

# TEN STEPS TO INCREASE THE KNOWLEDGE FOR AN EFFICIENT MANAGEMENT OF THE INTELLECTUAL CAPITAL IN THE ENTERPRISE BUSINESS INTELLIGENCE

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## ABSTRACT

In order to develop intelligent business for become competitive, the enterprises must increase the quality and technologic level of products and services conform with applicable codes and standards, to have permanent new products or to make old products bettering, to respect the market rules, the applicable laws and to have a good price politic.

These activities request a large amount of date, information and knowledge collecting from all sources and then transferring at each enterprise level.

This work analyses the state of the art of the knowledge management and it propose a methodological model, based on the occurrence of conversion types of the knowledge to be used during the product development process.

**Keywords:** Business intelligence, knowledge transfer, knowledge applications, knowledge capitalization, knowledge management.

## 1. INTRODUCTION

Whether organizations are composed of one enterprise or many enterprises (holding), for survival, is necessary to learn from the past, supervise the present and plan the future [1]. An important factor for the enterprise in the products and services development is to know, to establish, to translate and to define the customer requirements using quality methods, tools and techniques.

The enterprise use IT & C support to attract, retain and cultivate relationship with customers, streamline supply-chain, manufacturing, procurement systems and automate corporate processes to deliver the right products and services to customer quickly and cost-effectively.

During the first decade of the computer science, the emphasis was data management. In order to transform data into information it is required tools. In order to transform information into knowledge it is needed time.

Knowledge is to use information (and as a consequence data) to generate new ideas or solutions. Also, today, are differentiating these three classes of elements as [2]:

1. Data – a discreet and objective group of facts of a certain event;
2. Information – a message containing an originator and a receiver and whose meaning involves a new interpretation based on a group data;
3. Knowledge – a mixture of experiences, values, contextual information and intuition, forming a framework in a person's mind that enables him/her to evaluate and to obtain new experiences and information's.

The main studies are identified two important distinctions types of knowledge that has be used [3]:

- The tacit knowledge – it is knowledge that the people possess but it isn't described in any place, it is just residing in your heads;
- The explicit knowledge – the knowledge that is registered in some ways and therefore is available for the other people.

These studies have suggested four basic conversion patterns for the knowledge creation in an organization:

1. *From tacit knowledge to tacit knowledge (socialization)* – it is a process of sharing experiences and, therefore, the creation of tacit knowledge. The based input for the acquisition of this knowledge type is experiences.
2. *From tacit knowledge to explicit knowledge (externalization)* – an articulation process of the individuals tacit knowledge in explicit concepts. These conceptual knowledge usually happens through: symbolic representation of the tacit knowledge (through metaphors, analogies, models, concepts, hypotheses by using the figurative language), oral reports and films, part description of the tacit knowledge through spreadsheets, texts, images, illustrations, rules, scripts, design history, lesson learned, etc.
3. *From explicit knowledge to explicit knowledge (combination)* – a conversion process of some type of explicit knowledge individual generated for add up to the organization explicit knowledge (e.g. individuals knowledge exchange and combination through documents, meetings, chats, etc.). Usually, this systemic knowledge happens by different explicit knowledge grouping and processing that could be generate into a new knowledge.
4. *From explicit knowledge to tacit knowledge (internalization)* – an explicit knowledge from the organization incorporating into individuals tacit knowledge process. This operational knowledge happens through: reading/visualization and individual study of different format documents, individual interpretation and experimentation.

## 2. BUSSINES INTELLIGENCE

The enterprise market value is representing the thing that distinguishes its business performance from all others. It is generally accepted that the value of every organization falls into one of three major categories of value discipline [1], [4]:

1. *Customer intimacy*, when the companies try to understand their individual customer's needed, and will try to do everything is possible to accommodate their customers. These companies are definitely not cheap, because personal service is an expensive commodity; however their customers prefer to use them because they feel that they are sufficiently rich to justify the extra cost.
2. *Product leadership*, as companies that could be described as “leading edge”, because their value is that can keep you ahead to the customers of other similar companies. These companies are always on the top with new innovative products, new ideas that can keep their customer interest.
3. *Operational excellence*, as companies that excels at operational efficiency.

All companies tend to have a stronger affinity to one of the three categories. An organization needs to understand how to interact with its customers and how would like to interact with its customers. Therefore, activity improvement is a priority in all companies and a solution can be finding in one of the following situations:

- New products manufacturing assimilation (proper conception products or licensed products);
- New services assimilation;
- Existing products & services modernization;
- Production reorganization or readjustment;
- Manufacturing process modernization.

After this, the enterprises can start to develop a strategy to improve customer relationship management and other e-business solutions, as enabling technologies and core technologies. For the future, e-services and e-business, as were defined, require the enterprise re-thinking and re-modeling, with the system and applications design for an efficient use of new network technologies [1], [5]. The perspectives of this kind of manufacture and economy are named in brief *new digital economy*.

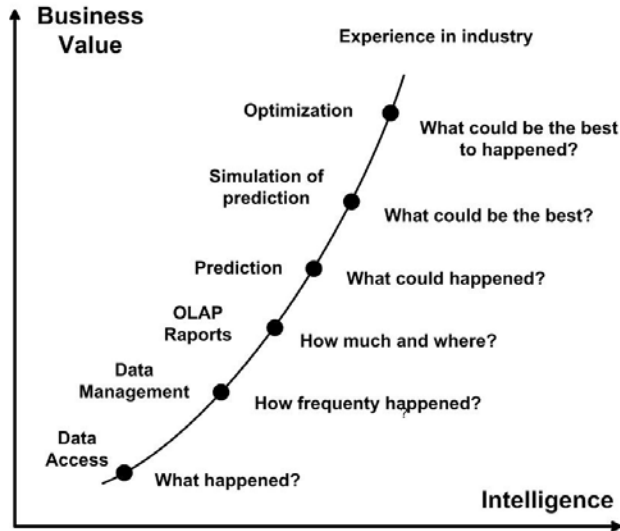


Fig. 1. The business value & intelligence evolution.

The connection between *business value* and *intelligence* can be represented as evolution (see Fig. 1), based on the experience in industry, where the beginning is represented by “data access” and “what happened?”

### 3. KNOWLEDGE APPLICATIONS (KApps)

Traditional applications in the enterprises, mainly related to ERP (Enterprise Resource Planning), DMS (Document Management System) and CRM (Customer Relationship Management), are using massive amount of data on operation and customers that are unused in data warehouses. To turn that stored data into valuable information, companies are now questing knowledge applications (KApps). The business advantage in having KApps, lies in the ability to analyze large amounts of data from any business model, determine the personalized preferences of all potentially customers, than rich them with relevant information, wherever they may be. These serve as the driving force for new generation of applications.

Traditionally, we have query-and-response paradigm for applications. For the new generation of applications, the logic is reversed: *what-if-system* didn't wait for the end user to have the question, and the system just asked the question for the end-users and sends them the answer. In this way one could anticipate a whole set of questions. This new class of applications allows companies not only to collect but to analyze data and information, in order to developed better supplier and customer relationships. It is aimed at increasing profitability through revenue growth. This revenue-enhancing framework focuses on an interesting mix of modeling, data processing as decision support, information retrieval, reporting and analysis, what-if-scenarios, data warehouses, and data mining.

Knowledge-driven applications have the potential to expand the use of information, by transforming existing huge data collections into revenue-generating asset [6], [7]. To take the full advantages for knowledge and information-based business models, there is a need for an integration framework that can tie together the various classes of Kapps. Some of the emerging classes of Kapps are [8]:

- *Customer Relationship KApps* - offer companies tools for mining customer data and information, having as outcome of this data mining process improved pricing, greater market share, longer customer retention, or a new revenue flow. For this, the companies must to do more real-time relationship management, the trend known as *personalization* (better understand and respond to each customer's needs, behavior and intentions).
- *Supply Chain KApps* - encourage trading partners to improve profits by managing inventories in the supply chain; by obtaining the information that enables visibility and certainty, offering more favorable terms, increased levels of supplies, invests in co-marketing.

- *Knowledge / Innovation Management* - assure the companies to push technologies farther, giving their employees instant access to information and reports that previously took days or week to obtain.
- *Remote Performance Monitoring* - provide information to operating managers throughout an enterprise that enables them to improve performance on a routine basis, by bridging operations and strategy using key performance indicators.
- *Simulation using what-if scenario analysis* - encompasses advanced simulation and scenario modeling, based on information from diverse internal and external sources. This enables management to participate in developing strategies and learns risk management (by modeling of future risk and returns).

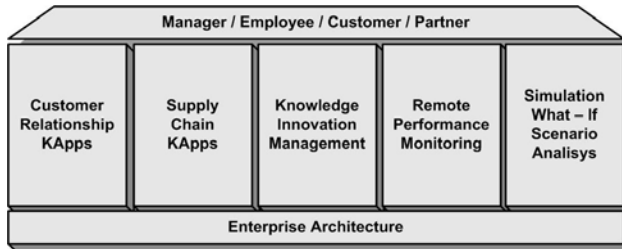


Fig. 2. The emerging classes of KApps - customers get exactly what they need.

To create an integrated decision framework, the organizations have to implement a number of KApps built on a platform that is composed of three layers [9]:

- *E-business decision* – support solutions, that includes the ability to deliver views and queuing, reporting, and modeling capabilities that go beyond current offerings.
- *Enabling technologies* – data mining, query processing, and result distribution infrastructure, which mean the ability to store data in a multidimensional cube format (On-Line Analytical Processing – OLAP), to enable rapid data aggregation and profound analysis.
- *Core technologies*, as data warehousing, and data markets, that get all company data working together so that user can see more, learn more, and make the organization to work better.

Because information access and control drive business competition, it is obvious to consider the lack of boundaries in modern business and that fact that corporations and consumers are becoming more interconnected via private networks and Internet.

These increasing interconnections are facilitating development of KApps in three phases:

- *Corporate Intranets*, in which the companies are creating complete and uniform linkage of information and knowledge resources distributed through the organization. For the knowledge creation to occur, data aggregation needs to be complemented with data analysis. Moving from departmental solution, in which data and reports are, developed for small, specialize communities of users, to corporate intranets, opens up data resources to a broader base of users, by using the browser as a standard interface.
- *Extranets*, that are focusing on supply chain partners, in the conditions when the companies are moving parts of the internal corporate information infrastructure, so that suppliers and trading partners can access them (through fire-walls). The key business drivers are: fast access, customized data, and responsiveness. Standardized reports and interfaces are minimizing services requirements imposed by the management of huge data volumes, cross-platform coverage and support, response time speed, and a broad range of interface choices.
- *Commercial Internet Applications*, which focuses on new business models, created for capturing, consolidating, and reselling consumer information, business transaction records, and financial data.

At the present, most companies and corporate strategy is in phase I, with the emphasis on creating the ability to imitate decision-making through all levels of an organization. But they are facing the challenges

of performing complex computational analysis on collected data and of disseminating the information and knowledge not only to employees, but also to customers, suppliers, and business partners.

#### 4. KNOWLEDGE MANAGEMENT

Knowledge management is a certain form of looking into the organization in the search of points of the business process where knowledge can be used as competitive edge [9]. Also, Knowledge management is not technology but it can be benefited from new technologies of the information and of communication. Knowledge management is not creativity and innovation but it is related to how to use the innovations generated in the company in a systematic way for a better market positioning. Knowledge management is not quality but it uses techniques and tools that have already been applied in the quality management and in the approaches of continuous improvement. Knowledge management is not marketing but it can help companies in the competitive intelligence. Knowledge management is not documentation but it is related to organizational collective memory.

Knowledge management is not also administration of human resources but it only takes place with the people of the organization. In fact, knowledge management is a new area within information technology and management, a new field among the strategy, culture and information system an organization.

Today, we define knowledge management as being the process by which the organization generates wealth, from their knowledge or intellectual capital. In this context, wealth happens when a Virtual Enterprise uses its own knowledge to generate more efficient and effective processes. Companies tend to differentiate themselves from what they know (intellectual capital) and from how they use this knowledge. The interest for knowledge within companies begins with identification that the value of market of several companies is much larger than the value of their own physical patrimony (equipments, facilities etc.).

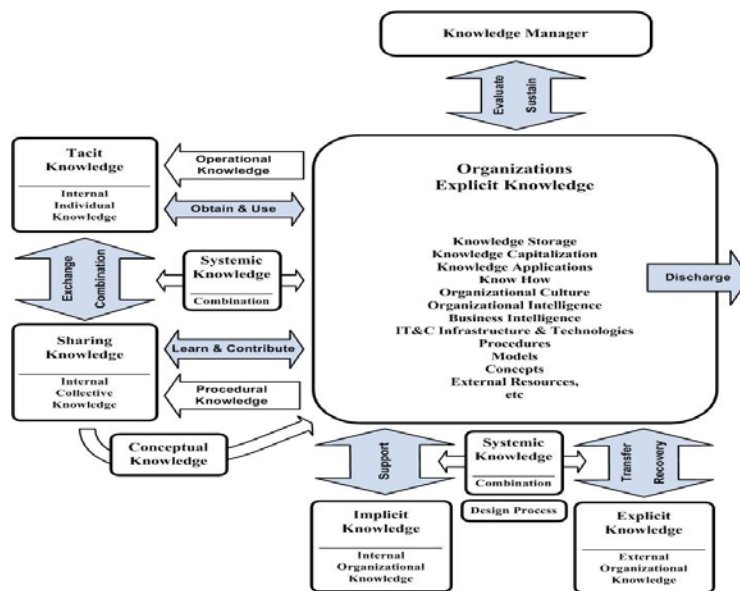


Fig. 3. Knowledge management at the enterprise level

The knowledge of the organization is composed by the sharing knowledge of each individual [1], [2]. For increase the knowledge in the enterprises for an efficient knowledge management of the intellectual capital we define ten steps: obtains and uses, learn and contribute, evaluates, sustain, support, exchange, combination, transfer, recovery and discharge (see Fig. 3):

**1. The steps obtain and uses** are well known within organizations. People always seek information and use them later to solve their problems, to take decisions or to create new products. Therefore, new

technologies (e.g. intranet/internet/extranet) allow that the large amount of information that flows within organizations can be correctly managed.

**2. The steps learn and contribute** are relatively new for organizations. For example, it has been difficult to convince employees to contribute to the organization's knowledge base. New technologies have helped companies easily organize, send and transfer certain types of information. However, the employee has seen this facility as a threat for his/hers own job security. The most difficult task is to convince individuals that their contribution will give return to their organization as well as to themselves.

**3. The steps evaluates** indicate that the organization should define its own necessary knowledge for its mission and classify its own currently intellectual capital. In other words, the knowledge manager does more than organize the content in system on-line; he/she should understand and foresee the community's needs.

**4. The step sustain or maintain** should assure that the future intellectual capital would maintain the organization viable and competitive. Organizations tend to build their own intellectual capital through their relationships with customers, employees, suppliers etc. The knowledge manager should also be responsible for the maintenance of the organizations knowledge base.

**5. The step support** can be used for the continuous improvement of the product design process.

**6. The step exchange** represents an intelligence and creativity combination of organization employees to find better solutions to their problem. Knowledge exchange involves interaction between decision makers and researchers or project development teams and results in mutual learning through the process of planning, disseminating, and applying existing or new research in decision-making.

**7. The step combination** can be making by means of the Industrial Informatics Systems or Knowledge Work Systems.

**8. The step transfer** realized by teaching process, e learning and simulations. At the organization level the knowledge could be found to individual or group (collective) resources.

**9. The step recovery** utilized when the organization must re-create knowledge that disappears because documentation isn't adequate or experts don't pass along knowledge before they leave.

**10. The step discharge** excludes any useless knowledge from the organizations knowledge base. However, some knowledge can be more valuable if it can be transferred to outside of the organization.

## 7. CONCLUSIONS

This paper analyses the knowledge management process at the enterprise level and proposes a methodological models, based on the intellectual capital as well as knowledge resource used during the product development process and business intelligence strategies elaboration. The validation of these methodologies will be carried out based on a practical application in a university and Romanian SME partnership. The aim of this project is to determine the new organization type for integrating in the virtual enterprise medium and to outsource shared resources of the university research centers to the industrial partners.

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