

Identification of the Main Factors Affecting the Increase of Productivity in Mexican Companies

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Abstract

Nowadays, Mexican companies must face the challenges caused by globalization, that is why it is very important that they develop solid strategies that have an impact on the increase of their productivity indexes, affecting the growth, development and consolidation of each company, taking into account that every day resources are more scarce, that is why it is of vital importance to know and identify which is the current state of these companies regarding their productive performance, as well as

to emphasize the main factors that help to the increase of their productivity and to be competent with the national as well as international companies, since if it is not adapted to the currents that entails the international commercial transactions, it will be obsolete and consequently sooner or later it will disappear, due to the exigencies that every day are greater, also it is fundamental to know the factors that are harmful for the productivity of these companies and to know how to revert them at the most appropriate moment.

Keywords: Productivity, continuous improvement, efficiency, profitability, resources used

I. Introduction

Low levels of productivity in Mexico and Latin America are behind the main development gaps that separate them from more advanced economies, according to a study by CAF (Latin American Development Bank).

Currently, the most important and determining factor in determining whether a country is growing and developing is productivity, understood as the relationship between production obtained and resources used, which is an indicator that helps us recognize the performance of companies. Productivity is a factor closely linked to performance, product quality and the reduction of the number of failures or errors. Employees are the main value of a company and productivity is above all a question of attitude [1].

The decrease in productivity in the country has generated a growth of barely 2.0% in the last decade, and has also fostered uneven economic development, according to the study "Low and Unequal Productivity in Mexico: Reporting on Future GDP Growth", based on the Standard & Poor's Financial Services report. In addition, the prevailing corruption, the growing rate of insecurity, etc. The latent growth of informal labor has slowed down the investment of foreign capital, losing each time the confidence to settle in the country. Faced with this reality, Mexican companies need to develop a series of strategies that allow them to compete nationally and with emerging markets, those that, according to the UN definition, are the least developed countries that have the potential to meet the characteristics of first world countries in the future, through their economic growth, improved social and political regimes, and efforts to remove barriers to the entry and exit of international investor capital. The priority actions to be taken are the reduction of debts, expenses and costs, as well as the efficiency of human resources and infrastructure. [2]

It is necessary to understand the fundamental factors that prevent companies from innovating and the markets from allocating productive factors efficiently, which helps to analyze why there is a production gap, said Fernando Alvarez, senior economist of the Directorate of Socio-Economic Research at CAF. For his part, Emilio Uquillas, CAF representative in Mexico, adds that "the information collected in this year's report promotes the consideration of public policies, building what is a pact for productivity.

An inefficient distribution of employment and capital among the companies shows the weaknesses in the process of entry and exit of the companies, as well as the lack of vision to promote innovation that would result in a transformation that would result in a primary phenomenon, which would seek to increase productivity, including those companies that are in the informal economy, the report adds. The informal economy is indicative of a notorious feature that has an impact on low productivity, a figure that slightly exceeds the regional average of 37% when compared to that of countries with similar income levels within the region, where inefficiency in the allocation of the labor factor persists due to the great difference in wage perception between formal and informal workers, being the third highest (28%) in a group of ten countries analyzed in Latin America, whose average is 24%. The EDR (Economics and Development Report) 2018 focuses on factors that transversally affect companies, beyond the sector in which they operate, such as the degree of competition, access to inputs and cooperation between firms, labor relations, and financing. For example, the region has on average markets where the level of competition is lower compared to more developed regions, which is reflected in high price margins, especially in the service sector. To improve this aspect, it is very relevant to increase the capacities of competition agencies, reduce entry barriers to firms, and deepen trade and international integration that are still limited by para-tariff and logistical barriers.

Finally, the EDR concludes that to make the leap in productivity it is essential to adapt the business support to achieve a productive environment that encourages more innovation, more efficiency in the allocation of resources and greater productive integration [3].

II. Productivity and Mexican Companies

Productivity evaluates the capacity of a system to produce products by making the most of the resources used, that is, by generating a better added value. That is why it is important to direct Mexican business systems in the same direction so that they seek to increase productivity. As it is known, productivity has a direct relation with the continuous improvement of the systems and processes of operation of the

companies, emphasizing mainly those of the administration of the quality, where nonconformities of the product can be corrected and be prevented, and with it, to perfect the standards of quality of the Mexican companies so that the consumers receive products that cover their expectations of value.

The profitability of the business is the result of saving resources that are limited, following and complying with production standards that must be constantly updated, to continue on the path of continuous improvement reflected in the quality of their products, processes or services without losing the quality of their products, hence Mexican companies must have some system that allows them to improve and optimize all their resources continuously every day to be more competitive. Finally, continuous improvement is a way of working to achieve a more productive and pleasant work environment [4].

II.1 Measuring productivity

The inputs from customers follow a series in every process, which are activities that add value to be transformed into outputs, which are goods and services to customers, other processes and/or stakeholders.

As can be seen in image 1 the productive cycle where it starts with the inputs (human, financial, capital and administrative resources, etc.) that combine to start a process that will generate goods and services that are the outputs, which gives the guideline to measure productivity by analyzing the relationship between inputs and outputs.

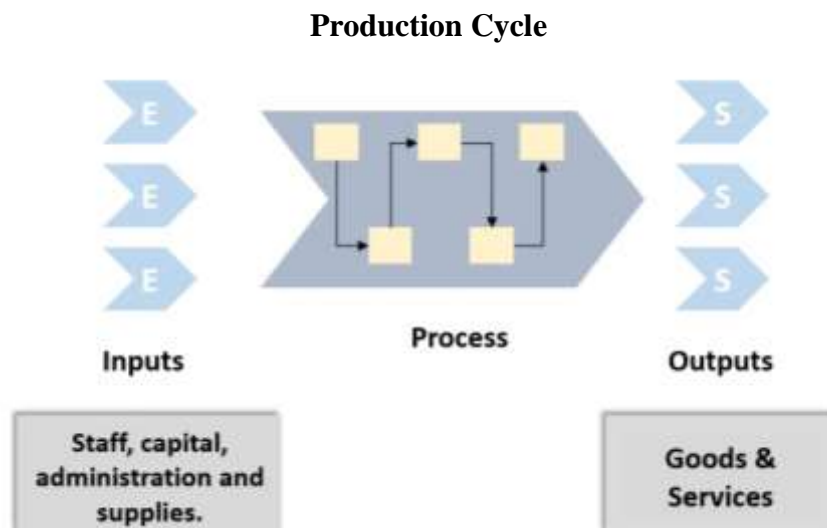


Image 1. Production Cycle

Reference: <https://ingenioempresa.com/productividad/>

To be more productive, it is required:

- Input reduction with constant output: it is about analyzing which would be the optimal input of resources that would not influence in obtaining the highest possible constant output according to the process that is being treated.
- Increasing the output with constant input: you must keep a constant input of resources to increase the output and make it constant.

As it can be seen in image 2, productivity involves a series of key components for its measurement, being these: product (total of goods and services) among the inputs (total of resources used), which throw a series of factors that are measurable and later compared against what was planned following its history to know how productive is the process of the company.

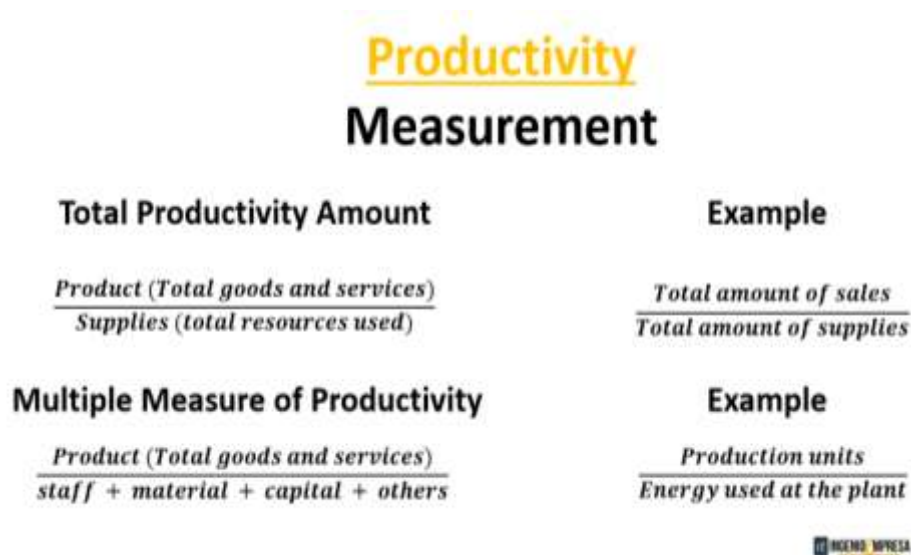


Image 2. Productivity Measurement
 Reference: <https://ingenioempresa.com/productividad/>

The measurement of productivity will depend on the company's performance and the measurement tools it has, so it must seek an appropriate mechanism that fits its process for better measurement of productivity, because in some companies will be more complex than in others [5].

Taking into consideration the country's competitiveness index, Mexico is ranked 48th out of 141 economies analyzed by the World Bank report

The Global Competitiveness Index 4.0 Classification 2019, which measures the competitiveness of its institutions, policies and the factors that determine the level of productivity [5].

As can be seen in Table 1, Mexico is far from the main economies with a high productivity index, where the country's score is only 64.9 compared to Singapore's score of 84.8, being the most productive as a nation.

Global Competitiveness Index 4.0 (2018)

Rank	Economy	Score ¹	Diff. from 2018 ²	
			Rank	Score
1	Singapore	84.8	+1	+1.3
2	United States	83.7	-1	-2.0
3	Hong Kong SAR	83.1	+4	+0.9
4	Netherlands	82.4	+2	—
5	Switzerland	82.3	-1	-0.3
6	Japan	82.3	-1	-0.2
7	Germany	81.8	-4	-1.0
8	Sweden	81.2	+1	-0.4
9	United Kingdom	81.2	-1	-0.8
10	Denmark	81.2	—	+0.6
11	Finland	80.2	—	—
12	Taiwan, China	80.2	+1	+1.0
13	Korea, Rep.	79.6	+2	+0.8
14	Canada	79.6	-2	-0.3
15	France	78.8	+2	+0.8
16	Mexico	64.9	-2	+0.3

Table 1. Global Competitiveness Index 4.0

SOURCE: www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

As shown in Table 2, Graphic 1 and 2, the behavior of Mexico's ranking and competitiveness index, where it can be seen that from 2010 to 2011 it has experienced downward changes with a competitiveness index of 59.84 and 59.89, and then upward changes until 2019 with a competitiveness index of 64.95 [7].

**GLOBAL COMPETITIVENESS INDEX
MEXICO**

DATE	COMPETITIVENESS RANKING	COMPETITIVENESS INDEX
2007	52°	60.47
2008	52°	60.89
2009	60°	60.38
2010	60°	59.84
2011	66°	59.89
2012	58°	61.35
2013	53°	62.35
2014	55°	61.98
2015	61°	61.06
2016	57°	61.35
2017	51°	63.43
2018	46°	64.60
2019	48°	64.95

Table 2 Ranking and global competitiveness index of the country
SOURCE: weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf



Graphic 1 Country's Global Competitiveness Index
SOURCE: weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf



Graphic 2. Country's global competitiveness ranking

SOURCE: [weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf](https://www.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf)

The "Global SME Pulse 2019", prepared by Oxford Economics for American Express, highlights that the main challenges to be faced are to promote the talent of employees, retaining those with greater skills and abilities, offering them attractive salaries and conditions so that they value the company more and acquire greater commitment. It also includes constant training and recognition of their work by educating them in business model innovation (being at the forefront of consumer tastes, needs and lifestyles).

The consolidation of a significant advance in the competitiveness of the Mexican economy is latent to promote the generation of jobs, proposing "to raise the competitiveness of enterprises by promoting the use of information technologies, innovation and technological development in their products and services" as indicators [8].

II.2 Kinds of business productivity

The relationship between productive activity and its resources to achieve it (technological, human, financial, etc.,) define productivity from a business viewpoint, using quantitative criteria to achieve its measurement, where human capital is considered the most important impact factor [Fredrick Herzberg], since a good working environment generates greater productivity in all its forms: productivity in the processes (to reach high levels of quality in the standard of production, added value and a better service to the client); productivity of marketing (to arrive at new markets by means of the design of commercial strategies that the globalized world demands nowadays); productivity with innovation (to be to the vanguard in the use of the new technologies); and finally the productivity of the

knowledge (the companies must be updated in all their scopes of activities: processes, tools, methods of quality, technologies, etc.) [9].

II.3 Main Obstacles that Affect the Mexican Company's Productivity

EDR 2018 focuses on factors that transversely affect Mexican companies, beyond the sector in which they operate, such as the degree of competition, access to inputs and cooperation between firms, labor relations and financing. It is important to increase the number of agencies that defend competition, reducing entry barriers for companies, deepening trade and international integration limited by tariff and logistical barriers. In order to make the leap in productivity, it is urgent to change the more efficient business structure that has an impact on a productive environment where incentives are reflected in greater innovation for greater productive integration, and thus be able to move forward on the path to achieving greater development of Mexican companies, based on sustained productivity gains [3].

The globalized economy demands that Mexican companies need to design and develop strategies that agree to compete nationally and internationally mainly with emerging markets that are more or less at the same level of development, they are less developed economies with the potential to meet the peculiarities of first world countries in the future. The priority actions to be taken by the top management of Mexican companies are the reduction of debts, expenses and costs, as well as the efficiency of both human resources and infrastructure.

The "Global SME Pulse 2019", prepared by Oxford Economics, underlines that one of the main challenges to be faced by Mexican and Latin American companies is: technological growth. Many of the small and medium enterprises that are the majority in the country could lower their costs by automating systems or implementing state-of-the-art technology in production processes, which will result in greater productivity. With the implementation of these types of tools, the country is getting closer to the so-called fourth industrial revolution, which is nothing more than the creation of intelligent factories that cover different areas of automation using software and applied technology. Enhancing the talent of employees and retain those with greater skills and abilities is the foundation for increasing the productivity of companies, coupled with this in Mexico 30% of companies do not have business Internet portal, being at a disadvantage to publicize their products and services in both domestic and international markets. In addition to the presence on the web, positioning and dissemination through social networks, e-commerce is increasingly a priority, especially if it is required to compete with emerging

markets, so it is necessary to promote development and productivity. This implies offering attractive salaries and conditions so that workers value the company more and acquire greater commitment, including constant training and recognition of their work. Innovation in business models requires being at the forefront of tastes, preferences, needs and lifestyles of consumers to offer products and services they demand on the platforms they want to frequent (customer service via whatsapp or social networks), since increasingly the customer prefers home service [2].

III. Results

The effective innovation of the economic system in Mexico depends on the increase of expenditure on research and development, which promotes the research effort to realize advances in research in the fields that are relevant for the benefit of society, integrating all innovative efforts are public and private, so it is essential that Mexican companies invest sufficient resources in laboratories and research centers, development and innovation to be leading edge companies [7].

For all the above reasons, it is necessary for Mexican companies to pay more attention to the following factors so that they continue the right path and thus continue to compete with national and international markets and not be annihilated:

- develop a series of strategies that will allow them to compete nationally and with emerging markets.
- reducing debts, expenses and costs, making human resources and infrastructure more efficient.
- promoting innovation in companies and markets allocating productive factors efficiently.
- improve the inefficient distribution of employment and capital among enterprises to balance the management of income and output of enterprises.
- have a greater vision to promote innovation that will influence a transformation.
- increase the degree of competition, access to inputs and cooperation between firms, labor relations, and financing.

- reduce entry barriers to companies, deepen trade and international integration limited by tariff and logistical barriers.
- provide greater incentives for innovation and efficient allocation of resources, always seeking greater productive integration.

IV. Conclusions

The country requires a renewed institutional capacity to implement the above-mentioned reforms, as well as governance systems that ensure transparency and accountability at all levels of the public sector, which is why it is said that for the country to improve its standard of living depends on its ability to raise worker output, optimizing the management of production factors (land, labor and capital) to achieve higher levels of value added in the economy. An inefficient distribution of employment and capital among businesses shows the weaknesses in the process of entry and exit of companies, as well as the lack of vision to promote innovation that would lead to a transformation that would result in a primary phenomenon, one that would seek to increase productivity, including those companies in the informal economy [3].

Acknowledgements. The authors would like to thank the Instituto Politécnico Nacional (Secretaría Académica, COFAA, EDD, SIP and ESCOM) for their economical support to develop this work.

References

- [1] C. Mena, Esto es lo que afecta a la productividad en México, **1** (2020), <https://www.forbes.com.mx/6-factores-frenan-crecimiento-productivo-mexico/>
- [2] Newsweek México, *Grandes empresas: los soportes del México de hoy*, (2020), <https://newsweekespanol.com/2019/09/grandes-empresas-soportes-mexico/>
- [3] CAF. Banco de Desarrollo de America Latina, *México necesita aumentar la productividad para lograr un crecimiento económico a medio y largo plazo* (2020), <https://www.caf.com/es/actualidad/noticias/2019/04/mexico-necesita-aumentar-la-productividad-para-lograr-un-crecimiento-a-medio-y-largo-plazo/>

[4] Consultoría de Proceso, S.A. de C.V, *Productividad en Mexico / La Mejora Continua*, (2020), <https://www.consultoriadep proceso.com.mx/2016-Mexico-mas-productivo.html>

[5] D. F. Betancourt, *Productividad: Definición, medición y diferencia con eficacia y eficiencia*, (27 de mayo de 2017), de Ingenio Empresa: www.ingenioempresa.com/productividad

[6] K. Schwab, *The Global Competitiveness Report 2019*, (2019), World Economic Forum.

[7] M. Aguirre Botello, *MEXICO, POSICIÓN GLOBAL DE COMPETITIVIDAD 2008-2017*, (2018), World Economic Forum. <http://www.mexicomaxico.org/Voto/CompetitividadMexico.htm>

[8] R. Pérez; O. Camacho; G. Arroyo, El incremento de la productividad y competitividad en México: Innovación, conocimiento y desarrollo, (2013, Septiembre), *Paakat: Revista de Tecnología y Sociedad*. Año 3, núm. 5.

[9] Eden Springs, *Tipos de productividad empresarial y factores de influencia*, (2020), <https://www.aguaeden.es/blog/tipos-de-productividad-empresarial-y-factores-de-influencia>

Received: September 3, 2020; Published: September 25, 2020