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## Analysis of the effects of ICTs in knowledge management and innovation: The case of Zara Group

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### ABSTRACT

The aim of this paper is to contribute to the study of how information and communication technologies influence on knowledge management processes within organizations and its influence on innovation and co-learning with an economical approach. Although this is a matter of particular relevance in the companies in order to achieve competitive advantages, there is a certain gap in economic literature about such concepts in an integrative way.

We propose a theoretical model that relates these concepts and apply it to the case of the textile group Zara. Results show that this company use different types of tools, such as management systems based on electronic communication or automation processes. The application of the case study of the textile group Zara shows that the combined used of these ICTs involve positive effects on socialization, exteriorization, combination and interiorization processes of knowledge management. Moreover, we identify which technologies and KM processes are most beneficial. Co-learning from ICTs favor the development of “living fashion” that involves the redesign new output lines in two weeks’ time (product innovation) and a short line production and zero stock policy (process innovation) in the company.

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### 1. Introduction

The *resource-based view of the firm* establishes the importance of organizations developing strategic resources that allow them to obtain sustainable competitive advantages over the long term (Edvinsson, 2013; Eisenhardt & Martin, 2000; Wernerfelt, 1984). Over the last few decades, the business environment has been characterized by becoming more dynamic and complex. As a result, organizations must reconsider the strategic resources that allow them to develop these competitive advantages. In this context, the competitiveness of companies is determined to a great extent by the use of information and communication technologies (ICTs), which allow for the creation of value and the establishment of knowledge management processes within the organizations (Kuo & Ye, 2010; Zhang, Ordóñez de Pablos, & Zhou, 2013).

Knowledge management (KM) is defined as “a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise’s information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience

in individual workers” (Duhon, 1998). In the present business environment, this concept plays a key role as it is concerned with the management of intangible assets in organizations. The majority of these types of assets involve processes that entail, in one way or another, the reception, structuring and transmission of knowledge. It is therefore a dynamic concept that involves the development of outputs with higher added value. In this context, intellectual capital (IC) is defined as a “combination of intangible actives which generate growth, renewal, efficiency, and stability in the organization” (Sveiby, 1997).

There is a large body of literature in the field of economics which studies: (a) ICTs, especially papers that analyze their effects on productivity and economic variables (e.g. Draca, Sadun, & Van Reenen, 2006), (b) KM, where research is centered on questions related to the processes of creation, transmission, use and knowledge management (e.g. Ichijo & Nonaka, 2007) and (c) innovation, with papers that analyze the main characteristics of business innovation (e.g. Teece, 2010).

However, a scarce literature examines the relationship between these three concepts. Moreover, it is not clear which technologies and KM processes are most beneficial in the companies. In this context, the objective of this paper is to analyze KM processes associated with ICTs in organizations and to use the results obtained, to identify implications for the innovation process.

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Likewise, co-learning within organizations in these processes will be analyzed because of the transferring and sharing of knowledge are indispensable concepts to obtain sustainable competitive advantages in the present business environment.

To this end, we establish a conceptual theoretical framework that allows us to analyze the relations between ICTs, KM and product and process innovation of the enterprises. Besides, we apply this model to the Zara Group (textile group that belongs to holding Inditex) with the aim of proving the theoretical proposals established in the model and analyze co-learning processes.

To do so, the structure of the paper is as follows: firstly, we analyze the literature about KM and the main characteristics of ICTs and propose a classification, in both the internal and external scope of the organization. From this, we develop a theoretical model where the concepts of KM, ICTs and innovation are related. After that, we apply this proposed theoretical model to the case study of the Zara Group and show the main results obtained. The final section will address the main conclusions and discussion that may be drawn from this paper.

## 2. Theoretical framework

### 2.1. Analysis of the literature about KM

There is an extensive literature about the analysis of KM concept. In this context, Lindblom and Tikkanen (2010) considers KM as “a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that will improve organizational competitiveness”. Bueno, Aragón, Salmador, and García (2010) establishes that “KM is the process of creation, acquisition and transfer of knowledge that is reflected in the behavior of the organization”. Similarly, Nonaka and Takeuchi (1995) consider KM as “company's capacity to create new knowledge, disseminate it within the organization and incorporate it in all organizational processes”. In this context, Edvinsson (2013) establishes “the importance of KM in the value creation from intangible actives in the companies”.

Therefore, in KM concept, there is an essential characteristic in common, related to the identification, sharing and creation of knowledge. It is important to bear these characteristics in mind, as they are a key element in organizational competitiveness. Therefore, as long as a dynamic process of knowledge reception, structuring and transmission has been developed, organizations will tend to develop outputs with a higher added value on the market (Kogut & Zander, 1992; Schmidt & Keil, 2013).

In this context, Nonaka and Takeuchi (1995) distinguish between explicit and tacit knowledge.

Tacit knowledge is a personal knowledge, developed from experience. It is characterized by being difficult to transmit, reproduce or embody. This type of knowledge is shaped by ideas, abilities and values. Know-how and the employees' experience are examples of tacit knowledge (Goffin & Koners, 2011).

On the other hand, explicit knowledge is formal and codified. As a result, it can be defined and transmitted with relative ease. Formulas, equations and company policy manual are examples of explicit knowledge (Hislop, 2013).

Fig. 1 shows KM processes, throughout various stages: socialization, exteriorization, interiorization and combination. By means of combination and socialization, knowledge is discovered. Externalization and internalization allow companies to capture knowledge. Later, these processes establish the possibility of sharing that knowledge in order to be able to apply it in the management by means of the establishment of routines.

Now, we are going to analyze their main characteristics:

- *Socialization*. This involves passing on tacit knowledge to form part of other tacit knowledge. In other words, it is based on the understanding and assimilation of tacit knowledge, derived from the interaction among people, by means of observation, imitation and practice. For example, when employees acquire new knowledge in a company directly from their workmates and managers.
- *Exteriorization*. This consists of moving from tacit to explicit knowledge. Therefore, the objective is to make tacit knowledge explicit by means of any type of medium that would allow other people to learn it, such as language or other formal representations. For example, when transmitted knowledge is encoded by means of the dialogue between employees and managers in a company which involve the possibility of sharing it.
- *Interiorization*. This consists of moving from explicit to tacit knowledge. In this process, knowledge is appropriated and later becomes one's own knowledge. As such, it is the result of learning and implementation. For example, when employees internalize the knowledge contained in the documents or software used in the company and then convert it into their own knowledge.
- *Combination*. This consists of moving from one type of explicit knowledge to another. It is based on the exchange, association and structuring of explicit knowledge from different sources, facilitating the creation of new knowledge of the same type. For example, when explicit knowledge of a company is combined (by means of documents or forums, among others), socialization process is extended.

### 2.2. Proposal of classification of ICTs

Organizations require information for decision-making that is especially relevant in complex and dynamic environments. In this context, there are several tools that manage the acquisition, distribution and use of information stemming from relationships among organizations, with an emphasis on ICTs (Butler & Murphi, 2007; Zhang et al., 2013).

As a result, ICTs are a key concept in obtaining and facilitating the creation of explicit knowledge by means of the collection, storage, aggregation and transmission of quantitative data (Phang & Foong, 2010). Furthermore, these technologies also aid in the creation of tacit knowledge by means of various tools, such as videoconferencing and simulation technologies. However, mere contact among people with explicit knowledge is not sufficient for the generation of tacit knowledge, rather interactions among individuals must occur in order to develop judgments and intuition.

Therefore, ICTs can involve positive impacts on co-learning. Thus, these technologies allow companies to create a shared space, in which employees can see each other actions of their workmates and each employee can contribute to which. Besides, these tools facilitate the creation of communication channels and the storing of commonly built documents that support co-learning (Van Joolingen, De Jong, Lazonder, Savelsbergh, & Manlove, 2005).

In order to promote co-learning, construction of shared knowledge is a key concept. Shared knowledge should be shown explicitly in order to allow employees to see the documents they are working on and talking about. However, it is necessary that the different employees' approaches can be integrated in the joint space created from ICTs too. So, employees would manipulate the documents established in it. Therefore, tacit and explicit knowledge is required from ICTs in order to promote co-learning in the companies.

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