Influence of Information Systems on the Performance of Companies in the Tertiary Sector: Reflexive Look for Colombia

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***Abstract* –This article intends empirically to reflect the influence of Information Systems (IS) on the growth of small and medium-sized Colombian companies, in order to understand how they contribute decisively to the growth of organizations. In this sense, we try to confirm the positive influence of technologies with respect to the performance achieved in the tertiary sector of SMEs in different spaces, going beyond the Colombian case. It is recalled that in Colombia SMEs grant recognition of their growth, to their commercial participation. In this sense, this article reconstructs other analyzes achieved in this regard, both nationally and internationally; the review for that is done on scientific articles and institutional web pages. It is concluded that there are precise technological reasons useful for system engineers, businessmen and entities to persist in receiving information systems in the tertiary sector of the Colombian economy**

Keywords **– Information systems, small and medium enterprises, growth.**

1. Introduction

In Colombia, one of the reasons why entrepreneurs are selling, closing or abandoning their plan in front of the created company revolves around low profitability. This is a great concern of which little is spoken since the figure that has been sustained for decades in the main regions of the country is that SMEs "generate a high percentage in sales and employment and also boost the economy" [1]. The fact of sustaining the organization has made the small or medium entrepreneur, not only consider immersion in the issue of information systems, but also in fostering cultural change.

For this reason, the growing trend in levels of business discontinuity is still worrying: from 6% in 2014 to 8.2% in 2016 [2]. In this context, and in a developing country, attention is growing on the use, appropriation and influence of the Information Systems (IS) in all the spheres in which the current organizations operate. This, in turn, exerts an enormous impact on technological development [3] of SMEs (Pymes) traditionally existing in Colombia, either service to consumers or service to other companies.

However, the National Administrative Department of Statistics of Colombia (DANE) is clear in ensuring that the tertiary sector covers more than 80% of the country's workforce [4]. Thus, the purpose of this document can-not be other than to scrutinize possible milestones related to a context little investigated in the region, so that we can see the interest various countries have yielded to the issue of organizations that belong to the tertiary sector of the economy, supporting the influence of information systems on business performance. Its structure includes the direct recognition of some background on order to deepen certain speculations.

2. Reviewing Exchanges

Several studies have been carried out in order to confirm that information systems have been gradually "providing the business environment with a dynamic performance" [5]. However, the renewal and corresponding adoption has been woven depending on the rhythm with which the position of cultural renewal of its context has been given. They

DOI: 10.18421/TEM91-23
https://doi.org/10.18421/TEM91-23

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Received: 13 November 2019.
Revised: 22 January 2020.
Accepted: 29 January 2020.
Published: 28 February 2020.

are described in decreasing chronological order here, but when describing the case one passes from one continent to another, with the ease of the globalized world to which the technology belongs.

Chinomona, for instance, conducts her study with 162 small and medium-sized companies in Zimbabwe. The study concludes that the influence of information systems on the strategic purchases of these organizations is quite positive, thus giving an important performance in companies [6].

Similarly, Loeser, Grimm, Erek, y Zarnekow [7], have proposed to analyze with multiple criteria the performance of a company. In doing so, they support an instrument with which it was feasible to evaluate the organization and its growth. The study concludes that it has not taken advantage of the Information and Communication Technologies with which they could reach increasing the competitiveness among similar companies.

Meanwhile, Riascos and Aguilera [8] in Colombia observed closely 60 commercial, industrial and service companies, all based in the city of Cali (Colombia). They found that there is already a diversity of packages of software that improve the management of human talent in all types of organizations, especially in the tertiary sector.

Mithas, Ramasubbu, and Sambamurthy [9] carried out a simultaneous study. In this research, they observe 80 industrial companies recognizing that the capacity of information management in business performance has a positive influence on the company. To do this, they take three criteria: customer management, process management and overall performance.

In Spain, Pérez, Urquía, and Muñoz [10] carried out their study observing 74 small and medium-sized Spanish companies. They concluded the positive influence of the use of computer media on the rational indicators of performance of the companies (economic profitability and financial profitability), but they observed that such means do not impact significantly on their productivity.

In 2010, Maldonado, Aguilera, and González [11] conducted a study with 400 small and medium enterprises in Mexico. They confirmed that the use of ICT positively influence the performance of companies belonging to the tertiary sector.

On the other hand, in the United States, after studying 189 business initiatives, Nakata, Zhu, and Kraimer [12] concluded that ICTs indirectly influence the performance of companies belonging to the tertiary sector, and that they do so through strengthening of customer management.

Thus, it is stressed that "different methodologies and tools, such as financial, operational and efficiency, have been developed worldwide to measure the performance of companies" [13]. What stands out here is that the performance directly related to the support of the information systems is in the way how the time of operations and the development of the "routine activities within the organization" are optimized [14].

3. Resistance to Technology Vs. Technological Renewal

Experts in the field claim that although SMEs are willing to change, strive to approach their local market and grow rapidly, "they have a great disadvantage: a resistance to technology" [15]. In this regard, Varela confirms that most organizations use outdated technologies, which shows that technological renewal is weak in the country's business sector.

It is also clear that Colombian and even Latin American cultures differ from those in other countries. For instance, in developing countries, less than 70% "of small and medium-sized enterprises claim that their expectations were met or exceeded in key technology investments" [16].

In Colombia, this is true. In fact, it is claimed that as long as a culture change is not made, immersion in the issue of information systems cannot be considered, as evidenced in other parts of the world. In this country, in the first place, "information and people have to be focused on the organizational context before improving certain systems based on technology" [17].

It has been claimed that the information systems are providing SMEs with new possibilities for their sustainability, efficiency and growth; diverse experiences corroborate that they provide the small and medium entrepreneur with success opportunities in their business plans [18]. At the same time, it is considered a great boom, to the point of almost displacing the traditional formats on paper when the members of an organization struggled to make decisions. However, this demands new challenges imposed by the changing technological process to the inside of each one of the companies.

4. Moving From a Luxury to an Investment

While it is irrefutable that technology is a competitive factor and those companies, in general, have to invest in it, in Colombia it is often found that most small and medium enterprises do not access information systems since they lack the necessary budget to get to experiment and toy with a technology. In fact, Hoyos and Valencia argue that SMEs do not decide to adopt information systems, not only because of the scarcity of financial and human resources, but also because of the absence of a business culture that welcomes their use [19].

Due to the fact that the company uses the information systems, the company becomes aware, in part, of the considerable investment that has to be made, given that these systems can cause modifications both in the structure and in the processes administrative.

Despite this, it is considered in Colombia today that "small and medium enterprises are ratified as the locomotives of the country, not only because of their contribution to the employment, but because their smaller size allows them to better manage the slowdown" [20]. In this regard, Restrepo and Vanegas state: "It is natural that in developing economies such as Colombia's, the creation of wealth is closely correlated between large companies and SMEs"

It is about recognizing how SMEs are companies that have been substituting their manual procedures for some decades for others based entirely on computers, which either takes the information systems as a great ally, or if; on the contrary, its growth has not been directly related to it.

Now, it is necessary to analyze the extent to which SMEs, which host information systems, manage to have and maintain competitive advantages with respect to those that do not do so to the same extent, and grow in a culture in which decisions made in the business world are of great relevance, since they are reflected in an entire organizational chain, as Smith and Fadel would say [21]. We can just think how many of the SMEs are supported with the idea of "meeting the needs of customers, promote and sell these products and services, and give continuous support" [22] to those who do possible its growth.

5. Information as a Resource of the Company

Although both technological resources and the organizational systems are considered a relevant part of the factors by which company prepares to compete with Restrepo and Vanegas, and there is consistent speculation that "technology is a strategic asset of organizations, having a technology, or deciding to go by one or another provider, can create or destroy a competitive advantage" [23]. Hoyos and Valencia insist that the competitive environment is increasing in the organizational culture, and to the extent that "technological tools and advantages are required".

Analyzing several companies which use the information systems is appreciable. But without having to do so, the performance that they are obtaining when they carry out specialized tasks within the business organization, such as the manufacturing and production as well as the sales and the marketing recorded, their finances, accounting and human resources is also worth anaylyzing. What Gálvez *et al*. predicted, when they argued that "until now there is no agreement regarding a generalizable indicator to measure performance" is confirmed.

Although SMEs "in Colombia represent 99% of the companies in the country and 80% of employment", as stated by Luz María Velásquez Zapata, vice president of People and SMEs Colombia Bancolombia to *Dinero* Magazine [24], the DANE, for its part, states that 48% of the economic establishments existing in the country are dedicated to trade, and 40% are intended to offer services. This reflects the gradual immersion of the idea consisting of the empowerment of information systems in an environment nuanced by economic openness.

To appreciate the influence of these technologies, it is necessary to recognize the constant change of those technologies which, depending on the new demands, are given in each company. The performance of the company is much more verifiable as long as the design and development of information systems information systems becomes the basic support for the organization.

The own tools of the information systems are to support the functional areas in which they operate, without generating, by their acceptance, limits to interact with each other through interfaces, obtaining the saving of resources, both technological and human and economic as Duménigo said. It is considered, however, that to propitiate the ideal effectiveness in those processes inherent in the planning of resources related to the performance of the company, the investment has to be considerable since these systems can cause modifications both in the structure and in the administrative processes.

However, it should be noted the way in which the members of a company experience the domain of a set of general tools related to the search and organization of data, its review and the respective processing. Additionally, it is important to consider the subject of the communication of digital information with other members of the company and, even, with external entities, not only in a diachronic way, but also synchronously: With the new mobile phones and computers based on high-speed digital networks, the vendors, who are traveling, are only seconds away from the questions and supervision of their managers.

New technological and computing possibilities such as *Enterprise Resource Planning* systems, along with innovative hardware platforms such as smart phones, personal digital assistants and extremely powerful wireless laptops, are promoting "greater effectiveness in the planning processes of resources related to the performance of the organization" as Gálvez, Riascos and Contreras affirms. In the process of renewal, you discover the passing of old businesses to innovative businesses.

The truth is that the inclusion of information systems in a company gives its particular or undeniable processes particular qualities that make it organized, sustainable, profitable and competitive. Yet, there are fears on the part of Colombian businessmen of "falling into the misinformation that leaves the management of social networks that are still weak in the business market" [25].

In the Colombian context, application service providers (ASP) are often discovered. They are recognized as companies dedicated to offering rental software to other companies, either through the Web or a private network. After all, "the internet (...) is a network system that expands rapidly" [26].

Thus, it is confirmed that the *Information Technology Association of America* (ITAA) relates to information technology (IT) with "the study, design, development, implementation, support and administration of computer-based information systems, in particular their applications of software and hardware" [27]. In this way, it seems unlikely to support a certain company without information system finance and accounting that supports, guides and leads it to the improvements.

6. Conclusions

Information systems have been altering the dynamics of small and medium enterprises, and their path of renewal and adoption has been accompanied by a cultural change. When the renewal of the ways of conceiving the company does not arise, it is much more possible that the information systems are not taken as an advantage, and the opportunity to compete in the business sector is diminished.

In this sense, there is a diversity of software packages that improve the management of human talent in all types of organizations, especially in the tertiary sector. However, studies carried out during the last decade show that information systems indirectly influence the performance of companies belonging to the tertiary sector since this performance occurs through the strengthening of customer management.

Undoubtedly, it is claimed that the information systems are giving SMEs new possibilities for their sustainability, efficiency and growth. Several experiences show that they allow the entrepreneur to achieve success in their businesses. Nowadays, it is not feasible to sustain a company without a financial and accounting information system that helps the company to follow in a rigorous manner what is foreseen by regulations and by improvement. However, until significant progress is made in the Colombian way of thinking and acting, it is not feasible to consider immersion in the issue of information systems, as has been evidenced in other parts of the world.

References

[1]. Morales, J. A. R., & Vanegas, J. G. (2010). Competitividad y comercio exterior de las Pymes del sector textil-confecciones del Valle de Aburrá: incidencia del tipo de cambio1. *Revista Virtual Universidad Católica del Norte*, *1*(30), 185-204.

[2]. Varela, R. (2017). *Cámara de Comercio de Cali* . Retrieved from: http://www.ccc.org.co/categoria_articulo/colombia-con-empresarios-intencionales/ [accessed: 01 November 2019].

[3]. Sánchez, L., Pardo, M., & Izquierdo, J. (2010). La dinámica del proceso de formación para la investigación científica en la educación superior sustentada en las tecnologías de la información y las comunicaciones. *Pedagogía Universitaria*. *(15)2*, 67-81.

[4]. Martinez, C. (2017). *Lifeder.com.* Retrieved from: https://www.lifeder.com/sector-terciario-colombia/ [accessed: 05 November 2019].

[5]. Gomes, C., & Pomin, M. (2010). Información en el ámbito empresarial: una reflexión acerca de los modelos de gestión de la información. *Ibersid: revista de sistemas de información y documentación, 4,* 117-121.

[6]. Chinomona, R. (2013). The fostering role of information technology on SMEs' strate-gic purchasing, logistics integration and business performance. *Southern AfricanBusiness Review, 17(1)*, 76–97.

[7]. Loeser, F., Grimm, D., Erek, K., & Zarnekow, R. (2012). Information and Communication Technologies for Sustainable Manufacturing: Evaluating the Capabilities of ICT with a Sustainability Balanced Scorecard . *Proceedings of the 10th Global Conference in Sustainable Manufacturing, Istanbul Turkey* , 429-434.

[8]. Riascos, S., & Aguilera, A. (2011). Herramientas TIC como apoyo a la gestión del talentohumano. *Revista Cuadernos de Administración Univalle, 27(46)*, 141-151.

[9]. Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How informationmanagement capability influences firm performance. *MIS Quarterly, 35(1)*, 237-256.

[10]. Pérez, R., Urquía, E., & Muñoz, C. (2009). La interrelación entre los sistemas infor-matizados de contabilidad y los indicadores de rendimiento: el caso de laspymes en España. *The International Journal of Digital Accounting Research, 25(4)*, 1-18.

[11]. Maldonado, G. M., Aguilera, E., & González, M. (2010). La influencia de las TICs en el rendimiento de la PyME de Aguascalientes. *Investigación y Ciencia, 18(47)*, 57–65.

[12]. Nakata, C., Zhu, Z., & Kraimer, M. (2008). The complex contribution of informa-tion technology capability to business performance. *Journal of Managerial Issues*,*20*(4), 485-509.

[13]. Gálvez, E., Riascos, S., & Contreras, F. (2014). Influencia de las tecnologías de la información y comunicación en el rendimiento de las micro, pequeñas y medianas empresas colombianas. *Estudios Gerenciales, 30*(133), 355-364.

[14]. Duménigo, D. (2012). Sistemas de información, aplicación en empresas. *Contribuciones a la Economía, 4*.

[15]. Sesma, J. (27 de noviembre de 2015). *PublicaTic*. Retrieved from: https://blogs.deusto.es/master-informatica/author/jesusesmaopendeusto-es/ [accessed: 05 November 2019].

[16]. DC InfoBrief.(2017). Patrocinado por SAP, The Next Steps in Digital Transformation.

[17]. Cavalcante, L. D. F. B., & Valentim, M. L. P. (2010). El Individuo en el contexto organizacional y su relación con las tecnologías de la información y comunicación. *Ibersid: revista de sistemas de información y documentación*, *4*, 219-224.

[18]. Suaiden, E. (2016). El futuro de los sistemas de información en un régimen de gobierno abierto y ley de transparencia. *Ibersid: revista de sistemas de información y documentación, 10*(2), 45-51.

[19]. Hoyos Chaverra, J. A., & Valencia-Arias, A. (2012). El papel de las TIC en el entorno organizacional de las Pymes (The Role of ICT in the SMEs Organizational Environment). *Trilogía ciencia tecnología sociedad*, *4*(7), 105-122.

[20]. Revista Dinero. (2017). Retrieved from: https://www.dinero.com/edicion-impresa/caratula/articulo/ranking-de-las-mejores-pymes-de-colombia-en-2017/249828 [accessed: 07 November 2019].

[21]. Smith, M. S. J., & Fadel, B. (2010). Gestión de la información contable: aspectos técnicos, legales y éticos. *Ibersid: revista de sistemas de información y documentación*, *4*, 73-79.

[22]. Laudon, K. C., & Laudon, J. P. (2004). *Sistemas de información gerencial: administración de la empresa digital*. Pearson Educación.

[23]. Gómez, A. (2016). *Reporte Digital.* Obtenido de ¿Por qué las empresas deben invertir en tecnologías para crecer?: Retrieved from: http://reportedigital.com/transformacion-digital/empresas-deben-invertir-tecnologias-crecer/ [accessed: 02 November 2019].

[24]. Revista Dinero. Retrieved from: https://www.dinero.com/empresas/articulo/bancolombia-lanza-plataforma-negocios-pyme/258424 [accessed: 27 September 2019].

[25]. Rodríguez, V. (2018). Editorial: Hacía el 2018 con optimismo. Recuperado de Revista Empresarial y Laboral: Retrieved from: https://revistaempresarial.com/editorial/hacia-2018-optimismo/ [accessed: 27 September 2019].

[26]. Becerra, Y. E. (2012). Estudiantes indígenas y los usos y apropiación de las tecnologías de información y comunicación. *Paakat*, *3*, 1-11.

[27]. Ancira, A. Z., & Gutiérrez, F. J. M. (2011). Integración y apropiación de las TIC en los profesores y los alumnos de educación media superior. *Apertura*, *3*(1), 142-155.