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The effects of ICTs as innovation facilitators for a greater business performance. Evidence from Mexico.

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Abstract

Information and Communication Technologies (ICTs) influence growth of economies and businesses' efficiency and facilitate innovation through diffusion processes, usage practices and commercial success. Innovation, as well, has a direct impact on growth and competitiveness. The present empirical study has the objective to determine the effects of the ICTs as facilitators of innovation for a greater business performance of the industrial Micro, Small and Medium Sized Enterprises (MSMEs) on a developing country. In this sense, the measuring scales utilized were submitted to a Confirmatory Factor Analysis (CFA) under the Maximum Likelihood Method, counting with reliability and validity. The results obtained through the Structural Equation Modeling (SEM), since a sample of 288 MSMEs established in Guanajuato (Mexico), is allowed to infer that there exists enough empirical evidence the ICTs are a facilitator of innovation by influencing in this positive and significant manner; similarly, it was found that innovation and the use of ICTs substantially impact in the performance of the businesses studied. Therefore, the decision makers should pay special attention on the way they manage these key variables for business success.

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1. Introduction

Since the new millennium Mexican businesses are concerned with improving business performance in order to cope with the turbulent conditions of markets and fickle demands of their clients. For this reason, the businesses that have higher levels of innovation in comparison with their competitors as, Barnett and Hansen [1] note, will have crucial advantages, which will allow them to compete in national and global markets [2]. In this sense, small businesses are the ones that face greater obstacles and each time struggle more to keep up with the

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time. For this reason, it is fundamental for these types of businesses to rethink their business strategies, and for this, the strategy to use information and communication technologies (ICTs) will allow them to improve their innovation levels, whenever ICTs have been considered an innovation facilitator for products and processes [3-4], and in this way improve their competitiveness and performance levels, allowing them to face the many challenges of the environment and remain in the global markets, highly competitive and changing that they face today [5]. For this reason, it is important that the MSMEs achieve to incorporate the ICTs as an essential business strategy, which will allow them to propel their efficiency and improve their competitiveness [6], raise productivity [7] and gain client, employee and supplier satisfaction [8].

On the other hand, Gretton et al. [9] have suggested that the use of ICTs makes innovation development relatively more easy and cost-effective and that the effects derived from the use of ICTs can be a source of greater productivity. According to the literature review we have found that the majority of the empirical studies about the use of ICTs have been centered on large companies in developed countries [5], therefore, according to Apulu and Latham [10], Cuevas-Vargas et al. [8] and Piget and Kossai [11], little research exists about the use of ICTs in developing countries. Furthermore, there are relatively few theoretical studies and published surveys that correlate the ICTs, the innovation and business performance [12], but there are even fewer studies that correlate these three variables in the context of SMEs [13-14]. Hence, the need for more research about ICTs, innovation and business performance exists [15]. In this sense, this investigation has the objective to determine the effects of ICTs as innovation facilitators for greater business performance of the industrial MSMEs of the state of Guanajuato, Mexico.

Accordingly, this study considers three important contributions. The first consists on providing empirical evidence of the direct relationship between ICTs, innovation and business performance, direct between innovation and business performance, and indirectly between ICTs through innovation with business performance. The second contribution lies in the study of the three variables with MSMEs of a developing country, as is Mexico. A third contribution consists on the application of a methodology that is different to that used in previous studies and consists in trying the theoretical model through a validation of the constructs through the CFA method in second order and the proof of the hypotheses through SEM.

2. Literature review

2.1 Relationship of the use of ICTs with innovation

The incorporation of new systems and information technologies facilitate business planning and encourage development and execution of production programs, while stimulating the process and product control [16] cited in [8]. Henceforth, the adequate use of ICTs allows organizations, primarily in small businesses, to improve administrative activities in substantial ways [17]. This is especially so for dynamic companies with a highly competitive environment that requires the use of advanced ICTs to improve their efficiency and cost effectiveness, and to offer high quality products and services to their clients [18], from the feedback given quickly by the users. For these reasons, the ICTs are a valuable source of business innovation.

Moreover, the ICTs can also influence directly with the innovations based on ICTs in the business products, processes, and services, also in the business models [19]. Additionally, they can transform business processes and facilitate new products and services, as well as products and services variety and personalization requirements that were not operational and economically feasible before without the use of ICTs [20]. In this sense, the literature shows that there is enough theoretical and empirical evidence about the important role ICTs play in facilitating innovation in companies [20-22].

Foremost, Arvanitis and Loukis [20] in their analysis of 743 hospitals in 18 European countries found that the electronic applications on behalf of the hospital has a positive impact in the product and process innovation. Similarly, they found that ICTs have a positive effect on innovation in the hospitals and that the innovations

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