INFORMATION AND KNOWLEDGE MANAGEMENT AND THEIR INTER-RELATIONSHIP WITHIN LEAN ORGANIZATIONS

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ABSTRACT
The global economy and worldwide markets are being characterized by the shift of focus from tangible resources towards intangible assets. In the context of a “knowledge economy”, knowledge and information management are key factors as they represent vital strategic organizational resources. Nevertheless, many organizations struggle with defining these two organizational areas and moreover, delimit them from each other. For lean organizations the information management represents a key element while collecting, organizing, using, controlling and disposing of information in an economically unwasteful manner. Therefore, information management can be defined as an integrated part of the organizational knowledge management. The unwasteful disposal of knowledge, and in particular of the tacit organizational knowledge, is as likewise a key success factor. The process of generation, management, application and transfer of organizational knowledge should be tailored around lean principles in order to avoid wastes like over training or over specializations of the staff. Based on an empirical literature review, this paper aims to draw a clear and understandable line between the concepts of knowledge and information management. Furthermore, it underlines the indispensability and interconnectivity of the concepts within lean organizations.

Keywords
Information, knowledge, management, lean, organization

1. Introduction
In the business community knowledge management has gained substantial importance over the last few years. Managers have long discovered that information is the most important asset of a company, but yet, the question of whether knowledge management (KM) is just another preface for information management (IM) is still in the back of many minds. In order to clear the air, this paper addresses both, IM and KM separately at first. The article studies the notions associated with the management of information and knowledge
from a lean perspective underlining the importance of eliminating waste factors as well as the fact that in this context IM is an integrated part of KM. The second chapter gives not only an overview of the two concepts, but also over the processes, means of implementation and success factors of implementing IM and KM within organizations. Chapter three combines the two concepts in order to show their inter-relationship and circumscribe their differences while the fourth chapter analysis and exemplifies the concept from a lean perspective. The last chapter not only summarizes the main results but also gives a brief overview upon the management implications and the gaps that need to be filled with further research in this field.

2. Conceptual Background

In order to truly understand the interaction between IM and KM it is very important to understand the difference between these two notions, hence the difference between information and knowledge. There is no shortage of researchers providing various definitions of these notions.

2.1. Information Management

IM represents the way through which an organization collects, organizes, controls and spreads information, ensuring that the value of that information is identified and exploited to the fullest extent. It represents the key for sustaining knowledge creation and application within organizations.

Information and data management are important pillars of knowledge management that allow individuals to transform information into the organization in order to create and share knowledge. Information management implies managing explicit knowledge, but also procedures such as sharing of rules or learning experiences [1]. Information systems should be the stable structure of an organization. That way, even though the human factor of an organization varies, the value of its experience will be incorporated in systems that help employees and their successors conduct the business [2].

One important step when gathering information with the purpose of turning it into organizational knowledge is its categorization.

Information can be categorize based on the function for which it is collected, hence marketing information, financial information, management information, but also based on the difference between qualitative and quantitative information. While qualitative information usually contained numbers, qualitative information will be expressed in qualitative terms [3].

There are several factors that can hinder IM processes. IM systems and projects, as well as KM systems, are usually complex and must be implemented company-wide. Therefore, they must be planned and managed carefully and given the necessary management attention and time. A bottom-up approach is indispensable for IM processes. Without sufficient management attention and the right sustaining infrastructure information, especially tacit information, can easily be lost which leads to the fact that it will not be considered an input for knowledge creation processes. The implementation and maintenance of IM processes leads us to the issue of budgeting. IM processes, systems and infrastructures usually generate high and diverse costs on the short run. The economic evaluation of information projects is difficult and opaque due to the intangible nature of this organizational asset. Nevertheless, the necessarily systems, the human resources allocated to these processes and the infrastructures will pay for themselves [4].

2.2. Knowledge Management

While definitions of information tend to be less complex and far more uniform, definitions of knowledge are most of the times more thorough and multifarious.

A common definition found in literature states that knowledge management represents the capability to build profits and market share by implementing the idea of knowledge and know-how [5].
In this context, KM refers to the means in which organizations manage knowledge resources in a company in order to obtain business benefits. In few words: the means to achieve business goals [6]. This organizational knowledge can be split into two different types: tacit and explicit knowledge.

The relationship between the two types is captured in four different ways:

– socialization, which involves the conversion from tacit knowledge to tacit knowledge;
– externalization, which involves the conversion from tacit knowledge to explicit knowledge;
– combination, which summarizes the conversion from explicit knowledge to explicit knowledge and
– internalization, which refers to the conversion from explicit knowledge to tacit knowledge [7].

While tacit knowledge is action-based, explicit knowledge is the kind of knowledge that can be codified and is therefore more easily communicated and shared.

KM is an integrated way that mixes the information stored in an enterprise's information system with unstructured information that holds the experiences and insights of the enterprise. It also encourages knowledge to be created, shared, learned, improved and organized for the benefit of the organization and its customers. Therefore, KM focuses on people and increases their capabilities by improving communication, information, transfer and collaboration [8].

There are four key processes that describe KM:
– the tacit dimension of knowledge creation;
– the subjective, interpretative and sense-making bases of knowledge;
– the construction of meaning in knowledge creation and
– the social interactive nature of knowledge [9].

The first type of knowledge is based on aspects that are difficult to communicate by computer-based information mechanisms like intuition and understanding [10].

Tacit knowledge can be transmitted through social interactions or socialization, and made explicit through externalization. Therefore tacit knowledge is concealed knowledge [11].

Within the second aspect, people give meaning to information through the process of interpretation. Interpretations are necessary for preventing oversimplification or premature decision closure. It also facilitates diverse views within a framework that is wide enough to comprise individual differences [12].

The constructive aspect of knowledge creation is expected to authorize the organization’s advanced response to discontinuous change. Since knowledge is created by individuals, in the process of using data, it is difficult to provide the best practices residing in computer-based repository. Individuals respond to what they consider to be a stimulus and not every individual responds to the same stimuli [13].

Last, interaction between people is the best way in which successful knowledge transfer can be obtained. Social interaction is moreover crucial in the creation of new knowledge [14].

In order to understand how organizations can make use of knowledge management systems in order to develop a lean organization, it is crucial to get a general understanding of how KM works and what the main phases of a KM process are. Many researchers have based their work around the area of KM, developing several theories around its lifecycle. All these models are based on five or six similar steps. One other thing all researches conducted in this area have in common is the fact all activities of a lifecycle are iterative. In most cases the KM life cycle begins with the phase of capturing, creating or generating knowledge so that this knowledge can be further organized, mapped and bundled. After these first two steps knowledge undergoes the process of transformation into explicit and formal
knowledge. The fourth step addresses the ability to share and distribute the formalized knowledge. Some models use a fifth and a sixth phase which address the ability to reuse knowledge as well as knowledge evolution [15].

While knowledge management is a tool itself to create long-lasting and sustainable lean organizations, this tool is also built on a set of utensils that need to be integrated within each lean organization. However, there is considerable disagreement on what KM tools are and this disagreement results mainly from the fact that these tools were not built as KM tools per se but are used to achieve the overall goals of lean organizations [16].

KM practitioners make use of a wide range of IT tools in order to create, codify and share knowledge. These tools are based on systems which will transform the information mentioned above into knowledge. One category of tool is based on providing access to explicit knowledge so that it can be stored and transferred within the organization.

Another category of tools is meant to support the presentation and analysis of the gathered knowledge. These are so-called semantic mapping tools. They enable users to organize the gathered knowledge based on several criteria.

Last but not least, KM also makes use of knowledge extraction and localization tools which are self-explanatory in this context [17].

Not having the right infrastructure and not paying the necessary attention to organizational knowledge can lead to its loss. There are several factors that can cause knowledge management failure. For instance, the lack of performance indicators in the area of KM can trigger failure. Even if the intangible character of knowledge makes it difficult for managers to measure results, just like in any other organizational area, performance indicators and measurable benefits are the key to assess whether the information gathered from knowledge is adequate, qualitative and usable or not. Successful KM systems are also dependent on management backing. KM strategies are long term strategies and involve not only the acceptance but also the adoption of processes, values and systems company-wide. That is why failure can occur due to the lack of leadership long-term acceptance, responsibility and support. Lack of understanding or insufficient time directed to the KM program from the managerial side can lead to the failure of the whole strategy. Managers need to understand the complexity and requirements of KM strategies as well as to allocate the necessary time needed to properly implement and manage organizational knowledge.

In other words, KM requires proper planning, designing, coordination and evaluation. Political maneuvering is also a premise for failure. KM projects are often used as a means to gain power with the organization. Also, the scope of KM can often interfere with managerial interests e.g. top management employees might not be ready to share valuable knowledge in order to improve the organization. Inadequate skills of knowledge managers and employees can also produce a failing KM system.

Just like in any other area of work, employees assigned to integrate KM systems within organizations are required to have a specific set of skills such as: strategic, business, communicational, interpersonal, IM, IT, intellectual and learning. The right business and technical skills must be present in order for an employee to be able to sustain KM projects and strategies. Employees working with KM systems should be analytical, intuitive and pragmatic [18].

Other factors that can lead to the failure of KM systems are, for example, the loss of knowledge from staff defection or retirement, lack of responsibility and ownership of knowledge, lack of relevance, qualitative and usable knowledge, improper implementation of technology and infrastructures that can sustain KM systems and improper or insufficient budgeting [19].
3. The Interplay between IM and KM

In order to distinguish KM from IM, it is very important to understand the concepts of knowledge and information.

According to Wiig (1999), information organizes facts and data to characterize a situation and knowledge as a set of truths and beliefs, perspectives and concepts, judgments and expectations, methodologies as well as know-how [20]. On the other hand, knowledge is described as a mixture of experience, values, information and expert view that ensures a skeleton for evaluating and incorporating new experiences and information [21]. Knowledge should be understood as a combination of information, personal experience, views, expertise, suppositions and logical reasoning formed in the minds of human beings [22]. According to Nonaka and Takeuchi (1995), knowledge, unlike information, is about beliefs and commitment [23].

Even though both KM and IM demand human involvement, their objectives are different. IM’s purpose is to provide stored and retrievable information whereas the goal of KM is related to organization outcomes. Another difference between KM and IM is related to the tools needed for their management. IM tools allow organizations to generate access, store and analyze data, usually in the form of facts and figures. On the other hand, while KM systems include tools that handle data and information, IM tools are not strong enough to ensure KM [24].

Also, the success of an IM project is accomplished when the preservation and the recovery of information is guaranteed while the success of a KM program depends on the sharing of knowledge. For example, if there is only one person who knows the organizational rules and procedures of an enterprise, these rules and procedures are not useful. Knowledge sharing is decisive when some employees quit and others join.

The main difference between IM and KM, especially from a managerial point of view, is the fact that information is much easier identified, controlled and transmitted whereas knowledge cannot actually be managed. Knowledge resides in a person’s mind and is acquired over time. A key interaction point between the two is the fact that knowledge is acquired and learned using not only experiences but mainly the above-mentioned information. Therefore, information is in this context an integrated part of knowledge. On the other hand, knowledge can also be translated into information through its application within various circumstances. If this created information is then used and shared with the purpose to create new ideas and value then the process described is a circular one where the two variables are directly interdependent.

One interesting point about this interaction is that knowledge can be transformed into information. Nevertheless, the reason for which these two notions are not identical is the fact that when this transformation occurs, individuals materialize their knowledge. During the process of writing emails, documents or even verbally transmitting ones knowledge, individuals not only codify their knowledge but also either leave knowledge out or learn and adapt it in the process of “downloading” this knowledge [25].

Another difference is that information per se can be useless for an individual and also not suitable for its transformation into knowledge if it lacks context. This is why KM is usually more human-centric than IM. Increasing the quality, context and understandability of information leads to greater chances that this information will actually be transformed into knowledge [26].

From a broad, organizational point of view, KM and IM not only have different approaches but also different scopes. KM is an organizational pillar, an ongoing process. KM projects usually have a holistic view upon the company and comprise all several if not all areas of an organization. Since KM relies on individual’s previous knowledge, motivation and willingness to transform this knowledge into information or further knowledge. KM is not only dependent on information but also more complex than IM.
4. Consequences for Lean Organizations

Within all organizations, KM refers to the process of developing the abilities of employees. The employees are the value-added creators of an organization and no new process or culture can be implanted in absence of a KM that is already stable in the organization. In other words, KM and IM are assured through the human factor of an organization.

In the context of lean management and unwasteful organizational processes, the elimination of waste from IM and KM processes is a key factor for the organizational effectiveness. Nevertheless, the conversion process described in chapter 2 can also result in loss or false codification of information. In order for information to be a valuable resource for an organization, a company must recognize the links between various parts of information and their usability. Also, it is crucial for a lean organization to understand the different types of information present in the company, as describes in chapter 2.1. [27]. As discussed in chapter 2.2., there are several ways to deal with this loss of information using KM tools. If the process results in false codification, one of two things can happen: either the information does not coincide with the knowledge that was intended to be codified, in which case the conversion mechanism should be revises, or the amount of resulting information is abundant. This last scenario is very common in organizations and therefore should be addressed with special care. Complex knowledge not only requires a high cognitive load but also significant experience and analysis of many decisive variables. In this case organizations are often faced with a type of lean waste, with unusable or repetitive information.

Tools like decision support systems, content management systems, semantic networks, data warehousing systems and so on are all tools that managers make use of, in order to capture and manage relevant knowledge [28].

KM ensures the durable functioning of lean organizations. KM, as well as its prerequisite, IM, needs to be an integrated part of the lean organization even prior to the start of the implementation of lean processes. Within lean organizations, KM lies in the organizational culture itself.

5. Conclusions and Implications

Knowledge and information need to be managed like organizational assets. Moreover, IM and KM strategies must be aligned to the organizational strategy in order to meet the strategic and tactical requirements set by the organization. It is essential that organizations draw a clear line between IM and KM. While IM is mainly concerned with people and managing their information sources for easy retrieval and dissemination, KM refers to the means in which organizations manage the knowledge resources created as an output to the gathered information in order to obtain business benefits. Within lean organizations, IM plays a crucial role as it represents the input for all KM processes. Information needs to be managed in a lean manner: without lacking indispensable information parts and without wasteful information. In this context, wastful information refers to either too much, not enough, too complex or partial information.

KM should also be managed under strong lean principles: under avoidance of overloading staff with knowledge not necessary for daily work, with the right amount of knowledge transmitted to the right person, at the right moment and last but not least, rather under the concept of quality then quantity.

5.1. Research Implications

In recent literature, there is a gap concerning a commonly accepted definition of KM. Many researchers have come up with definitions of KM or have adapted previous definitions. Nevertheless, there is no universally recognized definition of KM as an integrated part of an organization. Moreover, further research should
concentrate on an in depth analysis of the interplay between IM and KM and especially on how information flows in the process of KM. Further research should then concentrate on improving the general understanding of the cause-effect relationship between failure factors of KM and IM as well as on the relationship between the drivers of these two assets.

5.2. Management Implications

Managers striving to develop or maintain a lean organization should not only treat information and knowledge like indispensable resources and assets but also as separate entities. Understanding the interplay of these two concepts is decisive for their optimal management. Moreover, strategies based on information and knowledge should always be aligned to the organizational overall strategy of the organization. Another important matter is that lean organizations need to make use of tools in order to eliminate waste out of IM and KM systems and processes. The discussed failure factors are contributors to organizational waste and need to be eliminated or prevented.

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References


