**INSTITUTO TECNOLÓGICO DE ESTUDIOS SUPERIORES DE MONTERREY**

**CAMPUS ESTADO DE MÉXICO**



**GI5000 Metodología de Investigación e Innovación**

**(Research Methodology and Innovation)**

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**Assessed Exercise # 03**

**Research and Innovation**

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**Due date: March 12, 2019, 11:59PM**

**Articles to Read and Questions to Answer**

## [1] **From the reading of article “Lancho-Barrantes, B.S. & Cantú-Ortiz, F.J. (2019). What is the situation of science in Mexico with respect to strategic countries and how could it be improved?**

This article develops the theme about the actual situation of the researching on Mexico and how is the situation with collaboration with other countries, in special with countries considered how strategic by CONACYT [1].

The strategic countries recognized by CONACYT to the research are United States, Spain, France, United Kingdom, Germany, Canada, Brazil, Colombia, China, Russian Federation, Argentina, India, Chile, Japan, South Korea, Turkey, South Africa and Israel. These are main collaborative countries consider by CONACYT. And between them, the countries which collaborate the most with Mexico are United States, with 28,535 articles; Spain with 15,003 articles and France with 8249 articles. Spain is the country with most coincidences about the themes of investigation with Mexico, and it is followed by United States, Canada and Israel.

About the situation of the research on Mexico; the collaborative scientific production between Mexico and his strategic countries have been increasing between the years 2007-2016, there are a graphic that shows how the number of papers produced on Mexico have increased on these years, and the total number of articles is 8023 on 2016. The main obstacles that Mexico has on the research topic are the low investment on science and the small number of researchers per million inhabitants. And other important thing is that the main investor for research is the government and the private sector rarely invest on that.

So, for increase the number or scientific articles and researching on Mexico is necessary to increase the investment on first place, but also, it should invest more in the creation of a scientific culture and the development of research universities, recruiting talent from all over the world. This is the key point to improve the investigation on this country because the countries with the most quantity of articles produced per year invest big resources on universities for the researching.

## [2] **From the reading of article “****Ceballos, H. G., Garza, S.E., & Cantu-Ortiz, F. J. (2018)”. What strategy can be defined for establishing research groups within an organization?**

Scientific productivity and impact have become an important indicator of academic quality and a leading factor of innovation. Scientists and researchers all around the world are constantly incentivized and motivated by governments and universities to continue pursuing and releasing new publications. These publications are the product of a collaborative effort by research partners working together from different facilities in different parts of the world. The importance of correctly matching compatible members for the formation of successful research groups has been identified by multiple authors. Institutions interested in improving their prestige and ranking among other institutions have been developing strategies to assure the success of their research groups. [2]

Based on this necessity for improved collaboration and adequate research partner matching, Ceballos, H. G., Garza, S.E., & Cantu-Ortiz, F. J. investigate techniques that can help in the establishment of successful groups obtaining and profiling researchers’ information present in the networks. Some of the reasons considered by any researcher before collaborating with another partner are the scientific recognition of the partner, their specialization in science, their need of training, and the geographic distance between them.

The paper presented demonstrates that it is possible to develop strategies to consider the characteristic traits of each researcher from the information available in scientific social networks from which they are already members. Based on this information and correlated data between each of the researchers, the authors have established an algorithm proven to create more successful teams compared to randomly created teams in terms of Adjusted Rand Index (ARI). This strategy can be very useful for the correct assembly of research groups, assuring their success and improving their performance within their institutions. The reported results in this article were observed in the Tecnológico de Monterrey research infrastructure, and they give an optimistic approach towards the replication of this technique in other institutions. [2]

## [3] **From the reading of article “Cantu-Ortiz, F. J., Galeano, N., Mora-Castro, P., & Fangmeyer, J. (2017)”, What is the importance of developing an entrepreneurial mentality? Are you thinking about becoming an entrepreneur now or after graduation, if you are not an entrepreneur already?**

Entrepreneurship is an important skill that must be developed on Mexican colleges in order to improve the economy and the level of technology, innovation and development of Mexico. There are three deficiencies in Mexico’s entrepreneurship ecosystem which are: Research skills, high technology and technology transfer.

Academic entrepreneurship refers to university researchers commercializing university research through new business enterprises.

“The CONACYT coordinates an innovation program named FINNOVA that connects applied research with entrepreneurs and companies” [3]. Additional to that, it helps to transfer technology between academics and business. So, it’s important to increase the entrepreneurship on colleges on first time to people use this advantage and start to create new business, but also, for create new employees and improve the economy of the country. This is the best strategy to increase the economy of Mexico.

About the second question; I want to be an entrepreneur when I will finish my master’s degree, in fact, I was planned to start my own business some years ago because I prefer to work for me and my dreams and do not do that for others. I don’t think that have an employment and work on a business is a waste of time; I think that it’s important to develop skills and get experience, but nevertheless, is important that Mexican people start to develop an entrepreneurial mentality because a good way to increase the economy of the country and the families is that people start to have their own business, this is the key why Chinese economy has grown so much on the last years; because there are more and more people starting up their own business.

## [4] **From the reading of article “Ceballos, H. G., Fangmeyer, J., Galeano, N., Juarez, E., & Cantu-Ortiz, F. J. (2017)”, How important is collaborative work? What are the disadvantages of collaborative work?**

Bruno

## [5] **From the reading of article “Cantú-Ortiz, F. J. (2015)”, What role eco-innovation systems play for the socioeconomic development of an institution and its surrounding region?**

Universities have been centers of knowledge generation and propagation since the very beginning of their creation. These institutions have influenced and forged humankind trajectory through the centuries playing an important role as the torch that guides our species forward. The social and economic impact that universities have had though out history may be on the limit of incalculable measures. Universities concentrated in the generation of fundamental knowledge enhancing the advancement of sciences. They became engines of economic development by inserting themselves into what is called “Ecosystems of Innovation”. Research Innovation Ecosystems (RIE) [5]

## [6] **From the reading of article “Cantú, F. J., & Ceballos, H. G. (2010)”, How important it is to deploy an integrated information system to manage and communicate internally progress on institution’s research and development? How important is the use of a Data Science Strategy to promote institution’s competitiveness?**

Osamu

## [7] **From the reading of article “Cantu, F. J., Bustani, A., Molina, A., & Moreira, H. (2009)”, How important is for a knowledge-based organization to define and deploy a research and innovation strategy to remain competitive?**

Osamu

## **Resources**

[1] B. S. Lancho-Barrantes and F. J. Cantú-Ortiz, “Science in Mexico: a bibliometric analysis,” *Scientometrics*, vol. 118, no. 2, pp. 499–517, 2019.

[2] H. G. Ceballos, S. E. Garza, and F. J. Cantu, “Factors influencing the formation of intra-institutional formal research groups: group prediction from collaboration, organisational, and topical networks,” *Scientometrics*, vol. 114, no. 1, pp. 181–216, 2018.

[3] F. J. Cantu-Ortiz, N. Galeano, P. Mora-Castro, and J. Fangmeyer, “Spreading academic entrepreneurship: Made in Mexico,” *Bus. Horiz.*, vol. 60, no. 4, pp. 541–550, 2017.

[4] H. G. Ceballos, J. Fangmeyer, N. Galeano, E. Juarez, and F. J. Cantu-Ortiz, “Impelling research productivity and impact through collaboration: A scientometric case study of knowledge management,” *Knowl. Manag. Res. Pract.*, vol. 15, no. 3, pp. 346–355, 2017.

[5] F. J. Cantú-Ortiz, “A Research and Innovation Ecosystem Model for Private Universities,” in *Private Universities in Latin America*, New York: Palgrave Macmillan US, 2015, pp. 109–130.

[6] F. J. Cantú and H. G. Ceballos, “A multiagent knowledge and information network approach for managing research assets,” *Expert Syst. Appl.*, vol. 37, no. 7, pp. 5272–5284, 2010.

[7] F. J. Cantú, A. Bustani, A. Molina, and H. Moreira, “A knowledge-based development model: The research chair strategy,” *J. Knowl. Manag.*, vol. 13, no. 1, pp. 154–170, 2009.

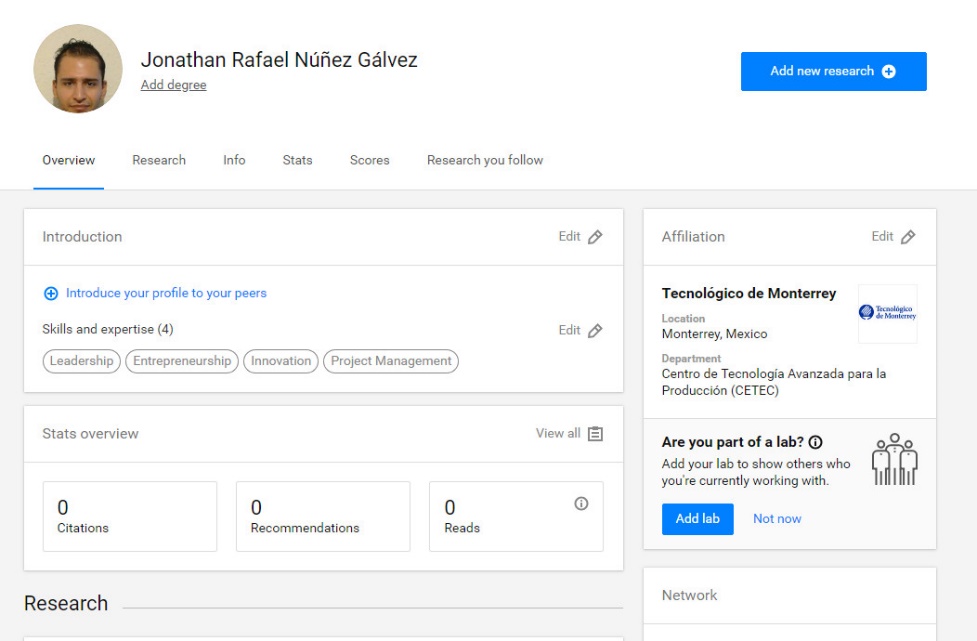
**Evidence of Google Scholar and ResearchGate**

Imagen que contiene captura de pantalla, interior

Descripción generada automáticamenteImagen que contiene captura de pantalla

Descripción generada automáticamente

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**Reflections on Steve Job’s Legacy**

Steve Jobs was a remarkable character. There is no doubt that his life’s work and his perspective of the world have had an important impact in human kind history. He was a businessman and a visionary. We believe that it was his creativity and his passion the reasons he became such a success. He had the ability to imagine beyond anyone else, and the will power to bring his ideas to life. As far as his professional life went, he never backed down, not even when they threw him out of his own company. He was smart and courageous enough to stand up and create more and incredibly competitive ventures. He even won back his company and took it the highest level, making Apple the first company in the world to be worth more than a trillion dollars. From what we can see in the videos about his last words and his speech in Stanford University, Jobs was also very aware of the importance of succeeding in the personal aspects of his life. He spreads the idea that being successful in business and profession is not the same as being successful in life. He explains how alone you can be even when you have everything you could imagine if you don’t have anybody to share it with. Jobs said you will always regret having chosen work over family and friends. We cannot say if Steve Jobs was church religious, but he did believe that there is some sort of force that guides us through the right way if we let it. He motivates us all to listen to our hearts and intuition and let the dots connect themselves, because somehow our journey has already been designed and we just need the courage to let it all fall into place. We wouldn’t say Christianity is an answer to the existential dilemmas posed by Jobs. It is clear he believes in God and destiny in a certain way, but it is much clearer that he first believes in himself. Although Jobs philosophy and Christianity do find some common ground. They both reinforce the importance of love to oneself and others, but Christianity is not the only religion to profess about love. Any religion can be a resourceful place to gather strength and faith, but we believe that Jobs was more convinced that we can find this place within ourselves.

**Video Resources**

Badabun, Estas fueron las últimas palabras de Steve Jobs minutos antes de morir. 2017.

N. Flores, Steve Jobs Discurso en Stanford Sub Español HD YouTube. 2012.

E. Terán, [NatGeo]-Mentes Brillantes. Steve Jobs vs Bill Gates. 2015.