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INNOVATION AND IT AS CROSS-CUTTING DRIVERS OF COMPETITIVENESS IN MEXICO

INOVAÇÃO E TI COMO IMPULSIONADORES TRANSVERSAIS DE COMPETITIVIDADE NO MÉXICO

LA INNOVACIÓN Y LAS TI COMO IMPULSORES TRANSVERSALES DE LA COMPETITIVIDAD EN MÉXICO

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ABSTRACT
The competitiveness of any country's economic entities in the era of knowledge management, the use of performance metrics, and scientific management, which define the IT industry and also characterize it, according to IMCO and AIMSI. It is in this context that strategic plans revalue the role of their human capital and its impact on the assets of social and productive organizations.

Keywords: Competitiveness. Metrics. Human Capital. IT. Organizational.

RESUMO
A competitividade das entidades econômicas de qualquer país na era da gestão do conhecimento, o uso de métricas de desempenho e a gestão científica, que definem o setor de TI e também o caracterizam, segundo a IMCO e a AIMSI. É nesse contexto que os planos estratégicos reavaliam o papel do capital humano e seu impacto nos ativos das organizações sociais e produtivas.

Palavras-chave: Competitividade. Métricas. Capital Humano. TI. Organizacional.

RESUMEN
La competitividad de las entidades económicas de cualquier país, en tiempos de la gestión del conocimiento, el uso de métricas para el desempeño y la administración científica, las cuales definen a la industria de TI y que, además, las caracterizan, de acuerdo con IMCO y AIMSI. Es en este contexto que los planes estratégicos revaloran la función de su capital humano, su impacto en los activos de las organizaciones sociales y productivas.

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Palabras clave: Competitividad. Métricas. Capital humano. TI. Organizacional.

1 COMPETITIVENESS IN THE IT INDUSTRY

According to Suñol, S; (2006), states that - Theoretical aspects of competitiveness -, enunciate the importance of this concept of economic theory, authors of the stature of Michael Porter and later, those developed by authors of the Economic Commission for Latin America (ECLAC) and the Latin American Center for Competitiveness and Sustainable Development (CLADS), a more complete idea of the importance of this phenomenon that occurs within organizations and organizations is described. countries in general, focusing on the process of productivity, competitiveness itself and the wealth of nations.

Similarly, both Porter and (OECD, 1992) affirm that it is firms and organizations that compete with each other, and not nations. Suñol, S. (2006) concludes that, given the factors of national stability, organizations are in an adequate environment to establish competitiveness just as a living organism does in its environment. In this context, Peñaloza, M; (2005), in his work entitled "Competitiveness: a new economic paradigm?" considers that competitiveness has become a paradigm of the global market, although there are currents of economic thought that affirm that globalization as such is coming to an end (Dr. Alfredo Jalife, 2017).

2 PROBLEM STATEMENT

The aforementioned author of the preceding paragraph affirms, among other things, that some of the sources of competitiveness are in the division of labor, in quality, in management and organizational culture, in productivity, and in science and technology, but without leaving aside external factors such as micro and *macroeconomics*. and some other, more specific factors related to the industry in question. In this context, the fact of mutating or migrating from manufacturing to the manufacturing mind creates competitive advantages, that is, knowledge management, which is addressed in successive sections. According to Morales Alquitira, A; Rendón Trejo, A; (2000), there are metrics based on the balance of flows, which determine their competitiveness in some types of industries, however, there are considerable information gaps, since sometimes there are no recent statistics at the national and international level.

2.1 RESEARCH QUESTION

The studies of Bernal, G H; Mungaray Lagarda, A; (2017), in their work - The

competitiveness indices in Mexico - contemplate in their document, metrics to derive strategies that conclude in five points, the first refers to the establishment of rankings of 120 competitiveness indicators, the second refers to public spending considered to increase competitiveness, public policies consider the relationship productivity and competitiveness, the IMCO and the ITSM, determine that the vast majority of economic entities consider productivity as a determining factor in national competitiveness. Yet, they testify, competitiveness is an issue of concern to government agencies, multilateral organizations, and business and academic sectors around the world. According to the above approach:

What are the factors of competitiveness at the level of human capital in IT necessary to influence the productive processes of organizations?

2.2 GENERAL OBJECTIVE

Considering the approaches proposed by the border discourse in relation to competitiveness, it is intended to support with documentation those that various sources from different areas of knowledge have regarding the topic in question.

3 JUSTIFICATION

Considering a national environment, researchers Flores Romero, B; González Santoyo, F; (2009), carry out a study on the competitiveness of Morelian SMEs, in which they conclude with the following: more than half of their managers have a bachelor's degree; about 50% have undergone changes in the use of technologies. However, the vast majority do not have access to these technological benefits, to comply with quality factors, they resort to training, only a minority of managers have reached the position through career planning.

De lo anterior da cuenta Ordóñez Tovar, J A; (2011), since it is necessary for governments, as governing bodies of nations, to give meaning to the benefits of competitiveness, since they consider that this is only justified in equality of opportunities and social development. According to their empirical data, it is shown that there is a correlation between human development and competitiveness, at least in the Mexican case, as they point out.

4 METHODOLOGY

The present work has been deployed under the design of a documentary triangulation, consulting multidisciplinary sources that address the same object of study, in this case competitiveness, and the bibliographic observations of information have been contrasted, leaving an approach to the reader so that they have elements of judgment in this regard.

5 DEVELOPMENT

The fundamental elements such as the production of wealth, the knowledge economy, are for Fidel Alva Fuentes, B; Guerrero Torres, R H; (2015), determinants of organizational competitiveness. In this work (Spatial Management of Knowledge), they address the spatial dimension of knowledge. To make this a reality, they consider the inevitable need to create an agenda based on innovation, which in turn is the result of long-term strategic planning. In this sense, and related to the knowledge economy, Molina Peralta, N; (2015), in their contribution - Knowledge, preamble to competitiveness -, who affirm that everything begins with directed education, that is, education as a foundation for growth or rather, human development. Likewise, Lombana Coy, J; (2012), they state in their work Relevance of Education in Competitiveness, "The conception of human capital in the eighteenth century in a utilitarian orientation to interpret economic growth, differs widely from the social and political aspects that are recently included in education as competitiveness. The utilitarian nature of human capital limits the concept to the increase in production given resources. However, as the academic literature has reformulated, human capital must be given qualitative attributions that better measure economic growth."

Considered as a relevant aspect in the subject of competitiveness is that of the metrics used in the relative competitiveness frameworks, in this sense, an important contribution to the conceptual framework of the same is made by Mancha Navarro, T., & Moscoso Durán, F., & Santos, J. (2017), in their work on regional competitiveness for Spain, they elaborate indices based on three key environments: productive capital, human capital and public capital. They therefore advocate a methodological approach related to the region in which they disaggregated variables in a temporally and geographically situated study. In essence, it is a concept to measure or rate each region in a very particular way and not to generalize in the so-called global competitiveness

indices, which do not determine (in his opinion) the particular components of these.

Delving into topics such as business intelligence and competitive intelligence, according to Fernández, M. (2007), it obeys a relationship of synchrony between organizational factors and IT infrastructure seen as systemically, and not merely as a team. It is therefore for this author an equation in which business intelligence operates as an organizational additive, taking it to higher stages of performance.

Table 1

Conceptions of competitiveness

Relating	Research on metrics and competitiveness
Fidel Alva Fuentes, B; Guerrero Torres, R H; (2015)	**Knowledge economy and wealth production factors, innovation-based agenda.**
Fernández, M. (2007)	Business intelligence, synchrony relationship between organizational factors and IT infrastructure seen in a systemic way.
Grupo Girsa, (2006)	Education, research, science and technology, as stated by the OECD, deriving these into human capital.
Bernal, G H; Mungaray Lagarda, A; (2017)	Competitiveness metrics, public policies, productivity and competitiveness relationship, IMCO and ITSM.
Botero Pinzón, L. (2014), Wong-González, P. (2013)	Polysemic concept, in which it is possible to define this term at the macroeconomic level, country or region.
Ordóñez Tovar, J A; (2011)	Correlation between public policies, human development and competitiveness.
Fuentes, N., & Osorio, G., & Mungaray, A. (2016)	Strategic management of tangible and intangible assets of the organization.
Licona Michel, Á., & Turner Barragán, E. (2014)	Investment in human capital as described in the case of South Korea: electronics, automotive and naval.

Source: The authors.

Espejo Benítez, J., & Hidalgo Pérez, M. (2011), in their analysis of the Cambridge Econometrics report (2003) on the occasion of the third report of the European Commission's Cohesion, carry out an analysis in which they establish that the concept of competitiveness based on labor production or on the GDP of nations, does not imply in

most cases the macroeconomic realization of the same. It is for this reason that in their work they determine an ad hoc competitiveness index for the Spanish provinces. With reference to engineering and its impact on Colombian competitiveness, Ramírez Vallejo, J. (2006) makes a contribution related to scientific management of organizations in which he relates it to the direct contributions of engineering, understanding engineering processes as the contribution of science and technology in the nation's productive processes. In this way, it places human capital on the upper scale of this model to achieve competitiveness in the Colombian state.

On the other hand, and under the approach of urban or metropolitan economies, Manzano, N. (2009), carries out an analysis of 21 Latin American economies from 2001-2008, relating the importance of cities in their centralist constitution that they historically have and their contribution to the GDP of the nations to which they belong or have an impact. Finally, with data from OMC, ECLAC and other global organizations, they conclude on the relationship between urban competitiveness and quality of life, resulting in a Latin ranking table of competitive cities.

Likewise, Quintero Ramírez, Á. (2003) learning in companies traces their competitive advantage, considering as learning, the maturity models of the same within the organization as proposed by CMMI in ascending cyclical learning. In this way, the author places knowledge of processes as the possibility of continuous improvement and achieving better stages in the organization.

In other issues related to competitiveness, it is the one that Orozco Hernández, M. (2007) visualizes in his work on floriculture. This paper studies how global economic factors impact the domestic economy, taking floriculture in the state of Mexico as a case study. In this article, technological innovation is related as a factor that positively influences local and of course global competitiveness, carrying out an analysis of the prices of the product in question between the consumption routes at the international level and in the local market and its commercial implications in free trade agreements.

Grupo Girsa, (2006) confirms in its work on the environment and competitiveness, that social responsibility is part of the competitive advantages that an organization can contribute to its environment, and that this can be enhanced through education, research, science and technology, as stated by the OECD. that these are derived from intellectual capital or human capital. As has already been addressed in the preceding paragraphs, the issue of competitiveness is not only a problem of indicators, since it refers to factors

related to society, human capital, knowledge management and other organizational values of an intangible type.

The vision of Botero Pinzón, L. (2014) in which he invites us to reflect on competitiveness as a polysemic concept, in which it is possible to define this term at the macroeconomic level of the country or region, as a possibility referring only to one organization, in which both maintain value advantages over their references in the competition, a conceptualization that he shares with Wong-González, P. (2013).

However, for Licona Michel, á., & Turner Barragán, e. (2014), competitiveness is a matter of investment in human capital as described in the case of South Korea, which has concentrated its human resource preparation in the electronics, automotive and naval areas. In the same way, Benítez Codas, M. (2012) positions the concept of competitiveness as a form of organizational strategy based on Michael Porter's studies in its historical context, indicating that competitiveness will evolve, to the point that it will be managed by individuals and not by organizations or countries.

Intangibles: factors that trigger competitiveness, Fuentes, N., & Osorio, G., & Mungaray, A. (2016) conducted research on the analysis of tangible and intangible values of 2,671 Mexican microenterprises in 2016 and their conclusion refers to their scope taking place through the management of non-tangible assets, in which are, of course, human capacities. Castañeda, G. (2012) on the other hand, emphasizes that the competitiveness of a nation such as Mexico must be based on its public and economic policies, since he affirms that the nation's stewardship must determine the directions of economic entities, an idea that is reinforced by Fernández González, J. (2013) in the case study on corporate strategy of the company Alpina (2012) and Delfín Ortega, O., & Bonales Valencia, J. (2014) in their analysis of competitiveness and public policies of the agri-food system of the state of Michoacán, Mexico.

Likewise, Sarmiento - Ramírez, Y., & Pérez - Cutiño, Y., & Ferrando - Alonso, L. (2013) in his conception of competitiveness based on the metrics of the organization and its processes, and of course evaluate it according to a standard methodology as stated by Saavedra García, M. (2012) in his study based on Latin American SMEs.

6 CONCLUSIONS

The strategic factor or value of competitiveness conceived as a dependent variable, is a topic that can be addressed from various positions or branches of thought,

as already mentioned, the possibilities of achieving that the concept of competitiveness has resonance in organizations revolve around science, technology and in general everything that comes from knowledge management.

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