

PRODUCT MANAGEMENT AND KNOWLEDGE MANAGEMENT

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Abstract:

On a global basis, product managers are recognizing the importance of knowledge as a means of gaining or sustaining product success on market. Knowledge management becomes an essential process in product management. A product management that joins all needed market, economic and technical skills on strategic and operative level can offer an effective and proactive approach to handling or avoiding such critical situations with the use of appropriately integration within knowledge management. However, most organizations do not understand what knowledge should and can be managed. Since knowledge is the most basic of all competencies, its localization, acquisition and development, transfer, codification and application should be a critical success factor for attainment of effective product management. Little research is focused on studying the product success factors within knowledge activities. This paper is mainly focused on knowledge issues in product management. In the article the knowledge management and product management concepts are described. This study focuses on the knowledge in product management; knowledge in product management is identified and classified based on new product introduction (NPI) projects. Furthermore, how to improve the knowledge management process in product management is presented.

Keywords: knowledge management, product management, knowledge, information, strategy.

1. INTRODUCTION

Due to the advances in science and technology and the rapid changes in the market, a product's life cycle has become much shorter than before. Industry must constantly innovate and conduct research on new products, choose appropriate products with new technology, cope with customer demands and the threat from new competitors. The role of knowledge as the key source for competitive advantage in enterprises has become very important.

A product management function is an important activity that helps enterprises to survive and make continuous improvements. Companies have adopted knowledge management (KM) method and product strategy. However, few enterprises have introduced the knowledge management concept into product management processes. This study will conduct research on the correlation between the knowledge management and product management activities.

Knowledge is a vital resource for effective product management. If managed effectively, knowledge can be used to reduce NPI (New Product Introduction) project time, improve quality and increase customer satisfaction (Sixotte & Langley, 2000). Identification of relevant knowledge and the ability to utilize it is a challenge for product management. Effective product management is based on accumulated knowledge, and, on the other hand, on individual and collective competences.

In this paper knowledge management and product management concepts were described. The differences and possible synergies between these two conceptions were presented.

2. THE CONCEPT OF KNOWLEDGE MANAGEMENT

Today's competitiveness and the resulting rewards can be obtained by taking advantage of knowledge management. Knowledge is a core entrepreneurial asset. Entrepreneurs often try to create a differential niche by virtue of process innovation, a product of knowledge combination, expansion or reframing as categorized by Tsoukas (2009). Wiig (1995) proposed that knowledge management is a group of clearly defined processes or methods used to search important knowledge among different knowledge management operations. Knowledge management was alternatively used to confirm new product strategies and strengthen human resource management in achieving the enterprise's goals. Because the main objective of knowledge management is knowledge innovation, each organization member can increase his knowledge through the spiral course of socialization, externalization, recombination and internalization. The competitiveness of an organization is thereby achieved and the knowledge sharing and integration process can generate new knowledge. Ler (1999) pointed out that knowledge management involves collecting information and transferring information to demanders. Such activities, including knowledge obtaining, knowledge refining, knowledge storing and knowledge sharing, can effectively increase the value of the knowledge asset in an organization. This is called knowledge management.

One of the most common distinctions in the contemporary knowledge literature is between knowledge, information, and data. Data is a set of discrete, objective facts about events. Information is a message, usually in the form of a document or an audible or visible communication. As with any message, it has a sender and a receiver. Information is meant to change the way the receiver perceives something, to have impact on his judgment and behavior. Knowledge is broader, deeper, and richer than data or information. Knowledge can

be understood to emerge from the application, analysis, and productive use of data and/or information (Hislop, 2005).

As domestic appliance industry increasingly adopt a consumer focus in their product product strategies, a new paradigm in product management and manufacturing is emerging. It offers broader product ranges, shorter model lifetimes and the ability to process orders in arbitrary lot sizes. A distributed knowledge management environment comprising, (a) a knowledge-based system, which analyzes, verifies, stores, and retrieves process definitions, and (b) a process manager, which manages and monitors execution of processes defined in the knowledge base system. Knowledge management involves people, technology, and processes in overlapping parts. Liebovitz (2003) considered it as dealing with capturing, sharing, applying and creating knowledge in an organization to best leverage this resource internally and externally.

Knowledge is usually developed by individuals on the basis of day-to-day collective work and, as such, knowledge is a continuing result of interactions between people, within and outside the organization. Accordingly, several researchers such as Gold et al. (2001) and Kim and Lee (2006) suggest that, together with information technologies, a knowledge management infrastructure consist of structural and cultural enablers. Both cultural and structural dimensions integrate the key role of actual and potential characteristics that derive from the relationships possessed by a human or in a social unit (Chuang, 2004), and both of them have been considered as complementary in encouraging the capacity to both explore and exploit knowledge within organizational contexts. Cultural and structural enablers must thus be supported as a basis to create a knowledge management context that determines the extent to which exploratory and exploitative activities can be developed and coordinated (Jansen et al., 2005).

Organizations possess two kinds of knowledge: external and internal. External knowledge reflects awareness of regulations, competition and market trends, as well as the ability to anticipate a market. Internal knowledge includes an understanding of core competencies, know-how, strengths, weaknesses and lessons learned from past experiences (Frappaolo 2000).

Pioneering studies of knowledge management have defined knowledge in several ways. Many authors make distinctions between data, information, and knowledge as follows (e.g. Tobin, 1996; Beckman, 1997; Liebowitz, 1999):

- Data – Facts, images, or sounds constitute the database which will be interpreted and meaning attached.
- Information – filtered, formatted and summarized data. This is the basis for action and applications.
- Knowledge – represented by ideas, rules, and procedures that guide actions and decisions.

Rouse (2002) classified data, information and knowledge as follows:

- Data are the results of measurements of variables, for example voltages, response times, or opinions.
- Information is an assembly of data in a comprehensive form capable of communication and use, for example tables or charts of statistics or trends.
- Knowledge is information evaluated and organized by the human mind, so that it can be used purposefully, for example conclusions or explanations.

3. THE CONCEPT OF PRODUCT MANAGEMENT

Product managers in industry are responsible for the overall product success on market. Meža (2009) defines product management as a kind of a messenger of a market. It directly transfers clear information market logic to different departments in a company which need such information to make their business decisions. Nowadays, in the times of severe competition and constant price pressures, this should be a permanent activity of product managers to care for cost reduction of product cycles. Product management core activities are by no means focused on a product and/or on management activities. They are related to direct participation in project development and in planning of new products. The outcomes of the product management work can be judged by the product quality or the level its success. Certainly, we should note, that there are some products which are more likely to be successful on the market, and there are others, which might be unsuccessful as well.

On the other hand, domestic appliance industry is facing a crisis nowadays. Some authors (Meža, 2009) suggest variety of possibilities to solve or even prevent such product crises. Product management plays an important role in avoiding and preventing potential product crises resulting in inefficient market communication, weak commercialization of novelties/changes (due to poor advertising start and inadequate advertising strategy).

According to definition, a product management as a discipline (i.e., organizational design) has been tested, scrapped, and brought back by many firms. This is not surprising since there are both advantages and disadvantages to it. Gorchels (2000) points out that a product manager becomes a champion for select products, brands or services in a multiproduct firm, acting as a "general manager of a virtual company." This provides dedicated attention to a set of offerings, but can also pose challenges. Product managers must juggle the demands of selling existing products with the development of new products. They may also be faced with resource constraints when competing with other product managers in the same company.

Product management is the entrepreneurial management of a piece of business (product, product line, service, brand, segment, etc.) as a "virtual" company, with a goal of long-term customer satisfaction and competitive advantage. Product managers are generally accountable for this piece of business without having direct authority over the entities that "make it happen." It may include, but is not synonymous with, project management, new product development, or sales support.

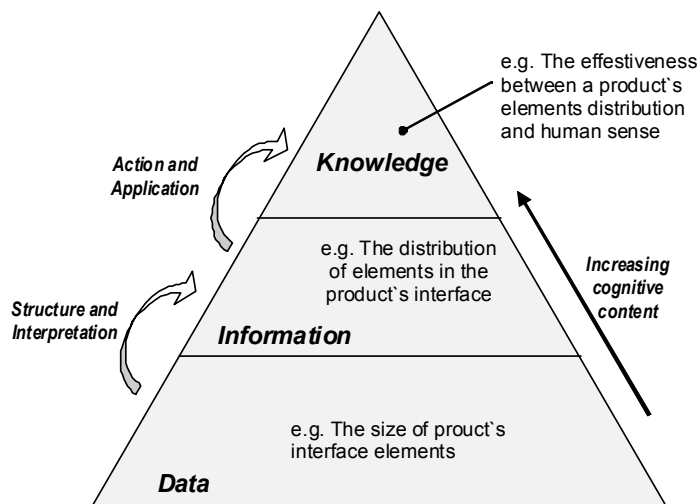
4. KNOWLEDGE MANAGEMENT AND PRODUCT MANAGEMENT

The literature concerning the product management and product development process as a whole has tended to conclude that a dedicated project management structure is the optimal way of organizing the entire process. In this configuration, the organisation remains largely functional, but project participants (maybe hundreds of people in new platform projects in the automotive industry, for example) are pulled out of their functional organizations and dedicated to the project, reporting for its duration to a project manager of similar hierarchical rank as the functional heads. Knowledge creation and transfer/sharing are seen as positive side effects of an effective project management structure, where teamwork, stage overlapping and intensive communication between all players and throughout all phases of development projects are the key enablers (Soderquist, 2006).

With general definition described in previous text, we need an answer what are the competencies associated with success? To be able to manage a piece of business, product managers need a grounding in business skills. To be able to attain these results without direct authority over all of the people involved requires an ability to work through other people. To ensure customer satisfaction and competitive advantage, product managers must understand customers and infuse this knowledge throughout the organization. They must also be able to translate this customer information into technologically specific product and service requirements. Finally, since product managers deal with new product development, numerous projects, and ongoing sales support activities, time management, project management and organizational skills are essential.

This paper will focus on the knowledge in product design. The relationships of data, information and knowledge are described in Picture 1.

Picture 1: The relationships of data, information and knowledge



Source: Yuan et al., 2006, p. 52.

Picture 1 shows that information is data structured and interpreted, and knowledge is information applied for guiding actions. Knowledge in product design is defined by the information put into a context of a particular use scenario in product design. It is information evaluated and organized by the human mind for guiding actions and decisions in product design.

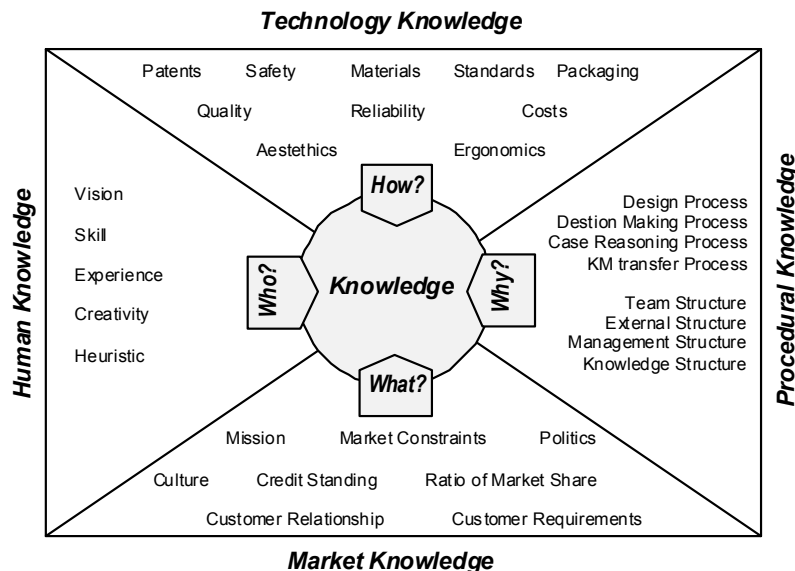
Many types of knowledge are recognized in the literatures; however, little work has been done on the research of knowledge in product design, such as what knowledge is used in the product design process. Based on pioneer research, analysis of decision making and product design process, knowledge in product design is classified into four types (Yuan et al., 2006):

1. market knowledge;
2. human knowledge;
3. technology knowledge; and
4. procedural knowledge (M-H-T-P).

This is illustrated in Figure 2 (Yuan et.al, 2006):

- Market knowledge (MK) represents the knowledge interacting with the external interface like customers, partners, suppliers and other stakeholders. This knowledge consists of knowledge of marketing channels, customer relationships and the strength and loyalty of these. Market knowledge is important for designer to know the objective in product design.
- Human knowledge (HK) represents the knowledge internalized in a person, such as skills, experience, creativity, etc. Within each designer resides the human knowledge the team seeks to utilize. Human knowledge is of vital importance because it is the source of innovation and knowledge generation.
- Technology knowledge (TK) refers to knowledge about technologies. This form of knowledge includes inventions, publications, trademarks, patents, knowledge recipes, etc. Technology knowledge is part of the core competence of a design team.
- Procedural knowledge (PK) refers to knowledge about how to accomplish an end. It deals with the mechanisms and structures. Procedural knowledge is the supportive infrastructure of human knowledge, technology knowledge and market knowledge.

Picture 2: Knowledge in product management



Source: Yuan et al., 2006, p. 54.

4.1. Product management phase model supported with Knowledge management

Product management and knowledge management disciplines are related. Both the disciplines have some common aspects and differences. Some of these aspects (purpose, focus area, strategy, functions, communication, organizational structure, technology, organizational knowledge, investment) are in this paper to develop a better understanding of both the disciplines and their relationship. Knowledge management was alternatively used to confirm new product strategies and strengthen human resource management in achieving the enterprise's goals. From its definition, it is clear that product management has overall responsibility for the product success. Responsibility for the success of the product means that they have to have a keen grasp on the shifting market place so that they can adjust the product or marketing mix accordingly. Strong forecasting, financial planning and analysis skills are prerequisite to any Product Management role. A knowledge-based product management

attends to two related processes that underline these direct processes: the effective application of existing knowledge and the creation of new knowledge. The goal is fourfold: to ensure that knowledge is involved and managed during all phases of product management described below. Effective integration of knowledge and product management during the NPI (New Product Introduction) project is a critical success factor for company.

Conceptual Phase

The focus areas of product management is to know your customer and the market. Knowledge management focus areas are: Generation and classification of ideas, cross-functional brainstorming, environmental scanning; market research; and market segmentation, multicriteria evaluation of ideas, selection of concepts to move forwards with. As ideas come in they need to be entered into the repository and be classified. Classification should be done by criteria such as the type of idea (new product, new product feature, product enhancement) and who or what generated the idea. In order to bring some focus and structure to the process of knowledge management the use of decision matrices is encouraged.

Feasibility Analysis Phase

Once the project has been given the initial green light, it is time to carry out some seriously in-depth research and analysis. By the end of this phase the following documents will be available as substantial first drafts of business case, marketing plan, market requirements document and launch plan. Building a special cross-functional team that will involve knowledge management touch in the product lifecycle from conception to retirement. The goal of this phase is to have gathered and analysed enough data to be able to make a sound decision about moving onto the definition phase or rejecting the concept. Knowledge management and product management are included in market and product requirements.

Business Case Phase

Business cases are actually used in nearly every industry to justify a whole range of business activities that need sign off from senior management. These can range from cases being built for developing new products to cases being built to justify investment. Knowledge management is requiring a long-term time period and significant organizational resources to justify a whole range of business activities that need sign off from senior management. These can range from cases being built for developing new products to cases being built to justify investment.

Product Definition Phase

Nearly every industry to justify a whole range of business activities that need sign off from senior management. These can range from cases being built for developing new products to cases being built to justify investment. The main stages of knowledge management in this process are elicitation, analysis, specification and validation. It is an iterative process that ends with the resulting document being validated and signed off by the stakeholders.

Product Development Phase

Product managers role during the product development phase is primarily about providing leadership - their management and people skills come into play. Product management is focus in innovation, sharing knowledge, and collaborating on efforts to improve efficiency and effectiveness of projects. The NPI project activities are also an integral part of knowledge management. Knowledge management is integrated with product management efforts to improve NPI projects success.

Product Launch Phase

Product launches are extremely valuable opportunities and have to be orchestrated well. Launches are a part of the public face of the company. It is crucial to have someone from the decision making body/ executive board leading the effort. Knowledge management activities can be broken down into smaller manageable stages with decision points and vital checks based on: revalidation of the market signals, re-evaluation of the assumptions in the business case and evaluation of the project risk.

Post-Launch and End-of-Life Phase

The main act of the Post-Launch Phase is the actual running of the business. Post-launch, it is important to have a process of debriefing for the project so that lessons can be learned. The "End of Life" phase of a product is the natural conclusion to the lifecycle of a product. All products are eventually superseded by new products in the market or the market moves on to a new technology. Knowledge management uses activities of project audit, knowledge transfer from lessons learned in business, and business performance metric and intelligence.

5. CONCLUSIONS AND IMPLICATIONS TO MANAGERS

In today's dynamic marketplace, knowledge is key to gaining and sustaining competitive advantage. Management of knowledge involved in the product management activities is critical to the success of firms competing in environments that require rapid innovation. Unfortunately, many firms lack an understanding of how to develop knowledge management (KM) strategies that drive successful outcomes. Creation, utilization and management of knowledge is at the center of the product management activities.

Firms pursuing product management strategies and process must know what they know and how to apply it in useful ways, and know what they don't know and how to close these gaps. From the perspective of product and knowledge management a NPI (New Product Introduction) projects are among the most knowledge intensive endeavors in the modern corporation. Knowledge management and the product management impacts the time to market, product and process functionality, manufacturing costs, and the match between customer requirements and final product features. Knowledge management can enhance the product management activities by being better able to leverage knowledge internally and externally through improved knowledge sharing during NPI project. The objectives of this paper are to discuss the correlation between the knowledge management and product management and to find relation and integration points of knowledge management and product management into NPI projects.

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