, presidential official, members and the company secretary. There is also the institution board of Laurea which constitutes the chairman, president, secretary, members i.e. management team, lecturers, staff, students & business life deputy (laurea webpage, 2009)

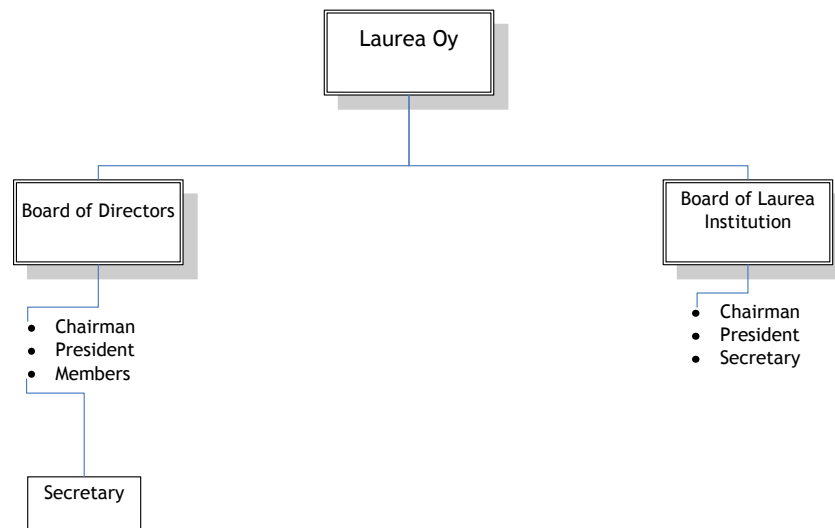


Figure 9: Basic Laurea organizational structure  
(Adopted and created by the Frank, N. 2009)

Laurea institute concentrates on producing new competences in the field of service innovation and also focusing on providing highly profession oriented education, research and regional development. The professional competences of research and development necessitated by the pedagogical innovation, learning by developing (LbD 2007) model serves as strategic collaborative tools of learning and practices, research and development (2004). The institutions profile is, particularly focused on regional development influence, R&D which is linked to cluster of development, network and business competence. This is related to operating models, the welfare sector and welfare entrepreneurship of the metropolitan region. Laurea, eventually, is to be part of the regional vision of the Uusimaa area, as the most competitive, safe and welcoming metropolitan area in northern Europe as part of its vision in 2015 (Laurea webpage 2009)

On the basis of international relations, Laurea enriches itself in the areas of operation with international networks, R&D programmes, expertise, and helping in promoting the internationalization of the broader metropolitan area. The institution strengthens and supports the innovation capacity of its region and creates favorable conditions for the birth of innovation. Further, Laurea is involved in three basic opportunities given to applied sciences institutions in Finland as pedagogy, regional development and research, to help create an integration of lecturers, students and other working staff. (Laurea webpage 2009)

Laurea has three defined strategies developed from its field of competencies as mentioned above. These are pedagogical strategy (2007), which has its development stage since 2000, regional development (2005) and research and development (2004). The strategic concept of Laurea's shared values, as defined in the year 2000, focuses on students and customers, communality, openness and a spirit of togetherness, reliability, social responsibility, innovation.

The strategic implementation plans were gathered for Laurea's main strategies for the years 2005-2006 and 2007-2009) which is the concept base for the establishment of Laure SIDLabs (Laurea webpage, 2009)

### 3.2 Description of Laurea SIDLabs

Laurea SIDLabs was founded in November 2007 by the management of Laurea University of Applied Sciences based on the LbD (2007) and R&D (2004) concepts. Two main characters behind the establishment are Fränti Marrit director, (Natural Sciences, Business Administration, & Hospitality Management, Laurea) and Rauno Pirinen also (Laurea Leppävaara, 2009). The RedLabs and Business Labs (BEC) was the initial environment and it was 'student-centric' approach (i.e. students' involvement) in the establishment. However, with the management support this environment has seen a unique growth from the two Labs to the current number of eight environments. The Labs operate in the area of research and development represent various fields of discipline such as business management, hospitality and service management, security management, information technology.

#### 3.2.1 Interviews and Observations

The general information of the Labs was scanty for this research therefore, research interviews were conducted. The interviews were arranged between the researcher and the following coordinators and facilitators of the Labs (Denise Reymann, Rod Moonen, Elisa Leinonen and Paresh Rathod). The interviews and personal observations as an intern in the SIDLabs-international environment and other information materials helped the researcher with needed information of the environment.

As has been indicated earlier realizing the serving importance of these Labs to students, teachers and management, the Labs were expanded to the current eight Labs. The main vision was to "integrate the R&D concept with the aim of advancing corporately knowledge, and learning environment". The Labs offer the space and a platform of communicating and networking with companies (e.g. SMEs), Higher Educational Institutions (HEI), students and the public based on the field of competences. These Labs under the auspices of Laurea University of Applied Sciences, Leppävaara Unit, offer services under the following fields Hospitality Management, Security Management, Information Communication Technology (ICT), Business Management (Interview: Moonen, R. 2009)

The Labs is considered as a "happy place, where people enjoy themselves participating in challenging research projects aiming to advance knowledge for their societal and economical environment". It is also considered as an environment that "brings visions and ideas to life in collaboration with education, research and businesses creating great minds which are capable

to contribute in the future Finnish knowledge society” (Interview: Reymann, D. 2009). These development environments can also be based on networked expertise explained by Denise (2008, 15) as she quoted (Hakkarainen, 2004, 79). This networked relationship which is among the communities of practices is shown in figure 10 below.

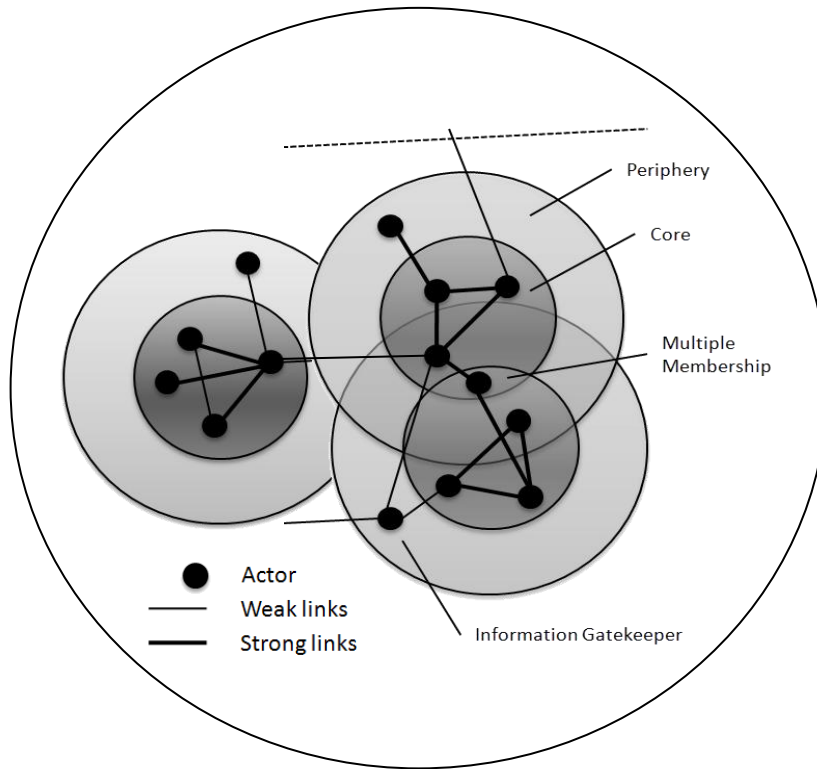


Figure 10: SID-Labs based on networked expertise  
(Source: Reymann, D. 2008, 15)

According to Reymann (2008, 15-16) the networked expertise is interlinked of weak and strong ties of networked relationships between communities of practices. This is characterised by trusted relationships between members by the weak and strong links. The strong linkage is when people working together in an organization have the intense knowledge of others. More so, those with distance interchange know-how have the weak linkage. She indicated from Granovetter, (1973, 1361), that several communities of practices are connected to a social network. Hansen (1999) also mentioned that strong relations between trusted people ensure an efficient knowledge exchange and creation. Denise quoted Granovetter (1973, 1360) who mentioned that “the weak ties comes as a result of new information between disconnected groups of people, as they are likely to search for information and knowledge outside their existing contacts”.

In brief this community of practices is how networked relationship could support the knowledge exchange, as it forms one of the main cores of Laurea and the SIDLabs business agenda. Examples are by linking learning to work life, creating networks with other knowledge experts in the field of work, and other higher institutions. The researcher recommends interested individuals, groups, to read more from Denise (2008) diploma thesis to get a detailed understanding of the community of practices. The Labs coordinators are considered to be operating as information gatekeepers. These gatekeepers know how to find information relevant for problem solving and also serving as mediators among interns, teachers, and other networked partners. They are intended to search for contacts of other networks and provide a new social platform (networks) to the various SIDLabs environments. “This helps people to interchange crucial information” (Reymann, D. 2008, 16)

In reference to Barzilai-Nahon (2005, 8), Denise explained that knowledge brokerage are into three distinguished approaches; (a) networking brokerage which connects separated people, (b) knowledge-oriented brokerage which is the translation of theoretical knowledge for increase in understanding , and (c) knowledge brokerage of new organizational technological concepts. The information gatekeepers (e.g. SIDLabs coordinators) help to provide the communicative linkages to members (e.g. interns, teacher supervisors etc). The interaction and information exchange between the core group (e.g. interns working on projects) and the peripheries (e.g. project supervisors, field experts, etc) is of importance to the environment’s network, business processes and new knowledge creation (Reymann, D. 2008, 15).

### 3.2.2 Current Network and Target Groups

The SIDLabs coordinators and other supporting people are making the effort to help create a communication platform to ensure the daily work environment creates a linkage between researchers and other interested project groups. Students are connected to the Labs through their course study, projects, and final thesis and “they are seen as equal partners in the knowledge creation process with guidance by mentors” (Interview: Reymann, D. and Moonen, R. 2009). Currently, there are 70 interns and other members working on various projects and researches in this environment. The current target or network groups are shown in figure 11 below which include companies (e.g. SMEs), students and other higher educational institutions (HEI).



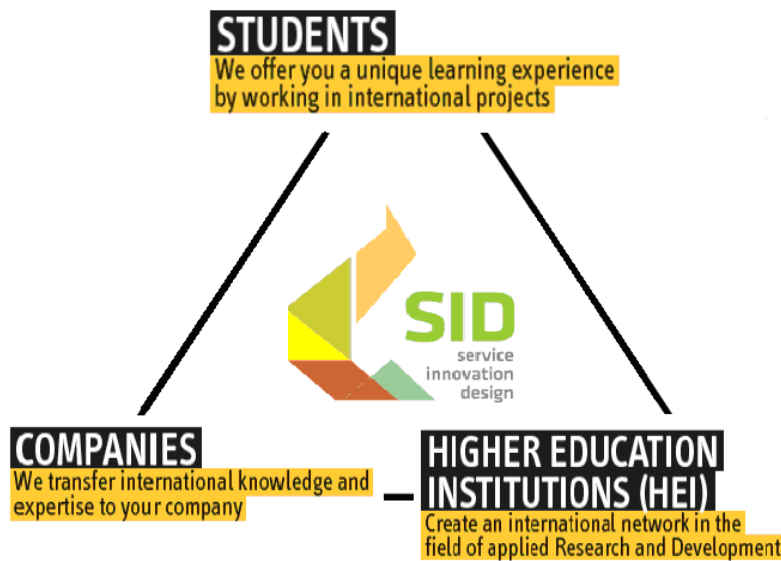


Figure 11: Current SIDLabs Network, partners and service offer

The SIDLabs are offering services which range among the following a) transfer of knowledge and expertise to companies (SMEs), b) offering of a unique learning experience environment for students and c) also the aim of creating a network in the field of research and development (R&D) for partner institutions. The Labs business offerings are for both the Finnish community and international dimension. The general activities of the Laurea SID Labs include the following;

- Generating applied research and services for working life partners
- Spreading ideas and solutions internally and externally
- Communication and network platform for companies, researchers, lecturers and students
- Offering a culture of community thinking, partnerships, trust, support and mutual cohesion
- Authentic projects for completing practical work placement, thesis work or experience real research work
- Enabling regional development & knowledge transfer through international/national researchers
- Distributed guidance and mentoring
- Nurture of networks in the form of relationship management which is ongoing

(Interview: Reymann, D. 2009)

The SIDLabs have undertaken some major projects, and currently there are ongoing projects which range from various fields such as security, hospitality and services, business management, information technology among others. The researchers include students (interns) from other partner universities from both Finland and abroad. There are lecturers and experts from the field of work as knowledge practitioners and acting as mentors. They are involved in R&D research projects and offer guidance to the interns. There are interns who are working part time and working full time and the average working period is between 3 to 6 months. The interns undertake development projects for working life while implementing their own innovative and creative ideas. The Labs operate also as business-to-business (B2B), and business-to-customers (B2C) environment. Example of the B2B operation is that they undertake R&D projects for other institutions and companies and with the B2C is whereby individual members such students and teachers are offered the opportunity to undertake their research projects (Interview: Elisa Leinonen, Denise Reymann and Rob Moonen 2009)

### 3.3 SIDLabs Knowledge Management Strategy

The SIDLabs management strategy begins with recruitment procedure/process. The coordinators have been given free role for hiring the appropriate people for the appropriate projects. Two main focus groups considered a) the people with knowledge sharing capabilities b) those academically and R&D oriented. Currently there is online application process giving the recruitment team the basis to employ young, energetic and intelligent students. The interns are either from Laurea including all the units, other higher educational institutions within Helsinki metropolis as well as other partner universities outside Finland. The interviews reviewed that two main issues are to be considered which are 'practical' and 'integrated'. That is, students who are practically oriented and willing to integrate are to be considered during the recruitment process. Another assertion is that both the technical advisors (IT experts) and coordinators should play a major role during the recruitment process. This will help foster strong based knowledge expertise for the various projects (Interview: Rathod, P. 2009).

Moreover, after the selection, the coordinators further grant those employed a tour round the Labs and Laurea facilities to give them familiarization about the work environment. Those from abroad are also given information about Finnish culture and working life to enable them adapt to the system. In essence create an enabling atmosphere for the interns to be able to work without stress. During the work they are given work related training such as information on the usage of Laurea online library sources and the use of other communication or information system tools. Examples of information tools are SharePoint, Optima etc (Interviews: Moonen, R.; Reymann, D.; Leinonen, E. and Rathod, P. 2009).

All these are necessary for creating the atmosphere and the work strategy in the Labs. According to Rob Moonen (REDLabs, 2009), flexibility of roles has been given to coordinators. This enables them support transfer knowledge expertise and competencies and to search for network partners for the Labs. Notwithstanding, the main management strategy is through projects, R&D research, and reports. From observations, interviews and the survey the enabling conditions described by Nonaka & Ichijo (2007) for knowledge creation is being observed in this environment. The employees show their commitment towards the vision and mission of the Labs and this is been described as intention. Example, during the recent SIDLabs seminar (2009) the objective was towards a 10 year vision. All the interns were involved presenting their projects, giving feedback and, brainstorm exercise to help share the 10 year vision of this environment. The sharing of knowledge is of diverse ideas which lead to creating of new knowledge. Though there is flexibility working in the Labs, yet individuals are responsible for whatever project or research they are involved in and this example is describe as autonomy.

Interruptions in the daily work schedule appear as routines, habits and cognitive framework of the Labs is described as fluctuation and creative chaos. Example the interns at times are involved in other activities internally completely different from their normal work schedule. There are at times brainstorming exercise which serves as educative and as knowledge sharing opportunity. The employees (interns) are gathered to share ideas and to receive information from the coordinators on behalf of the Labs' management. This is also a strategy for creating the Labs knowledge assets. Finally, there is the assertion of internal diversity and corporation being propagated and this is identified as requisite variety. Example during the recent seminar (2009) people gave comments and feedback to further strengthen the environments' business activities. There was the spirit of togetherness which served as another opportunity for exploit innovation and creativity. One could agree that all these are important approaches to the sharing, creating and managing of new knowledge for the future growth of such an environment as SIDLabs (Nonaka & Ichijo 2007. 35)

### 3.3.1 SID Labs Knowledge Management Approach

As indicated earlier, there are two basic knowledge management approaches (tacit and explicit). The interviews and observations show that both approaches are identified to be important in this environment. Example, the coordinators and project experts such as lecturers supporting some of the projects serve as project initiators. They therefore manage the interns who are knowledge carries in a social and interactive environment. This offers members the opportunity and willingness to share knowledge, thereby helping the flow of transfer and creating of knowledge for future business processes. The created working culture in this environment is considered to be Laurea's strategic shared values and also the vision of the Labs.

Laurea's shared value is focused on students, customers, the community, openness and a spirit of togetherness, reliability, social responsibility, and innovation. (Laurea webpage & interview: Reymann, D. 2009)

In summary, the Labs have a flat hierarchical organizational structure of work culture. There is high individual own responsibility, each member is approachable and willing to share their experiences, expertise and knowledge. The working culture here continues to give individual intern opportunity for independence innovative and creative ability. The working style is exhibited in a flexible and international atmosphere as well as team work, and trust for individual members (Interview: Reymann, D.; Moonen, R.; Leinonen, E. and personal observation, 2009)

### 3.3.2 SIDLabs and International Environment

Nowadays, many organizations are going international in their business processes. Ichijo & Nonaka (1996, 3) stated "the world is in its fast moving changing environment whereby much manufacturing and back office work is been transferred across geographical borders". One of the strategic plans of Laurea University of Applied Sciences is to enhance itself in the area of international networks to be able to meet future international challenges.

In this sense the Labs are creating an international relationship network with some partner institutions outside Finland. As Moonen (2009), mentioned that "there is flexibility from management for me to visit other higher institutions outside Finland to create network and search for international interns and projects". Another area is whereby the Labs are trying to adapt to the international changing environment. In this regard currently 40 percent of the interns are from abroad which create international cultural diversity and networks. Due to this added international diversity, recently some members of the Labs namely Denise, Sirkka, Tuula and Ilari visited Münster, Germany. This was to create an international network and cooperation with Münster University of Applied Sciences, Münster local food producers, Laurea University of Applied Sciences, Barlaurea and SIDLabs-International. There are also international research projects in the Labs in collaboration with other small medium size enterprises (Interview: Reymann, D.; Moonen, R.; Leinonen, E. and personal observation, 2009)

Example of such collaboration is between SIDLabs-International, and Pro-FIT Finland. The vision of Pro-FIT is to support small and medium size enterprises with international marketing entry and development research on food and drink (F&D). They help create cross-border collaboration for small medium companies while offering elementary information of international markets (Pro-FIT webpage, 2009).

To ensure the international diversity of the Labs business activities, they also organize international study tours for visitors. The visiting guests from abroad and other parts of Finland are taken round some R&D facilities, seminars and workshops are also organized to enlighten them about the activities of the environment. This is to offer the SIDLabs the opportunity to gain international recognition, create international network and also intercultural working life. Example is whereby recently guests from USA, Syria and another group from Poland visited this environment.

### 3.3.3 The Knowledge Management System Tools

Knowledge management system tools help an organization with its knowledge creating processes and to support the storage of knowledge assets. The knowledge management system tools in today's business processes are realized to be very important in terms of organizations sharing, creating and managing knowledge.

Based on the created working environment in the Labs, there has been flexibility of the usage of social communication tools such as Facebook, Skype, MSN, Yahoo Mail, Microsoft mail outlooks. This actually is helping the sharing, transferring and creating of knowledge within the SIDLabs. They also serve as external communication tool for both interns and other project facilitators. In addition to the social communication tools, there are other informative, learning and administrative tools being used within the various Labs and examples are Optima, SharePoint and Wiki.

The basic information is that each of these tools has initial purpose and target audience according Rathod, P (2009). The Laurea Optima serves as an academic purpose, i.e. as a learning environment tool with a target audience of Laurea staff and students. Meanwhile, some project coordinators, supervisors and lecturers were and are still using Optima as project management tool. Recently SharePoint was introduced in some of the Labs and is considered as a prototype which being used as project management and learning environment tool. The target audience are the interns, coordinators and some project supervisors. Another system tool in the development stage is wiki, which is to be served as project management tool to support sharing, transferring and storing of knowledge in the various Labs.

### 3.3.4 Challenges of the System Tools Usage

During the interviews, and observations from the recent SIDLabs, 09 seminars, some challenges were identified with regards to the use of the system tools. In general some lecturers, students and interns find the use of Optima environment complicated and cumbersome. Therefore, the optimum use is very limited according to Rathod, (2009). Adopting Optima to

be in the Labs is really not appropriate because of its time-span settings of documents or information storage. The gathered information is that, the system automatically erased stored documents or projects as soon as a student or an intern leaves the school (Leinonen, E. 2009). In brief this will not help the continuity of knowledge transfer and knowledge creation will be affected. SharePoint is equally good but its usability is limited as it is not being explored maximally. Wiki software tool is still in development stage but the challenge is that only one person has been assigned for its implementation. The purposes of this tool are among others as project storing tool, communication tool, and knowledge sharing and transfer tool.

### 3.4 The Prospect of Knowledge Creation-SID Labs

The concept of the 'prospect' is an aspect of organizations' desire to meet the immediate and perception needs of prospective target customers, how to ensure business growth and to meet future challenges. The prospect model was adopted from the word 'prospect' and created by the researcher.

The Webster Merriam online dictionary offers various definitions of the word "prospect". The first definition is that it is from a Latin word "prospicere" which means to look forward, or exercise foresight. Prospect can also mean the act of looking forward, and an advance realization of something to come. From online business dictionary it is defined as a potential buyer or customer (Merriam Webster online and business dictionary webpage, 2009). Therefore, the word 'prospect' can be used as a business term which can be adopted by organizations' concerning their business processes and future growth. This researcher perceives the model as ideal for use of organizations such as Laurea SIDLabs. In the recent two-day seminar (June, 2009) organized by SIDLabs the theme depicts which was "SIDLabs in 10 years from now" shows the purpose of the prospect model.

Figure 12 shows the prospect model. Every organization has a vision, mission and objective to guide them attain a good position their business operations. Many organizations seek to win a bigger market share, maximize profit, have competitive advantage, and meet the perception needs of their clients. Some of the organizations are also seeking international recognition and Laurea and the SIDLabs are no exception. One factor is that organization's knowledge assets play an important part in gaining competitive advantage and vision accomplishment. Therefore, the concept of the prospect model is paramount in this assertion of the process for organizations to meet their clients' perception needs. As shown in the figure 12, the words explain how organizations are providing real organizational service product in order to meet their expected customer target.

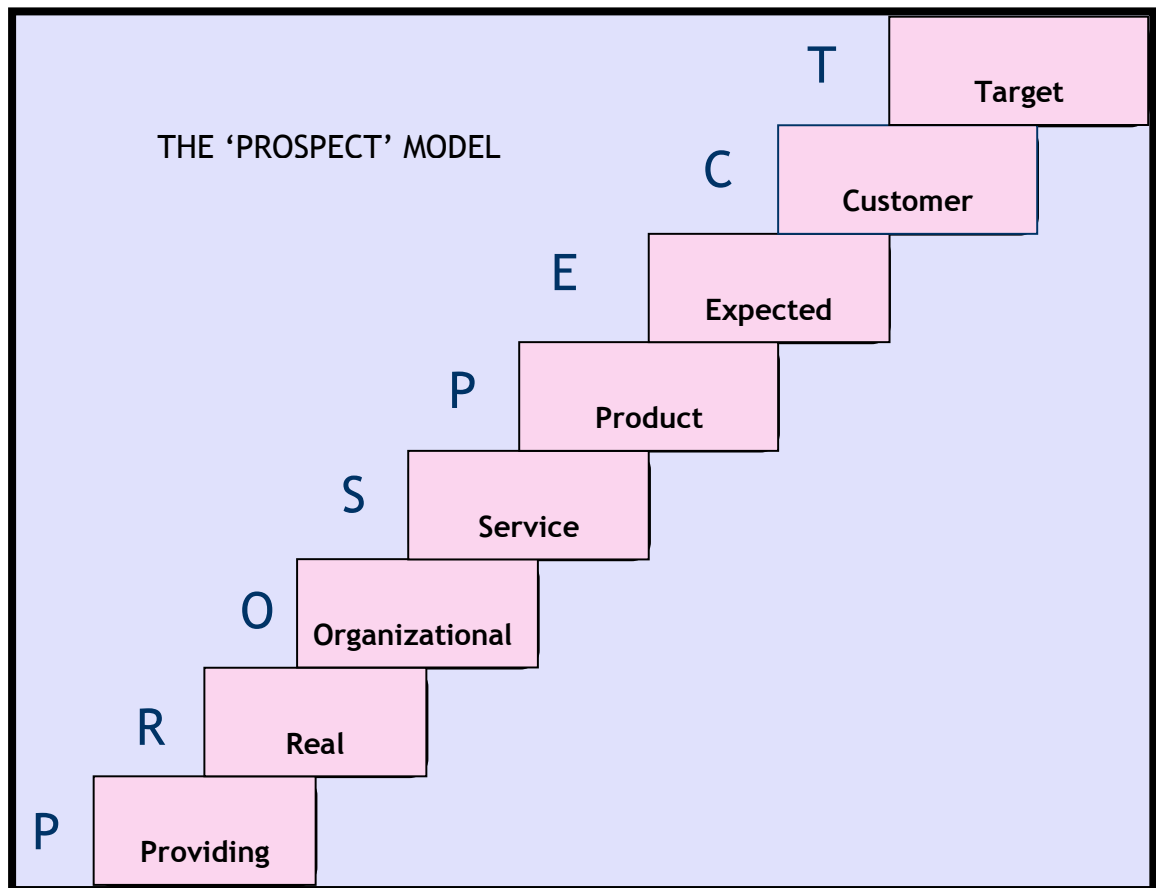


Figure 12: The "Prospect" Model  
(Adopted and created by Frank, N. 2009)

### 3.5 The Bases for the Prospect

The general concept is about organization's future growth and success therefore, Laurea SIDLabs could be used as example to further explain the model. Their vision as it were "is a happy place, where people enjoy themselves participating in challenging research projects aiming to advance knowledge for their societal and economical environment". The mission also is "bringing visions and ideas to life in collaboration with education, research and businesses creating great minds which are capable to contribute in the future Finnish knowledge society" (Reymann, D. 2009). Two important phrases appeared in both the vision and mission as 'aiming to advance knowledge....' and 'capable to contribute in the future Finnish knowledge....' These two phrases portray exactly the future aspiration of Laurea SIDLabs environment. In order that the Labs meet their future aspirations they desire to create an exclusive team Spirit, and trust to help maintain the vision.

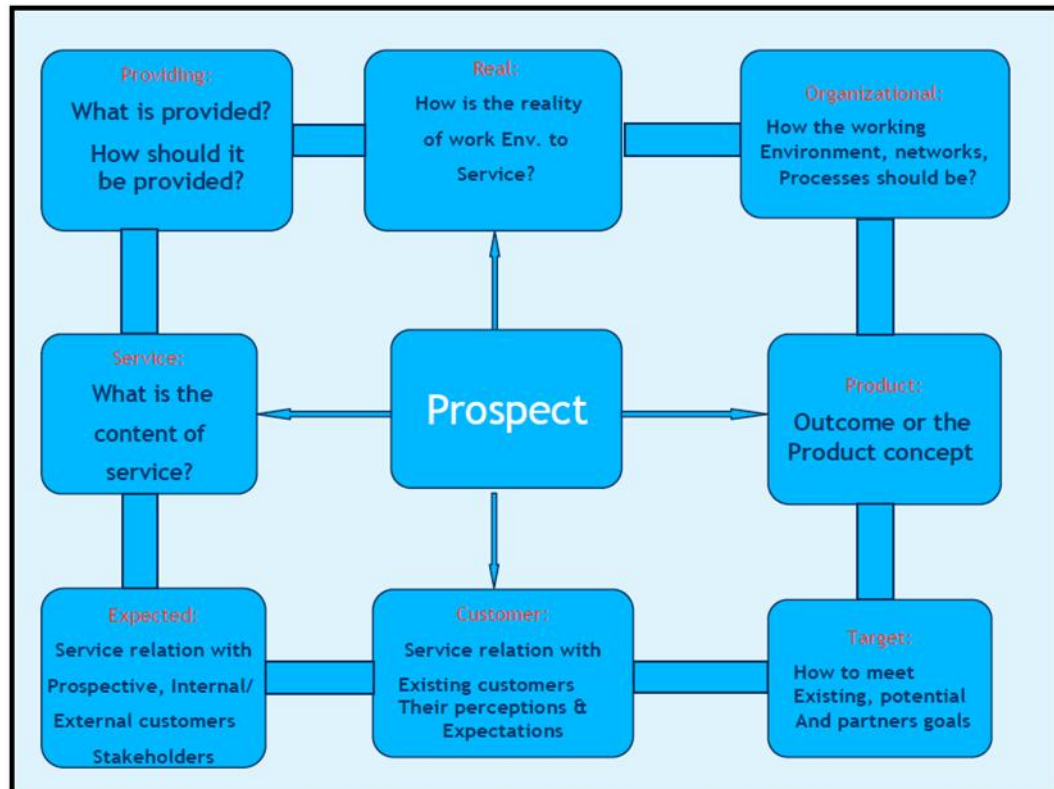


Figure 13: The prospect model expansion  
(Adopted and created by Frank, N. 2009)

The prospect model 'providing real organizational service project for expected customer target' is further expanded. Basic set questions of what and how are asked as shown in figure 13 in relation to organizations set objectives, visions and service provision. Example SIDLabs are providing Service innovation & design as the product package in an interactive, social and organized environment in order to meet the perception and expectation of target customers. Important aspect is that it will help employees to be focused and creative in order to enable them solve problems. It will help create an atmosphere for employees' willingness to share, create and manage knowledge in a continuous dialogue process. To meet the future objective, organization's internal and external prospective customers, customers and stakeholders' perceptions, service and product content as well as the environment should be considered.



## 4 The Survey

This section is about the main research questionnaire, which was used for the interviews as well as personal comments.

### 4.1 Main Research Questionnaire

To establish an understanding of how knowledge is being created in the Labs, there was the need to identify how knowledge is even shared or transferred in relation to work culture. Further view is how knowledge created is effectively managed. Because knowledge is in the mind of individual employees, an electronic questionnaire was designed and sent to the interns working in this environment. The questionnaire designed was based on quantitative study approach so 27 items was sent to 67 respondents. The questionnaire constitutes the following main items, personal information, the Labs recruitment procedure, work culture, the knowledge sharing possibilities and the Labs knowledge management approach. The international network and corporate partners, knowledge type in relation to the international changing environment, and management-employee relationship were considered. The information flow between management and employees, future communication and continuous network relationship of interns and other partner institutions was also considered.

### 4.2 Personal Comments

Prior to the questionnaire design, only personnel interview was envisaged in order to establish an in-depth understanding of the project objective. The realization that employees are the knowledge carries, it became appropriate to design an electronic questionnaire to gather views in order to obtain more and reliable information to substantiate the research. The interview questionnaire, survey questionnaire can be referred from the appendix of this thesis. As indicated above the questionnaire form the basis upon which the quantitative research method questionnaire was designed. The interviews, observations and other material sources (e.g. SIDLabs Brochure) helped to establishment a clear understanding of the Labs business operations and their knowledge strategy.

## 5 Presentation of Findings

This section represents the general analysis of the research findings. As presented above there were 27 research questionnaires sent to 67 members of the SIDLabs (e.g. interns, coordinators), moreover, the interns were the main target group. Out of 67 respondents only 24 responded representing 36%. 20 respondents completed the whole questionnaire which repre-

sents 83% while 4 respondents representing 17% were unable to complete. Figure 14 below is a pie chart representing the overall response of the survey.

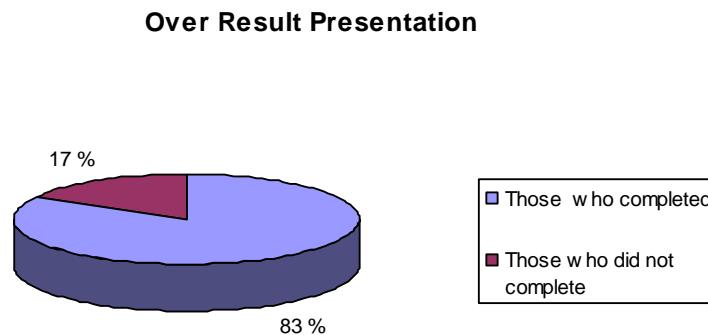


Figure 14: The chart representing the general response

## 5.1 Description of Findings

Knowledge is basically in the mind of individual members of an organization as indicated earlier. Therefore, it was necessary to accrue information from the interns working in this environment and to identify their willingness to support Laurea SIDLabs' knowledge creation. This section represents the analysis and charts of each questionnaire as was responded by respondents.

## 5.2 Results

There four items representing the background information of the respondents and out of the 24 respondents 67% were male while 33% represents female as shown in figure 15. This shows gender parity in this environment.

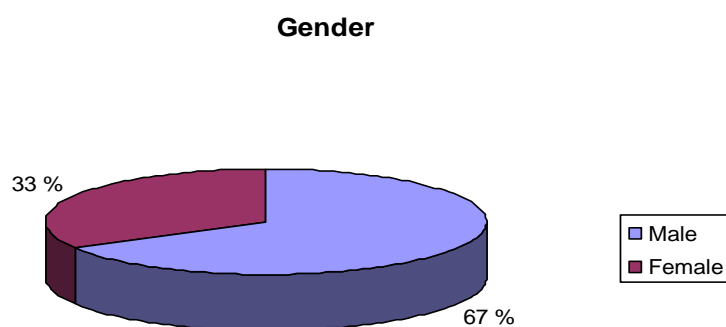


Figure 15: Gender of respondents

Figure 16 below depicts the age group of respondents with 33% been between 25 and 30 years, 29% were between 18 and 24 years, 25% were between the ages 31 and 40, 13% of respondents were aged 40 years and above. This shows the average age range of people who are working in this environment and the kind of workforce Laurea SIDLabs is having. It is more of a youthful, energetic workforce with needed created and competence ideas to support the knowledge creation of this environment.

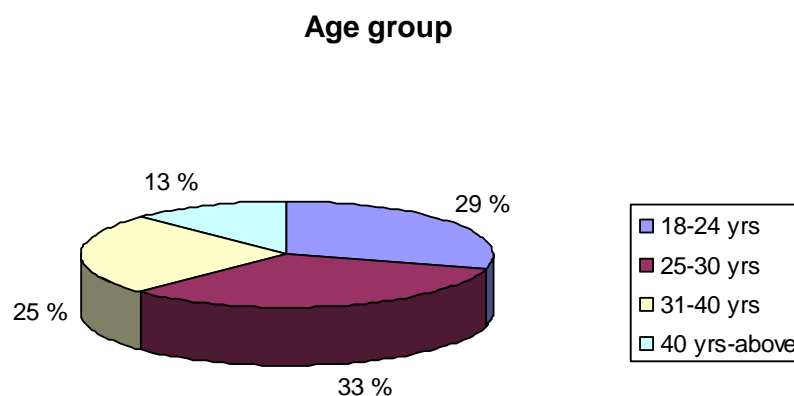


Figure 16: Respondents Age group

Moreover, 60-65 % of the respondents represent interns who are Laurea students while the remaining percentage was from other partner higher educational institutions of Laurea University of Applied Sciences. Example of the partner institutions were from Spain, Germany, Austria and the Netherlands. Figure 17 below represents the Labs recruitment procedure and 62% through personal contacts, 17% through advertisement while 13% were by recommendation by other people. 8% indicated through Laurea webpage and none through the Laureasid portal.

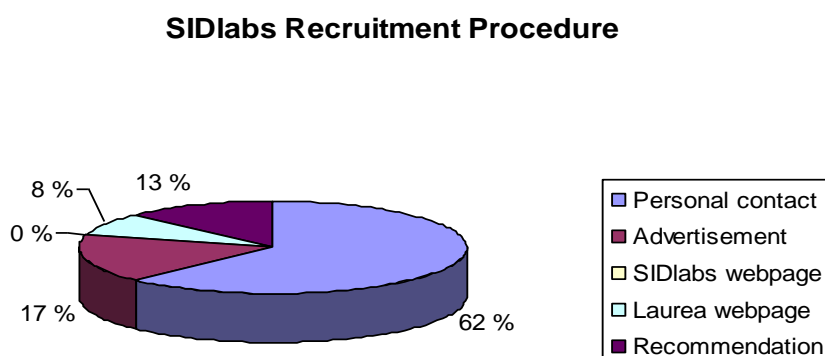


Figure 17: How did you know SID Labs?

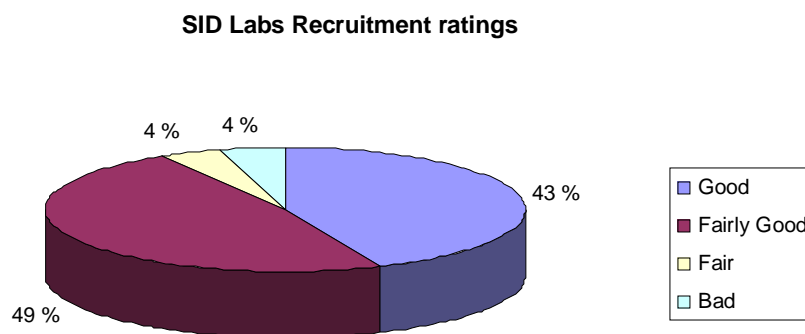


Figure 18: How do you rate the recruitment procedure of SIDLabs?

Figure 18 indicates how respondents rate the SIDLabs recruitment procedure or processes. 23 respondents completed this question and 49% were of the view that it was fairly good, 43% rated it as good, 4% indicated as fair and 4% also indicated it as bad. Figure 19 shows the work duration offered to the employees in this environment. 37% indicated that their work duration is between 1-3 months, 33% 4-6 months. In addition 13% indicated 12 months as the duration of work while 17% was 12 months and above. To ensure effective knowledge creation in a continuous dimension, employees work duration is very important. There should be continuity to ensure a effective knowledge transfer.

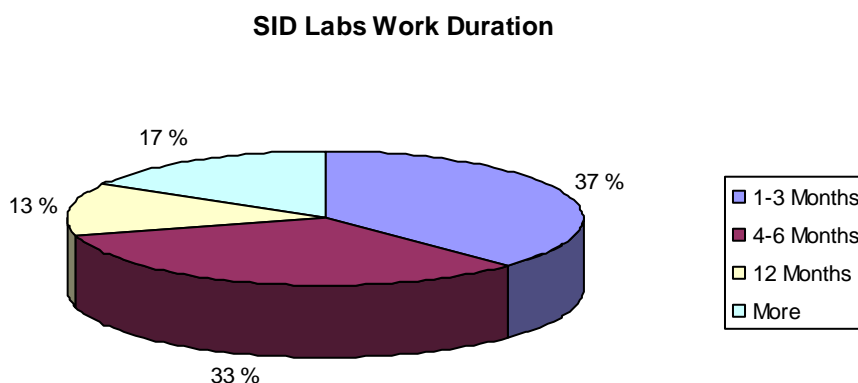


Figure 19: How long have you been working in this environment?

Figure 20 shows the project fields of the respondents and 9% focused on research projects in accounting and finance, 12% represented the management areas, 19% indicated information and communication technology, those who indicated Security was 12%. The other fields were indicated as follows communication 9%, product & services 16% and marketing 23%. This analyzes explain the fact that most of the interns were doing their research projects on market-ing. People are of believe that knowledge creation capacity environments are mostly the

research environments. In this research environment each of the fields play a unique role in knowledge creation.

### Project/Research Fields of respondents

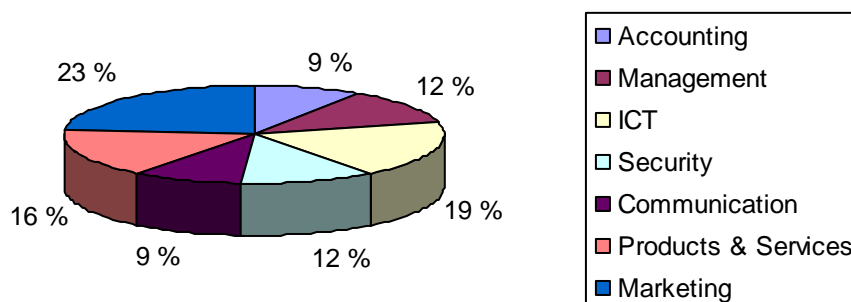


Figure 20: Project/Research areas or fields of respondents

There was a question about work related training given to the interns before start of their projects and 85% had 1-2 days training on the application of Microsoft related tools, Laurea library online sources. 15% indicated they had training on time & calendar management, programme languages, mind tools. The trainings were very important to give the interns needed experience about the systems to support their research and the Labs knowledge creation process.

### SID Labs work environment

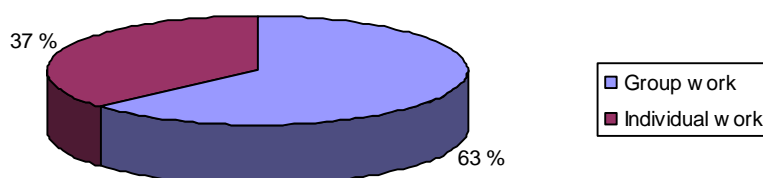


Figure 21: Which kind of working environment do you prefer?

Figure 21 above represents respondents' preferred working nature culture. 63% preferred working in groups while 37% preferred individual working environment. This also plays important role in organization's knowledge creation process. Nonaka's organizational spiral indi-

cates how knowledge can be created in an interactive and social environment and working in groups supports this claim. They are able to interact among each other and share their experiences and knowledge to help the Labs, knowledge assets.

There was a question about knowledge sharing opportunity and respondents gave the scaling as follows, 42% agreed strongly, 42% agreed to the assertion, and 21% either agreed or disagreed. None of the respondents disagreed or disagreed strongly as indicated on table 5 below. This was to help ascertain the fact of needed opportunity that enables the employees of the Labs to share knowledge. If employees knowledge sharing is not effective, organization's knowledge creation capabilities will be automatically affected. Therefore, with the percentage indicated it creates an understanding of created opportunities in this environment for the interns to share their knowledge to support the Labs knowledge creation concept.

	Frequency	Percentage	Cumulative Percent
Agree Strongly	10	41.67	41.67
Agree	10	41.67	83.34
Either agree or Disagree	4	16.66	
Disagree	0	0	
Disagree strongly	0	0	
Total	24	100	100

Table 5: The opportunity of respondents sharing their knowledge

In other respects, a question about the willingness for employee's to share their knowledge was asked and 54% agreed to the notion, 25% strongly agreed. None of the respondents either agreed or disagreed while 21% either agreed or disagreed as shown in table 6 below. The relevant concept of this question was the fact that if the individual knowledge carriers are not willing to share their knowledge, organization's knowledge creation process cannot be effective. The percentage indicated showed how the interns in other words the Labs' employees were willing to share their knowledge as they are given the opportunity.

	Frequency	Percentage	Cumulative percent
Agree Strongly	6	25.00	25.00
Agree	13	54.17	79.17
Either agree or Disagree	5	20.83	100
Disagree	0	0	
Disagree strongly	0	0	
Total	24	100	

Table 6: The willingness of employees to share their knowledge

Is knowledge created in an organization always stored and managed? The question whether the knowledge shared and created in Laurea SIDLabs being managed was asked to assess respondents' views. Table 7 therefore, denotes how respondents gave their views and 54% agreed to the fact that shared knowledge is being stored and 25% either agreed or disagreed. 13% disagreed to the assertion while the remaining 8% agreed strongly. If the created knowledge is not stored or managed, the organization's knowledge assets will be baseless. This analysis shows the percentage of respondents' view that the Labs management is taking steps to store and manage the knowledge creation in this environment and is a commended idea.

	Frequency	Percentage	Cumulative percent
Agree Strongly	2	8.33	8.33
Agree	13	54.17	62.50
Either agree or Disagree	6	25.00	87.50
Disagree	3	12.50	100
Disagree strongly	0	0	
Total	24	100	

Table 7: Managing knowledge in the Labs?

Evaluation of organization's business activities differ from organization to another. Organization's knowledge creation knowledge is an important aspect that supports business operations. This section is the analysis of the question which was to find out if indeed the Labs daily activities are evaluated. Figure 22 indicates 33% of respondents agreed to the notion, 29% either agreed or disagreed, while 13% agreed strongly to the fact that the Labs' daily activities are evaluated. 17% respondents disagreed and 8% disagreed strongly that the Labs daily activities are evaluated. It was realized that the strategy for evaluating the activities was through the internal presentations effected in the various Labs, organized seminars.

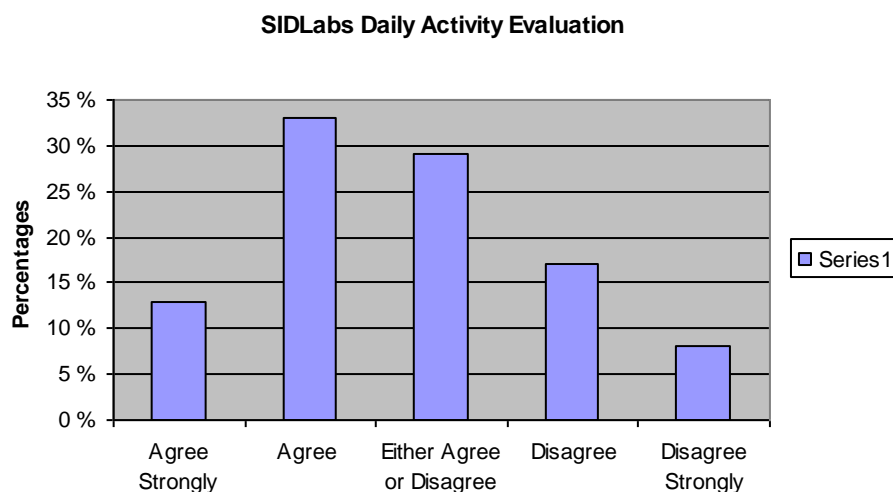


Figure 22: SIDLabs daily activity evaluation

Another question was asked to help identify the international cooperation between Laurea SIDLabs and other partner universities. 27% indicated that it is through internships, 18% through research programmes and 14% through exchange programmes. 11% stated through conferences, and 9% through networked platforms respectively. This really indicates that the Laurea SIDLabs have cooperation with other partner universities of Laurea University of Applied Sciences and this is indicated in figure 23. This identifies the aspects of the community of network expertise, community of practice and internationalization which supports the Labs knowledge creation process.

### SID Labs International. Relationship

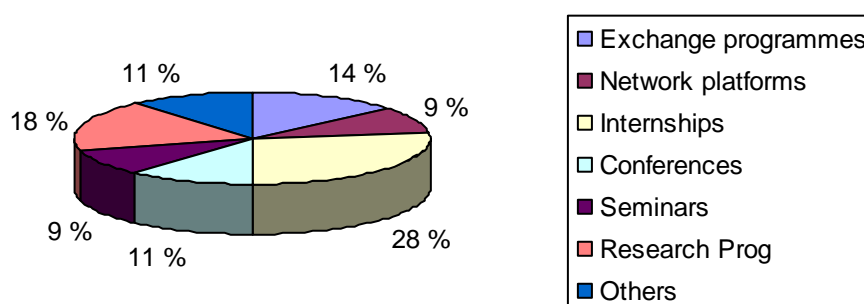


Figure 23: Relationship of SIDLabs & Other Higher Institutions abroad

### Method/Mode of Knowledge sharing

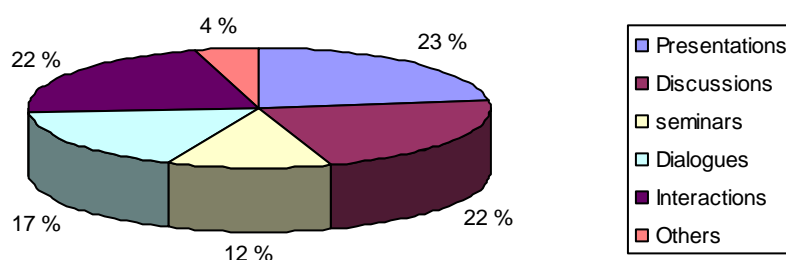


Figure 24: Respondents mode of knowledge sharing

Figure 24 above shows respondents view about the mode of the interns' knowledge sharing approach. 23% indicated that respondents were able to share knowledge through presentations, 22% each were able to share knowledge through interactions and discussions respectively. 12% were those who indicated that they share their knowledge through dialogues, and 4%



indicated other means. Knowledge sharing plays important role in the knowledge creation process, therefore the respondents views indicated the approach being practice in the Labs to ensure effective knowledge sharing.

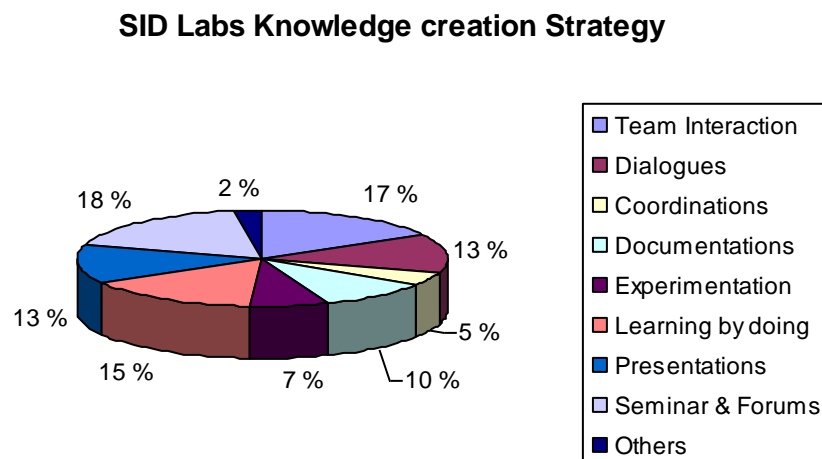


Figure 25: The strategy for SID Labs knowledge creation

In figure 25 above respondents were also asked to indicate the strategy for knowledge creation in the Labs. 18% indicated through seminars & forums, 17% indicated through team interactions, 15% and 10% stated through learning by doing and experimentations respectively. 13% indicated that one of the Labs strategies for knowledge creation is through presentations, while 7% indicated through dialogues. In other respect 5% indicated through coordination among the various Labs and 2% indicated through other means. Organizations adopt strategic approaches towards knowledge creation but the approaches differ from one organization to another. This section supports the approach being employed by the management of the Labs and either through the management initiation or through guidance, supervision and motivation for interns to support management strategic approach.

There was a question about approach used by SIDLabs to store the created knowledge and 39% indicated through files while 21% indicated through books. 19% indicated through software tools, 14% indicated that the Labs created knowledge is stored in Laurea Optima, while 7% indicated CDs as other option. Figure 26 depicts the percentage description of respondents.

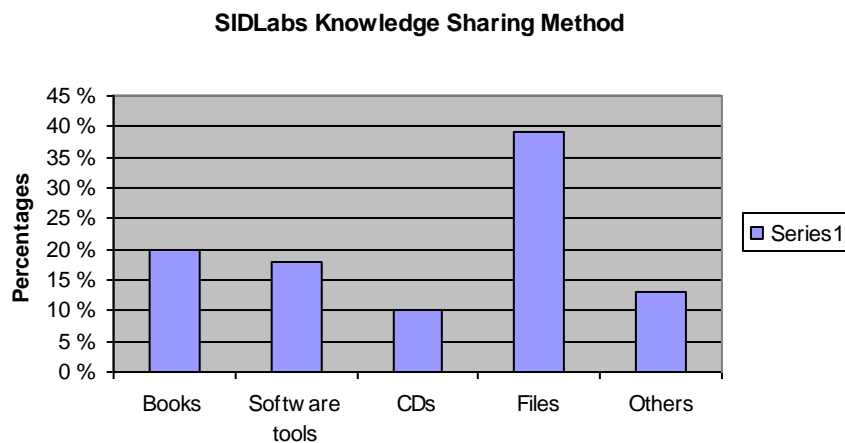


Figure 26: What is used to store created knowledge?

Despite the fact that knowledge creation is known to be two dimensions tacit and explicit knowledge. As indicated in the theory of this project there are four stages of knowledge, received, subjective, procedural and constructed knowledge. Knowledge creation can also be identified from these four stages of knowledge. There was a question which respondents were asked to indicate the type of knowledge they prefer to share taking into consideration the international changing environment. Figure 27 depict 33% preferred constructed knowledge, 26% preferred subjective knowledge, and 21% preferred procedural knowledge while 19% received knowledge.

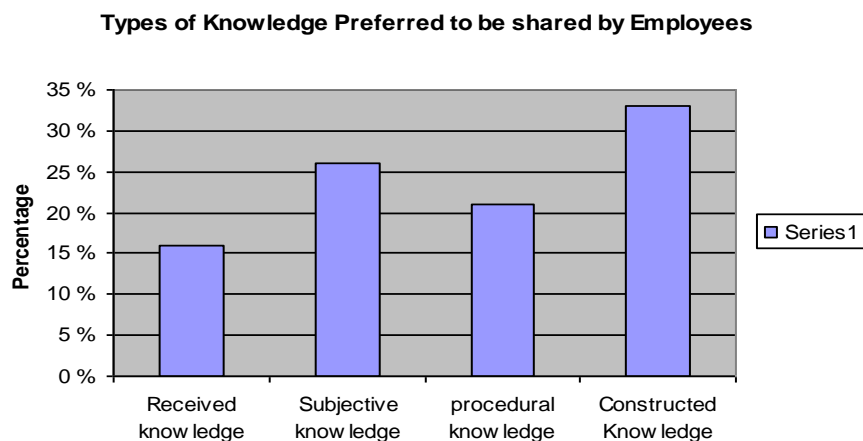


Figure 27: Preferred type of shared knowledge

A question was asked about the type of knowledge interns preferred to acquire during work period in the Labs. Figure 28 show that 35% preferred procedural knowledge, 30% indicated constructed knowledge, and 22% preferred subjective knowledge while 14% preferred received knowledge. This shows that knowledge creation is a shared responsibility between management and employees.

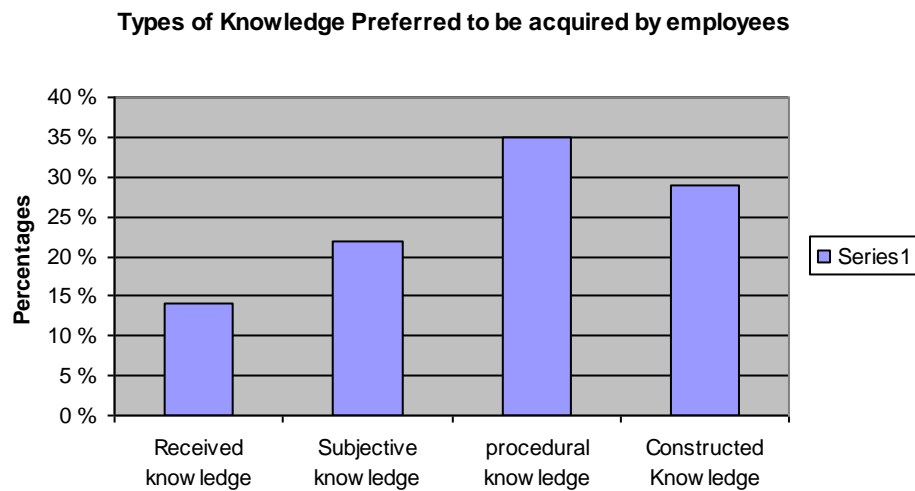


Figure 28: Preferred acquired knowledge

In order to ensure that the Labs management supports the knowledge strategy, there was a question designed to ensure existing relationship between employers and employees. The option was to indicate whether this relationship is hierarchical or flat type (horizontal). Figure 29 below shows 90% indicating flat type relationship, and 10% viewed it as hierarchical. 21 responded to this questionnaire. This analysis indicates further opportunity flow of information that helps the enabling atmosphere for knowledge creation.

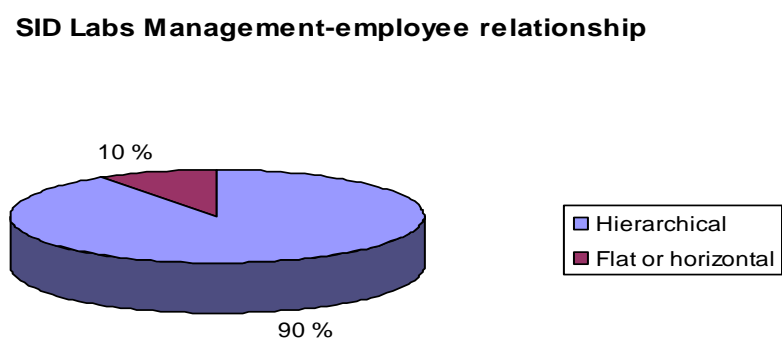


Figure 29: The management and employee relationship

There was a further question designed to help identify flow of information or communication level from management to employees in the Labs. 43% of the respondents indicated is semi-structured (homogeneous), 33% indicated structured (non-homogeneous). Figure 30 shows 19% indicating is uniformly structured (homogeneous) and respondents view describe how flow of information and communication level supports environment knowledge creation strategy.

### SID Labs flow of information or communication level

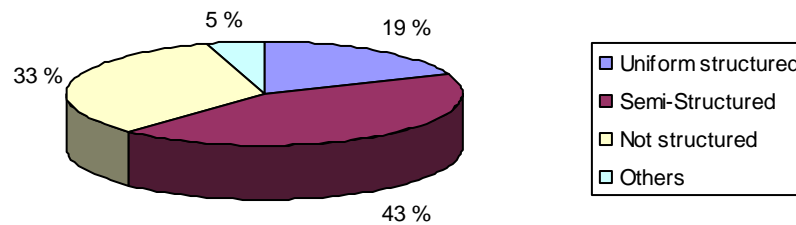


Figure 30: The Information flow of management & Employee

Finally, there was a question to show platform for relationship that will ensure continuous sharing of experience, creating future network between the Labs and other partner institutions. Different opinions were that 31% preferred social networks, 29% through workshops. Others views were that 20% preferred seminars, 16% consider conferences an option while the remaining 4% indicated others (e.g. international cooperation and research works). Figure 31 shows graphical representation of respondents' views.

### Platform for continuous relationship

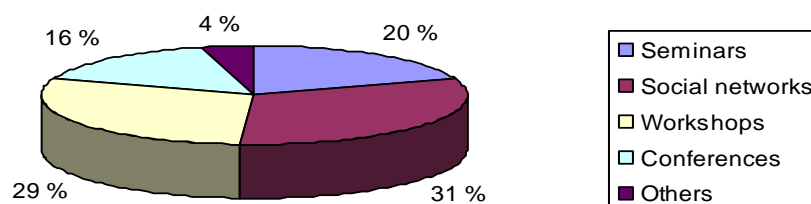


Figure 31: Platform for continuous relationship

## 5.3 Summary of Findings

The purpose of the survey was to establish a concrete definition of the concept knowledge creation and its future development to Laurea SIDLabs. As indicated previously, 27 questionnaire items were designed and sent via emails to 67 respondents. 24 employees representing approximately 36% responded and 31% completed. Respondents had the opportunity to share their views about how knowledge is being shared, transferred, created and managed in this

environment. Other aspects were that they could indicate the enabling working culture, flow of communication that support knowledge creation within the Labs. In addition how the management is supporting the knowledge creating process in a continuous dialogue and to offer needed security for the Labs' knowledge creating assets.

Notwithstanding, the respondents gave suggestions to support their opinions from the open questions asked. The following was a summary of suggested views from respondents: team discussions and presentations considered to be developed further; internal networking is to be ensured for sharing of ideas and knowledge. More so, there should be cooperation and coordination between the Labs, especially between employees working on the same projects even if they are of different objectives. In addition, some suggested there should be more social activities to help enhance the mental well-being of employees to help curb stress after working hours. Flow of information and shared ideas will be effective and also to ensure effective performance and high-quality productivity.

Furthermore, some were of the view that the case company's profile should be described clearly through the website, laureasid portal. In addition, there should be well developed marketing prospectus to promote the activities of the Labs. Further suggested views were, SIDLabs is strategic learning environment whereby new ideas and knowledge are shared. The future of the Laureasid portal was considered creative and interaction platform for knowledge sharing among students and staff. One other important issue raised was the need to have a common system tool to serve project or knowledge management storing tool. This will help both current and future interns to access information easily to enhance the Labs' knowledge assets.

As discussed previously, knowledge creation cannot be effective if the working culture or environment within organization does not support it. Therefore, respondents suggested opinions to give a scope of how the Labs' work culture supports the knowledge creating process. Respondents identify the environment as social, friendly, relaxed and flexible atmosphere whereby employees are enthusiastic, energetic, innovative, creative and international in relation with their work. It is service-oriented and opportunity work environment with cooperative, interactive and multicultural background.

Finally, the graphical and tabular presentations above represent how respondents opinions from the survey have been presented taken account the project objective.

#### 5.4 Obstacles to Knowledge Sharing

The research findings indicate that knowledge shared and transferred to ensure continuous creating of new knowledge to support Laurea SIDLabs' business processes. One question was asked for respondents to give views about obstacles or limitations to the willingness and opportunity for sharing of knowledge. The following were some of respondents' views:

- That some of the Labs do not have enough working space, therefore atmosphere for sharing knowledge is challenging.
- That there is not enough experimentation for knowledge sharing
- That knowledge sharing should be among people who share common interest or among colleagues working on the same projects
- That most of the Labs' partner companies secure their business know-how. This affects the willingness of interns doing projects to share knowledge.
- That time-management is changed chaos-management because different tasks have to be effected at the same time creating difficulty to share ideas among colleagues.
- Some people do not know what kind of knowledge to share and to whom.
- People have no interest or time what other people are doing in order to share views, ideas and familiarize different projects.
- Sharing knowledge through presentations and discussions are time consuming.
- That there are cultural differences affecting the knowledge sharing process.
- Lastly, some people are not open or willing to share knowledge.

## 6 Conclusion

### 6.1 Observations

The purpose of this research project was to analyse Laurea SIDLabs knowledge strategy concept with regards to knowledge creation. Processes involved that support the Labs knowledge assets for effective performance and future growth taken into consideration international changing environment. For a knowledge-intensive organization such as SIDLabs to be focused and competitive in the world's business environment, their knowledge assets will serve a paramount purpose.

This section therefore, includes general observations, identified limitations and recommendations for future research projects on the concept of Laurea SIDLabs' knowledge management strategy.

In essence, the research has helped to create a general concept of information about knowledge-intensive organizations' knowledge creation capabilities and the working environment or enabling conditions in which this knowledge can be created. In addition how SIDLabs knowledge creation is being conducted in order to meet the set business objectives and company vision. The researcher believes it is also going to help in the future redevelopment of research work of this environment's knowledge strategy. Most importantly some key issues were the recruitment procedure, process of hiring individuals with knowledge competences as basis for the knowledge creation, and the knowledge strategy capabilities. It was also realized that there is knowledge management system tools, international networks being developed to support the Labs knowledge creation process. Organization's knowledge management system tools to support knowledge storing process is also important therefore, the need to redefined and modified the Labs system tools to ensure knowledge created is appropriated stored. Furthermore, the management is helping to create enabling working environment which will help effective knowledge creation.

One would have realized that most people who serve as knowledge carriers were hired through personal contacts. To ensure effective knowledge creation, such approach will reduce the importance and quality attached to organization's knowledge creation. Management trust in individual employees and supporting their project presentations, workshops, seminars is also important element for knowledge creation. Another factor is creating international network to ensure cooperation and collaboration with other higher educational institutions and companies. Organizations' working culture plays important role in knowledge creation. It was realized that the SIDLabs are experiencing interactive, social and flexible work environment that supports knowledge creation. The concept of tacit and explicit knowledge ap-

proaches regarding organization's knowledge creation strategy is valuable. However, most of the projects and projects ideas are initiated by either project managers, coordinators or the project supervisors therefore, there are offering of guidance and supervision and these part of the Labs management approach to knowledge creation.

## 6.2 Limitations or Challenges

In general a research project has challenges and example could be choosing of project topic, research content, and source materials to be used etc. Some challenges concerning this project include preparing plan of approach, searching for needed literature materials and content structure of the entire project. In addition choosing the research methodology and right designing approach for the survey were challenging. The questionnaire item was development in stages and was reviewed by project supervisor and SIDLabs-International coordinator. The responses to the questionnaire took longer time to answer than expected and accordingly some of the questions were not clearly understood.

The research topic was completely new concept to the researcher and the case company. These challenges mentioned above could be determining factor to the overall response of the survey. Other challenges were that SIDLabs information profile and business activities were not sufficient. It was difficult to gather information about the Labs establishment and business activities. Most of the gathered information was from coordinators' presentation slides and some arranged interview appointment did not materialized.

## 6.3 Recommendations

Recruitment of employees in an organization is important initial step towards knowledge creation. Therefore to base recruitment procedure on personal contact debunks the idea of fairness and might automatically affect the knowledge base. Therefore proper recruiting mechanism must be developed to ensure effective knowledge based interns are hired for the Labs in the future. The survey showed 63% of interns were hired for work placement through personal contact and this is identified not effective for the Labs further knowledge creation strategy. It was recognized that new approach being adopted by modifying and developing LaureaSID for such purpose and as information system tool. Project management system tools are important element in the knowledge creation process. The new browser 'redlabs/wiki' must be developed to serve as project management system tool to help knowledge creation storage. There should be defined roles and targets for the user interface of different systems and portals being developed.



Laureasid portal should further be developed to serve information, interaction and social purposes for both the Labs and employees. The redlabs/wiki browser should be given a different name (e.g. [www.sidlabs/wiki](http://www.sidlabs/wiki)) to serve as learning, educative and knowledge management system tool for all the Labs. To attract international attention and create international collaboration network of researchers, organizations, and other institutions, lauresid portal should have English language interface.

There should be further research work on the Labs' knowledge management strategy to help continuous strategic knowledge creation and management should be supportive and cooperative. Continuity of research work on the Labs' knowledge strategy will help create a unique opportunity to meet the nature of international business processes. One important recommendation, future research questionnaire should be shortened and made clearer to motivate more respondents to take part in the survey.

Furthermore, some of the knowledge experts who are serving as supervisors have busy schedule tasks which makes it difficult for needed attention to those interns who are working on specific projects under them. Their roles should therefore be well defined to offer needed time and space to share their knowledge expertise and competencies. There should be a good network platform to encourage more supervisors or experts internally or externally to help motivate and supervise projects. They should help with projects contents descriptions and this help create an atmosphere of focus and willingness of knowledge sharing that in effect will ensure knowledge creation.

Finally, all the above concepts are needed for Laurea SIDLabs' knowledge creation concept and to help them meet the perception needs of target customers. To create LbD, R&D and innovation and service competitive advantage and offer future knowledge base to meet the international changing nature of business.

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## List of Appendixes

### Appendix 1: List of Abbreviations

KM	Knowledge Management
KS	Knowledge Strategy
SID	Service Innovation and Design
LbD	Learning by Developing
R&D	Research and Development
IS	Information Systems
IT	Information Technology
ICT	Information Communication Technology
HEI	Higher Educational Institutions
SMEs	Small and Medium Enterprises
F&D	Food and Drink
B2B	Business-to-Business
B2C	Business-to-Customers
SECI	Socialization, Externalization, Combination and Internalization
LAC regions	The Latin America and Caribbean

## Appendix 2: Interview Questionnaire

No:	Basic questionnaire for interview
1	The main idea of setting up such environment considering Laurea status as an Educational Institution?
2	Current Population of SID Labs employees
3	The mode of selection of Interns
4	The work related service trainings
5	The working culture in relation to work output
6	The willingness of employees to share their knowledge
7	Is there any tool for storing the shared knowledge?
8	How the shared knowledge is organized and managed?
9	Has there been any problem with the sharing and managing?
10	How does the management support the knowledge creation in the SID-Labs?
11	What is the working relationship in the Labs and for that matter management and employees?
12	Has there been any communication platform with clients or those working life experts? And how?
13	Which of these knowledge approaches is appropriate for SIDLabs; Managing people as individual carriers of knowledge (Tacit Knowledge approach) or Management initiating and sustaining the knowledge process assets (Explicit knowledge approach)?

Table 8: Generation interview questions

### Appendix 3: Survey Questionnaire and Results

Dear Respondent,

I am an international student currently studying a Degree Programme in International Management at Laurea University of Applied Science, Finland. I am conducting a research on the topic 'The Prospect of knowledge creation' as my thesis and also as R&D project for SIDLabs-International (Laurea-Leppävaara). This Knowledge creation can be describe as the process of sharing knowledge among individuals in a narrow corporate context and that rely concretely on individual experiences and personal relationships in an organization. The purpose of the research is to identify how knowledge-intensive organizations as SIDLabs, manage their knowledge in order to adapt to the international changing environment. As SIDLabs is actively involved in the knowledge management environment. I will like to invite you to participate in this study and be assured that your responses will be treated with utmost confidentiality.

There is a short questionnaire that asks a variety of questions on the said topic and can be answered by clicking on the following link:

(<http://www.eSurveysPro.com/Survey.aspx?id=18236cab-8fad-4bd8-a37f-b7f4c82f83a5>).

It should take you about 10-15 minutes to complete and when done submit by pressing the done/save button below.

Your participation will be well appreciated as it will help gain an understanding of this sensitive topic of knowledge creation, and how it is managed for international adaptability and for SIDlabs' future growth.

For further questions concerning this questionnaire or the research, you may contact the researcher by telephone 0403579079 or email: [frank2.nyarko@laurea.fi](mailto:frank2.nyarko@laurea.fi)

Best regards

1. Please indicate your gender.                      Male                      Female

2. Indicate your age group.

18-24yrs

25-30yrs

31-40yrs

40yrs and above

3. In which University are you from?

4. How did you know about SIDLabs?

Personal Contact

Advertisement

SIDLabs webpage

Laurea webpage

Recommendation

5. How do you rate the recruitment procedure of SIDLabs?

Good

Fairly Good

Fair

Bad

6. For how long have been working in this environment?

1-3 months

4-6 months

12 months

More

7. Are you currently taking part in any project?

Yes

No

8. If yes, please tick your project area(s). Please choose maximum three.

Accounting   Management   ICT   Security   Communication   Products & Services

Marketing

9. If No to question (7), please state your role in SIDLabs

10. What kind of work related trainings have you had so far?

Microsoft tools   Academic materials   Library sources

Others, please specify

11. Which kind of working environment do you prefer?

Group work   Individual work

12. In your own words describe the working culture in this environment (SIDLabs)

Answer the following statements about SIDLabs.

13. The opportunity of sharing your knowledge

Agree strongly

Agree

Either agree or disagree

Disagree

Disagree strongly

14. The willingness for employees to share their knowledge

Agree strongly

Agree

Either agree or disagree

Disagree

Disagree strongly

15. Do you think knowledge is managed in the Labs?

Agree strongly

Agree

Either agree or disagree

Disagree

Disagree strongly

16. SIDLabs should measure the daily activities

Agree strongly

Agree

Either agree or disagree

Disagree

Disagree strongly

Related questionnaire on knowledge creating processes, principles etc

17. Which best term describes the relationship of Laurea SIDLabs with your Country University?

Exchange program

Network platforms

Internships

Conferences

Seminars

Research program

Other, (Specify)

18. Choose from the following list the method of sharing your knowledge in SIDLabs

Presentations

Discussions

Seminars

Dialogues

Interactions

Other, Specify

19. Please suggest any obstacles (Limitations) with regards to the sharing of your knowledge in this environment

20. Choose from the following terms to describe the way you think SIDLabs is creating knowledge.

Team Interactions

Dialogues

Coordination

Documentation

Experimentation

Learning by doing

Presentations

Seminars and Forums

Other, (Specify)

21. What is the method of storing the shared knowledge in SIDLabs?

Books

Software tools,

CDs

Files

Other, Specify

Indicate the type of knowledge

22. What type of knowledge with regards to international changing environment will you like to share in SIDLabs?

a) Received Knowledge   b) Subjective Knowledge   c)Procedural Knowledge   d)Constructed Knowledge

23. Which of these knowledge types will you like to get by working in this environment?

- a) Received Knowledge   b) Subjective Knowledge   c) Procedural Knowledge  
d) Constructed Knowledge

24. How do you describe the relationship between management and employees in SIDLabs?

Hierarchical

Flat type or horizontal

25. Choose from the following to describe the flow of information or communication level from management to employees in SIDLabs

Uniform structured-(homogeneous)

Semi-structured (semi homogeneous)

Not structured (Non-homogeneous)

Other, (Specify

26. Use the following to describe the kind of platform you will like to have for further relationship and sharing of experience gained as intern with SIDLabs in future.

Seminars   Social networks   Workshops   Conferences

Other, Specify

27. Any other suggested ideas will be appreciated.

Thank you for your response



## Appendix 4: SID Labs Brochure



**SID Labs** BarLaurea  
**SID Labs** Business  
**SID Labs** International  
**SID Labs** Neon  
**SID Labs** Networks  
**SID Labs** Red  
**SID Labs** Security

**Laurea SID Labs provides international solutions for your business.**  
 Laurea SID Labs is an international research and development environment which focuses on Service, Innovation and Design. It includes various labs in the field of Hospitality Management, Security Management, Business Information Technology and Business Management.  
 Talented people from all over the world participate and carry out development projects for working life contributing innovative solutions to specific problems. Making international business easier, communicating more efficiently and crossing barriers is the aim of Laurea SID Labs.

**Our previous projects and friends**  
 During the last years, Research and Development activities at Laurea SID Labs have increased substantially. Serving the needs for R&D in small to medium sized companies has created close ties between them and us. Meanwhile, we often reside in the heart of Laurea's larger ongoing R&D projects, in turn helping us in creating synergy with higher education institutions and research institutions. Thanks to these links, we can offer your company or institution a rich expertise network for doing R&D projects.

**What we can do for you**

**COMPANIES**  
 We transfer international knowledge and expertise to your company.

- Do you have a specific problem, which needs a particular solution?
- Do you want to internationalize your organisation?
- Are you interested in creating an international project in cooperation with us and our international partners?
- Are you looking for a way to expand your business?

Tell us your needs and our international research team will generate innovative and creative approaches aiming practical and cutting edge solutions for your demands.  
 We offer a wide range of services in the field of Service Design, Business development, IT solutions, Risk & Security Management and Hospitality Management.

**STUDENTS**  
 We offer you a unique learning experience by working in international projects.

- Do you want to gain work experience and develop your own competences?
- Do you need support for doing your BSc or MSc thesis?
- Are you interested in working together with people from different countries?
- Are you looking for a new and exciting challenge?

We offer you the possibility to do your internship or write your BSc or MSc thesis at Laurea SID Labs. You get the chance to work in an international development environment and carry out applied R&D projects. Further you will gain experience by working together with people from other countries and cultures. Coordinators, teachers and experts from working life will support you at any time.

**HIGHER EDUCATION INSTITUTIONS (HEI)**  
 Create an international network in the field of applied Research and Development.

We are interested to work together with different HEI to enlarge our network in the field of applied Research and Development. Our aim is to create cooperation between HEI and international working life as well as to create strong knowledge intensive centres in different specialisation areas. Cooperation with partner HEI makes it possible to create international projects and to provide worldwide internship places for international researchers in the field of applied R&D.

**Do you think we can do something for you?**  
 Please read more about SID Labs and contact us through our website: [www.laureasid.com](http://www.laureasid.com)

**Three words describing the heart of SID Labs**

**Service**  
 Our services include applied research and development projects in the field of Hospitality Management, Security Management, Business Information Technology and Business.

**Innovation**  
 We provide creative ideas which support systematic recognition of new innovations, evaluation and development of innovations as well as commercialization of businesses.

**Design**  
 We design a customized solution or service for your business.

**SID Labs**  
 provides international solutions for your business

[www.laureasid.com](http://www.laureasid.com)

Figure 32: SID Labs Brochure