

Application of Business Intelligent System in the Realm of Knowledge Distribution to Employees

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Abstract

The intelligent business idea encompasses the utilization of personal computers and the Internet to maximize company intelligence. Business intelligence (BI) is frequently utilized in several organizational functions, including human resource management (HRM), research and development (R&D), distribution, customer relationship management (CRM), and notably, knowledge management. corporate intelligence technology facilitates the retrieval and analysis of historical and current data pertaining to various aspects of corporate operations. The standard functions of business intelligence encompass a range of technologies that facilitate reporting, online analytical processing (OLAP), analytics, data mining, business performance management, benchmarking, text mining, and predictive analysis. The primary benefit associated with the implementation of this approach pertains to the field of knowledge management. Knowledge management ensures that all employees are informed about the internal operations of the organization and recognizes the significance of knowledge management in facilitating value creation and the attainment of competitive advantages. PT. X Indonesia demonstrates a strong awareness of the value of knowledge management among its workforce. The current application system is deemed appropriate for utilization, therefore obviating the necessity for its replacement with an alternative application system.

Keywords: Application systems, Business intelligence, Knowledge Distribution, Effectiveness, Application system

1. Introduction

The current era of globalization, characterized by the revolution of communication and information technology, has resulted in extraordinary changes. With the ease obtained from communication and information comes competition which results in consumers getting more and more choices. It isn't effortless to satisfy because there has been a shift initially only to meet needs, increasing the expectation of meeting satisfaction [Dony, 2023].

This change has encouraged new thinking, new products, new markets and new competitors, so there is fierce competition from competitors. The needs and desires of today's customers are increasing and variegated, making it increasingly difficult for manufacturers to satisfy the needs of their consumers.

The era of globalization, which has caused a shift in almost all aspects of life, must be balanced with service and product quality improvements. Quality improvement and improvement is not only carried out by government institutions that must provide public services but also companies, both those that produce goods and services.

Paying attention to these conditions and winning the competition from competitors requires a strategy. The goal is to provide satisfaction to stakeholders, both customers/consumers, company owners, employees/employees, etc. one of the strategies is the selection of information technology used by the company, which is the application of business intelligence in an organization [Wattimena, 2023].

This concept is an application of artificial intelligence in intelligent companies [Novaliendry, 2023]. This concept is one that all multinational companies must do to maintain their control over world-scale or state-scale trade. An idea that must be learned by every local Indonesian entrepreneur who wants to move to become a national-scale company. It is also mandatory for national entrepreneurs who wish to maintain market share ahead of AFTA.

Currently, PT. X has 19 permanent employees specialising in training, consulting/advisory, and office work (admin). Position from various companies and government agencies outside the region requires mutual communication and coordination between each employee and PT's management. X New Zealand. This encourages implementing an application system to accommodate information, data, references needed, and a discussion forum.

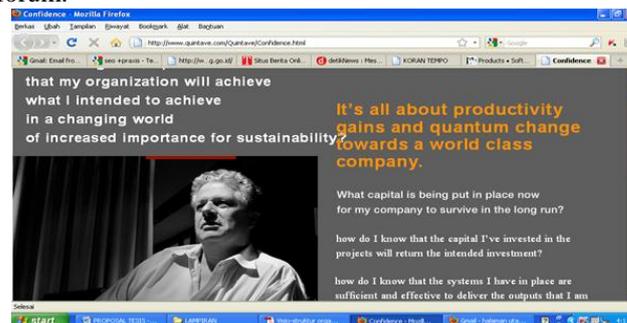


Fig. 1. Home page screen view

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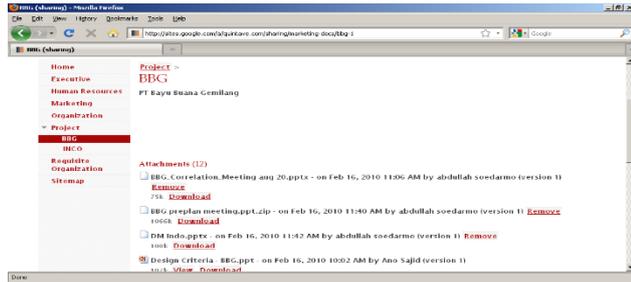


Fig. 2. Project BBG Screen Display

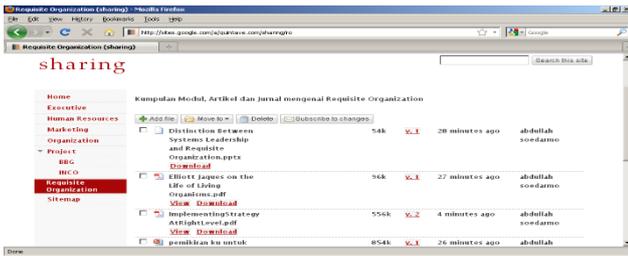


Fig. 3. Requisite Organization Screen View

1.1. Variety of Knowledge Used

Sharing, where the employees at PT. X Indonesia can access the information contained in the company and download files containing information, references, and data.

Discussion Forum, where employees can discuss with other employees and the management of PT. X New Zealand.

2. Methods

Business Intelligent (BI) "refers to skills, processes, technologies, applications and practices used to support decision making". BI can be interpreted as an effort to involve expertise, processes, technologies, applications and practices to support decision-making.

Business intelligence technology provides past and present information from business operations. Standard functions of business intelligence include technology for reporting, OLAP, analysis, data mining, business performance management, benchmarking, text mining and predictive analytics.

The purpose of Business Intelligent is to support a better business decision-making process. Business Intelligent (BI) systems can be called Decision Support Systems (DSS). However, BI is often used as an equality of competitive intelligence because both support decision-making. Bank Indonesia uses technology, processes and applications to analyze internal conditions, data structures and business processes so that it becomes competitive intelligence, which is carried out by collecting, analyzing, and disseminating information with or without the support of technology and applications and focusing on all sources of information and data (unstructured and structured), as well as external conditions to support decisions. Determining factors for the successful implementation of Business Intelligent:

1. Business-driven methodology & project management
2. Clear vision and plan
3. Commitment support from management and sponsorship.
4. Data management and quality issues
5. Map solutions according to user needs
6. Performance considerations of the BI system
7. Powerful and scalable framework

2.1. Theoretical Knowledge Review

2.1.1. Understanding Knowledge

Knowledge, in this case, is not translated because the notion of knowledge itself is still debated. Knowledge is defined as follows: "Knowledge is a mixture of experience, value, information, contextual, expert views and fundamental intuition that provides an environment and a framework for evaluating and uniting new experiences with information. In companies, knowledge is often related to documents or places to store valuables and routines, processes, practices and company norms".

Based on the definition mentioned earlier, knowledge becomes essential because:

1. Knowledge is an asset of an institution, which determines the type of labour, information, skills and organizational structure required.
2. The company's knowledge and experience are sustainable resources from competitive advantages compared to the mainstay products and the most advanced technology owned.
3. Knowledge and experience can create, communicate and apply knowledge about all related matters to achieve business goals.

Knowledge is divided into 2 (two) types that can be described as follows:

1. **Explicit Knowledge**
It can be expressed with kata-words and numbers and conveyed in scientific form, specifications, manuals, etc. This knowledge can be immediately passed on from one individual to another formally and systematically. Explicit knowledge can also be explained as a process, method, method, business pattern and design experience of a production.
2. **Tacid Knowledge**
It is the knowledge of experts, individuals and communities and their experiences. Tacid knowledge is very personal and difficult to formulate, making it difficult to communicate or convey to others. Personal feelings, intuition, body language, physical experiences and practical instructions (rule-of-thumb) are included in the type of tacid knowledge.

Other approaches define knowledge in 4 (four) operational levels :

1. **Know what or cognitive knowledge**
It is knowledge gained through training, learning and formal qualifications. This level is essential for the company but is generally insufficient for commercial success.

2. Know-how- is a practical level of application
At this level, what has been gained at level 1 is translated into execution. At this stage, it is an area where knowledge adds value to an organization through the ability to translate theoretical knowledge into practical implementation.
3. Knowing why is also called system understanding
It is the most profound knowledge of a network of causal relationships in a discipline. This level allows professionals to move from the execution of work to solving more considerable and complex problems and creating solutions to new situations.
4. Care why- an advanced stage of self-motivated creativity
It is the level at which radical innovation can occur through imaginative leaps and lateral thinking.

2.1.2. Understanding Knowledge Management

Knowledge management is an effort to increase helpful knowledge in organizations, including familiarizing the communication culture between personnel, providing learning opportunities, and promoting knowledge sharing. This effort will create and maintain increased value from the core business competencies by utilizing existing information technology. This is extracted from the opinion [Palegrini, 2020] as follows:

"Knowledge management (KM) is an effort to increase useful knowledge within the organization. Ways to do this include encouraging, offering opportunities to learn, and promoting the sharing of appropriate knowledge artefacts" [McInerney, 2002][Palegrini, 2020]

The trigger of knowledge management (The 24 Drivers of KM) that makes KM a thing that cannot be ignored in a business is divided into 6 (six) groups :

1. Knowledge-Centric Drivers:
 - 1.1. The failure of the company to know what they already know.
 - 1.2. An urgent need for the intelligent distribution of knowledge.
 - 1.3. Speed and slowness of expertise.
 - 1.4. The knowledge walkout problem and the high dependence on tacit knowledge.
 - 1.5. The need to deal with the tendency of knowledge-hoarding among employees.
 - 1.6. The need for systemic unlearning (learning to leave old things behind / using them when it is no longer by conditions)
2. Technology Drivers:
 - 2.1. The end of the role of technology as a viable long-term differentiator.

- 2.2. Compression of the product and process life cycle.
- 2.3. The need for a perfect chain of links between knowledge, business strategy and information technology.
3. Organisational Drivers:
 - 3.1. Functional convergence
 - 3.2. The emergence of a project-centric organizational structure.
 - 3.3. Challenges arising from deregulation
 - 3.4. The inability of companies to keep pace with competitive changes due to globalization.
 - 3.5. Convergence of supporters and services.
4. Personnel Drivers:
 - 4.1. Vast functional convergence
 - 4.2. The need to support effective cross-functional collaboration.
 - 4.3. Mobility and fluidity of the team.
 - 4.4. The need to deal with complex corporate expectations.
5. Process-Focused Drivers:
 - 5.1. The need to prevent costly and repeated errors.
 - 5.2. The need to prevent unnecessary rediscovery
 - 5.3. The need for accurate prediction anticipation.
 - 5.4. The emerging need for a competitive response.
6. Economic Drivers:
 - 6.1. The potential to create extraordinary abilities through knowledge.
 - 6.2. The demand for robust differentiation of products and services.

Knowledge management has an important function which is divided into 4 (four) things (Davidson, 2003] as follows:

1. Identify key assets from the knowledge of the company.
2. Reflects on what the organization knows.
3. Sharing all understanding with anyone who needs it.
4. Implement the use of knowledge to improve organizational performance.

The critical components of knowledge needed in the implementation of a successful knowledge management (KM) strategy are as follows [Ferreira, 2020]:

1. The right source and flow of knowledge for the organization
2. The right technology to store and communicate that knowledge.
3. The right work culture so that workers are motivated to take advantage of this knowledge

Table 1
Sources of Knowledge in KMS [Tiwana, 2000]

Source	Explicit/Codifiable	Tacid/ Explication	Need
Employee Knowledge, skills and competencies	√		√
Experimental knowledge (group or individual level)	√		√
Team-based collaborative skills			√
Informal shared knowledge	√		√
Values			√
Norms			√
Belief	√		√
Task-based	√		√
Knowledge embedded in physical systems	√		√
Human capital			√
Knowledge embedded in internal structures			√
Knowledge embedded in external structures	√		√
Customer capital	√		√
Experiences of the employee	√		√
Customer relationship	√		√

Table 2
Elaboration of The Critical Components of Km That Worked [Tiwana:2000]

Component	Purpose	Focus
Information and knowledge	Input for KM. Sources and flows of knowledge	What do we need to know?
Technology	Mechanisms for storage and communication of knowledge	How to maintain what we know
Culture	A structure that motivates staff to share knowledge and integrate existing knowledge with their work	How to motivate staff to share what they know and use what all the people already know.

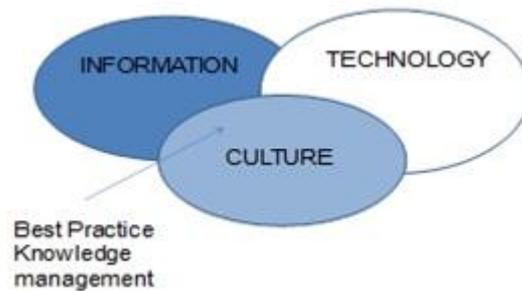


Fig. 4. Successful Knowledge Management [Davidson, 2003]

From the table above, a problem arises; namely, the three components are separate entities (discrete). This condition causes the success of knowledge management (KM) to only occur at the intersection of the three.

Understanding the components of knowledge management above is through twin ideas about knowledge stocks and knowledge flows. These two understandings are essential dimensions of successful knowledge management. This dimension arises from the cache and flows approach to knowledge management that provides characteristics [Davidson, 2003]:

1. Knowledge stock is a well-known thing
These dimensions can be in a company database or library, spread across the organization in various

forms, or within each employee. This approach focuses on the elements/components of the knowledge management strategy.

2. Knowledge flows

To make helpful knowledge, it is crucial to ensure that expertise anywhere in an organization can be available wherever needed. This approach focuses on the objectives of the knowledge management strategy.

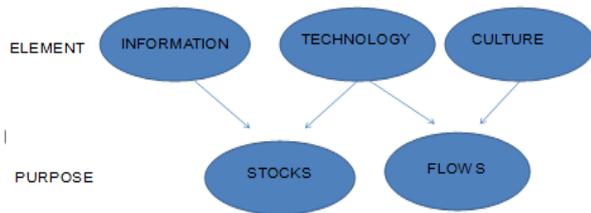


Fig. 5. Mapping the Relationship of Components and Dimensions of Knowledge Management [Davidson, 2003][Ferreira, 2020]

2.1.3. Knowledge Stock And Knowledge Flows :

What is needed to increase the knowledge supply is to do 6 (six) ways of forming knowledge in the company [Davenport, 1998][M Asif, 2021]:

1. Acquisition gaining knowledge that is not very important but very useful. It is obtained through buying or imitating ideas.
2. Renting, hiring consultants or sponsoring research projects in universities or polytechnics.
3. Dedicated resources create knowledge by providing resources specifically intended for that purpose.
4. Fusion forms knowledge by combining different skills, ideas and values from other divisions to create innovative solutions.
5. Adaptation adapts to changes that occur, where these changes trigger knowledge formation. Some companies need a series of external threats to realize their potential.
6. Established and informal networks in organizations are often a source of knowledge-building power. Knowledge is not only formed at the limits of disciplines but also the limits of the formal structure of an organization.

Organizations need to support the formation of the knowledge mentioned above by providing opportunities for company employees to get training or learn. That is to learn skills they can use at that time or needed for the following career advancement. For the training provided to be appropriate, a competency map is required to assist staff in filling existing gaps. The competency map itself has characteristics [Davidson, 2003]:

1. Demonstrate the capability of knowledge and the level of expertise possessed by employees.
2. Identify the needs of knowledge, expertise and personal traits that must be mastered to succeed in a career position.

The competency map will show the gap in expertise between the two characteristics. This makes it easier to create an employee training planning program. This mapping also establishes a mechanism for linking individual expertise profiles with company objectives. So

from these relationships, formal learning is given to the right individual.

To maximize the use of existing knowledge stock, knowledge flows are needed that spread knowledge wherever required for the organization. Remember to form knowledge flows not by flooding employees, hunting treasure, or fighting for power with knowledge owners. Developing knowledge flows is knowledge transfer, which allows employees to find helpful information easily, take it and give it to others. In other words, the best way is to form a system that will enable and allows employees to talk and listen to each other [Ferreira, 2020].

3. Results Of Analysis And Discussion

3.1. Knowledge Transfer / Distribution

The trend in companies is that knowledge-sharing activities are local and separate. Generally, someone will ask for the party that is easiest to find or who is well known instead of looking for the most appropriate party. So it is necessary to form the following things to improve mutual sharing and knowledge transfer activities.

To enhance mutual sharing and knowledge transfer activities, several key elements need to be established. Firstly, the creation of a knowledge map is essential, detailing where knowledge resides within the company and identifying individuals and their areas of expertise. This serves as a foundational tool for effective knowledge management. Additionally, the implementation of a talk space provides an informal setting for employees to engage in conversations, fostering a conducive atmosphere for knowledge exchange [Ferreira, 2020].

The design of a smart office layout is imperative to cultivate an environment that supports learning activities. This involves configuring workspaces to facilitate collaboration and knowledge dissemination. Furthermore, organizing dedicated knowledge-sharing events, such as knowledge fairs or forums, promotes interaction among employees who may not regularly engage in daily work activities. An adaptable structure is recommended for such events, allowing participants to tailor their involvement to meet their specific needs.

Establishing a common language is identified as a critical factor for the success of knowledge transfer activities. This entails creating a list of terms and their abbreviations, ensuring clear and consistent communication among all employees. Knowledge leaders play a crucial role in this process by determining resource accessibility, mastering the logic of knowledge sharing, monitoring employee participation, and exemplifying a collaborative sharing mindset [M Asif, 2021].

Moreover, fostering a cultural shift towards a willingness to share knowledge is a challenge that requires the removal of barriers to knowledge dissemination activities. This voluntary nature of sharing can be encouraged through a change in organizational culture. Finally, creating room for tension, also known as fusion or

creative abrasion, involves bringing together employees from diverse areas to collaboratively solve problems. This approach is vital for promoting innovative learning and solutions by challenging individuals to expand their thinking in new ways [Pellegrini, 2020].

3.2. Culture of Trust

The way to maximize the work of knowledge stock and knowledge flows is through ideas from the knowledge marketplace in an organization. The condition of a market is that there are buyers (who need knowledge), sellers (who know) and intermediaries (who unite both parties). But the focus here is the "currency" used in buying and selling knowledge.

No currency units are used because this market runs on exchange activities ("This market runs on reciprocity"). What applies is that a person will share knowledge with other parties because he -or someone he knows- has access to knowledge that may be needed in the future [Davenport, 1998]. The idea of reciprocity explains the theory of social exchange: individual actions are motivated by the expected results of such activities.

Another activity besides reciprocity is the provision of knowledge for free. This is on the grounds of showing the "wealth" of knowledge possessed (seeking status) or donating voluntarily as a charity (altruism). Of the three reasons that revive the course of this market, social virtues are needed that support the creation of prosperity, namely trust. This is quoted from Francis Fukuyama's opinion, "The virtue which most obviously underpins any market is trust" [Davidson, 2003].

A culture of trust in a company can be built by paying attention to things [Davenport, 1998]:

1. Trust must be visible. Employees should see someone get an award for knowledge sharing. This will strengthen the reciprocity.
2. Trust must be ubiquitous. The culture of belief should cover all or nothing
3. Trustworthiness must start at the top. Trust flows throughout the company. The management needs to set an example.

Given the trust itself is formed by the contact of personnel. So face-to-face meetings are significant to build a culture of knowledge in the company. Nothing is virtual about faith or its formation.

3.3. Formation of Knowledge Management

A learning model called "life's special treadmill" was described by Charles Handy based on the idea of a wheel. Where a set of questions are so answered and reflected will trigger another question. Learning is a discovery effort, which is only successful when a search is carried out. The key to this learning is curiosity. This is where knowledge sharing plays an important role [Davidson, 2003]



Fig. 6. Handy's Learning Wheel [Davidson, 2003]

The establishment of an influential knowledge management culture depends on the following [Davidson, 2003]

1. Recognizes the role of "informal" structures on workplace learning.
2. Rewarding employees who carry out learning, sharing, or creating knowledge.
3. Form a time and place to create knowledge, share knowledge and learn.
4. We have senior employees who lead and become an example of knowledge-creating and sharing behaviour.
5. Introducing several creative tensions to challenge employees to think in new ways.
6. Allowing someone to make a mistake.

The model depicted in the amber g above is used to divide the knowledge management process into four phases as follows:

1. Identify where the key knowledge exists in your organization
Identify what is known to start knowledge management. This includes the knowledge that exists in the
 - 1.1. The mind of every employee
 - 1.2. Reports in company libraries
 - 1.3. Data sets in organizations
 - 1.4. Suppliers and company customers
2. Reflect on what your organization knows
Make deposits or supplies from the knowledge that is already owned. This activity provides an opportunity to:
 - 2.1. Changing employee tacit knowledge to explicit knowledge
 - 2.2. Summing up existing knowledge into a form that is easy to share
3. Share that knowledge with whoever needs to know it
Create a system that aims to make knowledge that exists anywhere in the organization available wherever the knowledge is needed.
4. Apply that knowledge to improve the way your organization performs
When ability improves organizational performance, the organization will implement it and create a system that incorporates that knowledge into daily work

procedures. This will eventually turn knowledge into structural capital.



Fig. 7. Phases of the Knowledge Management Process [Davidson, 2003]

The fourth phases, known as the I-R-S-A approach, reflect a logical sequence of how an organization can develop a company's knowledge management strategy. This logical sequence emphasizes that a new phase can begin after reaching the previous stage.

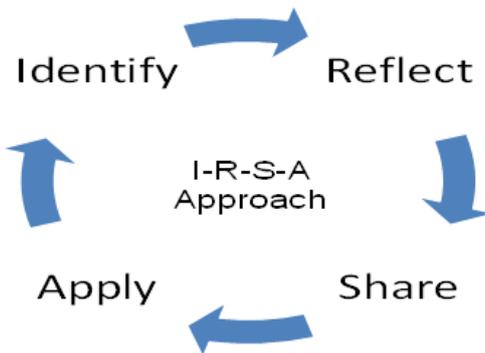


Fig. 8. I-R-S-A approach Application Cycle Diagram [Davidson, 2003]

The cycle of the I-R-S-A model in figure II.5 underlines that knowledge management is a process. Where after one cycle is reached, the organization will learn new things. The cycle should have been carried out as a whole, but there is a possibility of a shift due to the many things learned during the process. When this happens, the focal point of the process shifts from the strategic gains that can be obtained to the short-term operational gains. The transition can be described as follows:

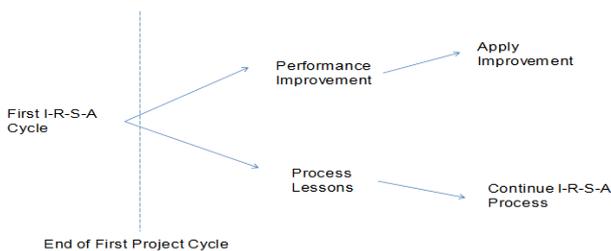


Fig. 9. Diagram of The Shift in the Implementation of cycles I-R-S-A [Davidson, 2003]

Indication factors that can be used to find out whether a company is ready to carry out the application of knowledge management include the following:

1. Scanning imperative. Finding the most important things that should be in the company
2. Corporate culture. A corporate culture that supports knowledge-sharing activities.
3. Begin with what you know. Evaluate what the company already has and then improve it before doing anything new.

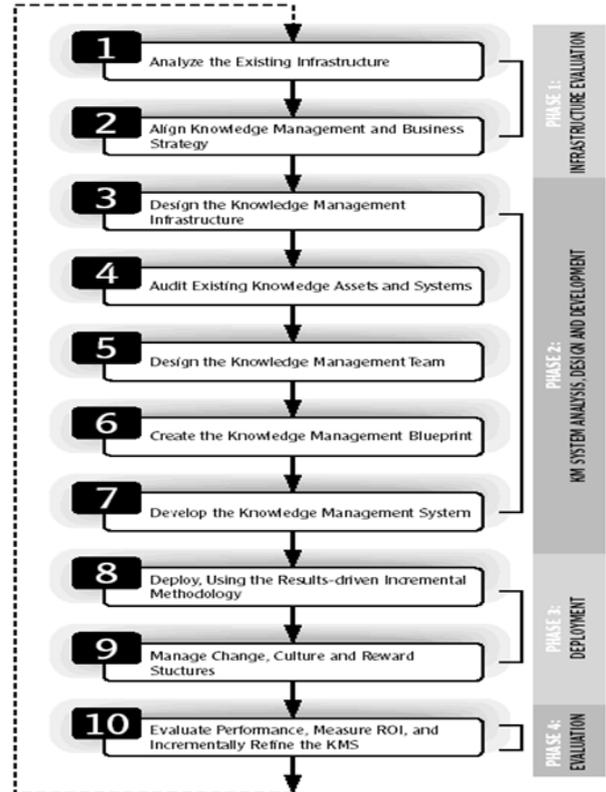


Fig. 10. The 10-step KM Roadmap [Tiwana, 2000]

The following figure shows the relationship between company strategy, knowledge strategy and knowledge management (KM). Generic strategies known for corporate strategy are codification strategy and personalization strategy. The two generic strategies are usually detailed into 4 (four) knowledge strategies, namely:

1. Intellectual asset management strategy
2. Personal knowledge asset responsibility strategy
3. Knowledge creation strategy
4. Knowledge transfer strategy



Fig. 11. Relationship between Corporate Strategy,

Knowledge Strategy and Knowledge Management

Referring to the picture above, to develop of a business strategy needs to be supported by the following:

1. Analysis of the conditions of the business environment
2. Determining the key factors of success
3. Translating the company's strategy in the plan of future activities
4. Identifying the knowledge that is already owned
5. Reviewing the company's knowledge position through existing documents

3.4. Implications on Human Resources in the Company

The step taken after the company identifies the knowledge that has been owned and that must be acquired is an analysis of the information communication technology or ICT infrastructure and the condition of human resources.

Issues related to acquisition activities are:

1. Sharing or sharing knowledge
2. Utilization of knowledge

Some of the things that often appear in each activity are:

1. Acquisition:
 - 1.1. Companies do not have adequate policies to support knowledge acquisition
 - 1.2. Employee absorption is low, so acquisition activities are ineffective
2. Sharing:
 - 2.1. Employees are reluctant or do not have enough time to share knowledge
 - 2.2. The company does not have a policy or knowledge-sharing practice
3. Utilization:
 - 3.1. Employees prefer to live things that are usually done (routinely), reluctant to apply new knowledge.
 - 3.2. The company does not have policies and practices that support using new knowledge.

The conditions mentioned earlier cause knowledge management experts such as Van Krogh, Ichiyo and Nokana (in *Enabling Knowledge Creation*, 2000) to say there are 5 (five) dimensions called the dimension of care. These five dimensions can overcome obstacles and streamline the process of sharing and utilization of knowledge, namely [VanKrogh, 2000]:

1. Build mutual trust among the organisation's members, regardless of standing, intelligence and performance.
2. Actively empathize so that each organisation member can know the other's problems and whether today's knowledge can help those members.

3. Access to help if everyone in the company, especially people "more" than others, makes themselves a place to be asked for help.
4. Quite tolerant in evaluating the performance or progress of others in the learning process.
5. Have the courage to interact, dare to experiment, dare to express opinions or feedback, and dare to convey ideas as an alternative solution to the problem.

The implications of the Business Intelligent system include the following:

1. Aspects of Information Systems

Based on the aspects of information systems, the results of research on the application of business intelligent application systems in the distribution of knowledge to employees at PT. X Indonesia is already good. The existing application system is suitable for use, so replacing it with another application system is unnecessary.

2. Managerial Aspects

Based on managerial aspects, the existing application system is already running effectively. This condition will create a good distribution of knowledge to employees at PT. X New Zealand.

4. Conclusion

- 4.1. Application of a business intelligence application system in the distribution of knowledge to employees at PT. X Indonesia has been running well and has been effective. This is seen from the analysis results, which show a number/score of 80.
- 4.2. Based on the aspect of the information system, because the application system is suitable for use so that:
 - 4.2.1. The company does not need to replace it with a new application system.
 - 4.2.2. Always do research and development to follow and meet users' needs.
 - 4.2.3. Always complete and update information, data and references.
 - 4.2.4. Conducting a scaled evaluation

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