

The impact of COVID-19 and after the pandemic on the competitiveness of micro, small and medium-sized companies in Mexico post COVID-19

El impacto del COVID-19 y después de la pandemia en la competitividad de las micro, pequeñas y medianas empresas de México post COVID-19

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Abstract

Micro, small and medium-sized companies are the backbone of the economy in the world and in Mexico, especially in León, Guanajuato, during and after the COVID-19 pandemic, productivity in companies was reduced by the lack of materials and productive talent, the objective of this research is to analyze the competitiveness of MIPYMES after the COVID-19 pandemic, through the application of 350 surveys to MIPYMES, the grounded methodology is used, worldwide Mexico is above the 50th place in the annual ranking, It is obtained as a result that MIPYMES are accustomed to high economic turbulence, the following is concluded; Although it is true that during and after the pandemic many of them closed temporarily and others permanently, those that survived use survival strategies that lead them to maintain their levels of competitiveness.

COVID-19, productivity, MIPYMES

Resumen

Las micro, pequeñas empresas y medianas empresas son la columna vertebral de la economía en el mundo y en México, en especial en León, Guanajuato, durante y post la pandemia COVID-19 la productividad en las empresas se vio mermada por la falta de materiales y de talento productivo, el objetivo de la presente investigación es analizar la competitividad de las MIPYMES post la pandemia COVID-19, mediante la aplicación de 350 encuestas a las MIPYMES, se utiliza la metodología fundamentada, a nivel mundial México se encuentra por arriba del sitio 50 en el ranking anual, Se obtiene como resultado que las MIPYMES están acostumbradas a las altas turbulencias económicas, se concluye lo siguiente; si bien es cierto que durante y después de la pandemia muchas de ellas cerraron de manera temporal y otras de forma definitiva, las que sobrevivieron usan estrategias de supervivencia que las lleve a mantener sus niveles de competitividad.

COVID-19, Productividad, MIPYMES

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Introduction

It should be noted that the COVID-19 pandemic does not happen, neither economically, nor healthily, despite the fact that vaccines for this disease were applied and continue to be applied throughout the world. Economically, in many countries, support was provided by the government with subsidies and economic loans to the neediest people, as in the case of Mexico, MSMEs were supported with economic support, with projects to generate an income in families with loans and donations. Despite all the health and economic efforts, the type of companies under study continues with the economic consequences of the pandemic.

In the month of March 2020, the global isolation was carried out and it was representative for the dismissal of many collaborators who were financially dependent on that job. The companies closed temporarily, but many of them did so permanently as they did not bear the weight of fixed expenses and debts obtained before the pandemic. Productivity was one of the aspects that was affected by not having the necessary personnel. Neither the raw material could not be produced in time or in the form of the merchandise.

Hence the importance of analyzing the impact on the economy and finances of Mexican MSMEs and what strategies the companies that survived the first red light used. And when the traffic lights change from yellow, orange and finally in December, some states find themselves again with a red traffic light, a new problem that MSMEs will have to face.

The central question of this research is: Did MSMEs maintain their productivity rates during and after the COVID-19 pandemic, small and medium-sized enterprises, during and after the pandemic?

The data was collected in October 2021 in the city of León, Guanajuato, Mexico to learn about the management of productivity and competitiveness of MSMEs during and after COVID-19.

Justification

The task of this research is to analyze the competitiveness of MSMEs during and after COVID-19 in León, Guanajuato, Mexico.

The management that the directors and owners of this type of companies gave to the productive, financial and cost aspects in terms of competitiveness.

Its high business representation in Mexico with more than 95% of all companies, represents the backbone of the economy in the country. These companies have gone through economic crises and continue to operate, this due to the family roots that most MSMEs have.

Problem

As of March 2020, and to date the covid-19 has led to a global economic crisis and for companies in León, Guanajuato, Mexico is no exception, that is why MSMEs were affected in productivity, many of them sawed off their doors definitely and those that are still alive had to adapt their production and financial processes to live with this natural phenomenon that affects all companies.

Research questions

- a) Has financial performance increased in the last three years?
- b) Production costs are low?
- c) Do managers work together with their service and technology providers?

Hypothesis

Micro, small and medium-sized companies in León, Guanajuato, do not have the levels of competitiveness during and after the covid-19 pandemic.

General objective

Analyze the impact on the levels of competitiveness of micro, small and medium-sized companies during and after the covid-19 pandemic.

Theoretical framework

Current situation of international competitiveness

The following table number one shows the most competitive countries worldwide, as of September 2021. Finding in the first 10 places: Noriega, Denmark, Switzerland, Sweden, Ireland, the Netherlands, Finland, Austria, Australia and South Korea. (IMCO, 2021).

Analysis of the competitiveness of Mexico with the other 42 countries. We occupy the 37th place of the 43 countries evaluated in the IMCO International Competitiveness Index 2021. The following is found: In health, energy and connectivity, Mexico shows gaps in competitiveness. The population covers 42% in its health expenses, there is a drop in the coverage of measles and DPT vaccines. There is a drop in net foreign direct investment and a drop in the commercial freedom index that affect the attractiveness of the country for talent and capital.

As defined by IMCO, productivity is the ability to generate, generate, attract and retain talent and investment.

The productivity of Mexico was affected in the decline of 5 of the 10 analyzed sub-indexes, in three of them it remained the same and only in 2 improved and it is in the following: environment retreated, society regressed, political system regressed, market Factors advanced thanks to improvements in labor laws, economy advanced due to the increase in international reserves and the reduction of external debt, in international relations it fell due to the loss in foreign investment, in innovation fell due to the decrease in invention and the decline in high-tech exports.

Position	Country	Position	Country
1	Norway	23	Hungary
2	Denmark	24	chili
3	Swiss	25	Poland
4	Sweden	26	Greece
5	Ireland	27	Malaysia
6	Netherlands	28	Costa Rica
7	Finland	29	Panama
8	Austria	30	Thailand
9	Australia	31	China
10	South Korea	32	Indonecia
11	Japan	33	Russia
12	Belgium	34	Colombia
13	Germany	35	Peru

14	Canada	36	Turkey
15	United Kingdom	37	Mexico
16	USA	38	Brazil
17	France	39	South Africa
18	Israel	40	Argentina
19	Portugal	41	India
20	Czech Republic	42	Guatemala
21	Italy	43	Nigeria
22	Spain		

Table 1 International competitiveness index

Source: Own elaboration with data from the Mexican Institute for Competitiveness, A.C.

The following Table shows the states with the highest productivity, as well as the places they occupied before the pandemic and the one they currently have as of September 2021, as well as their setbacks, increases or if they remained the same as before the covid, during and post covid-19. (IMCO E ICE, 2021). Mexico City is the most competitive city, Guerrero is the least competitive entity, of the 32 entities there are six with very low competitiveness Veracruz, Tlaxcala, Tabasco, Oaxaca, Chiapas and Guerrero.

Sinaloa is the city with the greatest advance, while Hidalgo has the greatest recession.

The state competitiveness index (ICE) found that Yucatan is the safest state, Mexico City the most innovative, Chihuahua is the most connected state and Sinaloa has the best working conditions.

The characteristics of the most competitive states according to ICE 2021, is that the inhabitants have 8.2 years of schooling, 52% of the workers have access to health institutions, 42% of the workers are formal, they have an average monthly income of 8, 972.

In turn, the characteristics of those with the lowest productivity index have 2 less years of schooling, that is, 6.2, have 7 times more informality, an economy 14 times less diversified, 90% fewer patents per 100,000 economically active people.

























Ranking	Entity	Previous index	
1	Mexico City	=	0
2	New Lion	=	0
3	Queretaro	=	0
4	Coahuila		2
5	Jalisco		-1
6	Aguascalientes		-1
7	Sinaloa		7
8	Baja California Sur	=	0
9	Sonora	=	0
10	Yucatan	=	0
11	Chihuahua		-4
12	Tamaulipas		3
13	Baja California		-2
14	San Luis Potosi		-1
15	Nayarit		4
16	Quintana Roo		-1
17	Guanajuato		1
18	Durango		-2
19	Campeche		2
20	Mexico state		2
21	Colima		-1
22	gentleman		-5
23	Puebla		1
24	Morelos		-1
25	Zacatecas		2
26	Michoacan	=	0
27	Veracruz		2
28	Tlaxcala		-3
29	Tabasco		1
30	Oaxaca		1
31	Chiapas		-3
32	Warrior	=	0

Table 2 Mexican state competitiveness index
Source: Own elaboration with data from the Mexican Institute for Competitiveness, A.C.

Financial performance

In research carried out by Maravato (2020), by June of this year 77% would have financial problems or at least opened their doors temporarily closed due to the red traffic light in each of the states, this presumption was carried out in many establishments and the numbers The exact details of the definitive business closings are not exactly known due to the fact that there are businesses that are taxed informally and there are no records of them.

Now, for Proum (2020), Mexican SMEs are in great economic distress, this putting as a precedent that the virus was born in the province of Wuhan, China and without losing sight of the bilateral relationship that exists between both countries.

In turn, for Blancas (2020), a very important problem during this pandemic is the main characteristic of MSMEs, most of the micro companies pay taxes in informal trade and this affects the country's economy.

For its part, ECLAC (2021) mentions that PRONAFIM granted strategic financing to microfinance institutions to expand coverage and it will be directly to avoid and eliminate the intermediation part. It is important to mention that support for MSMEs in the context of the pandemic is based on the guidelines of the National Development Plan 2019-2024. What is sought is to support MSMEs with loans to create jobs in the face of the covid-19 pandemic. (ECLAC, 2021).

Productive and technology performance

For the magazine managers and managers (2021), The health crisis caused by COVID-19 has made us use networks and technologies to market our products and services, this speeds up the transactions of MSMEs, it is an excellent tool that every micro, small and medium-sized company must adapt to their working life. This type of company has the facility to get out of the economic crisis and change the way they carry out their activities and adapt to the digital age.

In turn icoline (2021) SMEs are adoption technologies, connectivity and digital platforms, which were not necessary before to make businesses work, but the adoption of these digital tools will be key to their recovery and, incidentally, that of Mexico. The global economic crisis is the responsibility of each country, but we must consider and adopt the basic measures of technology to carry out our purchases and sales.

For its part, ANTAD department stores promoted digital banking; but there was resistance by users and by the banks themselves. Before the pandemic, buyers were reluctant to use the digital age, out of mistrust, with custom, but with global isolation they had to adapt to change (Olguin, 2021).

Methodology to be developed

The present research is quantitative, 350 surveys were applied to the managers and owners of the MSMEs of León Guanajuato, the students of the economic-administrative area of the administration and gastronomy careers mainly, were the ones who applied the surveys in person and captured them in the database of the network of technological universities, the instrument was applied nationally by all the Technological Universities that participated within the post-covid-19 crisis research network. The instrument consisted of a total of 15 blocks, with block three being the analysis of this research.

Next, the following Table is presented with the items subject to this research.

BLOCK III COMPETITIVENESS
Comparing with the industry average, indicate your level of agreement with these statements
Our return on investment has been very good in the last three years.
Our sales have been very good in the last three years.
Our financial results have been very good in the last three years.
Our profits have been good in the last three years.
Our debts have decreased significantly in the last three years.
Loans in the last three years have been at preferential rates
Comparing with the industry average, indicate your level of agreement with these statements
Coordination costs with our providers are low.
The costs of orders with our suppliers are low
Transportation costs with our suppliers are low.
The costs of delivering the products with our suppliers are low.
The costs of raw materials and supplies with our suppliers are low.
The production costs of our company are low.
In your company, they work together with their suppliers in terms of:
Technology development
Product and / or service development
Development of production processes and / or services.
Project planning.
Improvement of machinery and equipment.
Information technology development.

Table 3 Applied instrument

Source: Own elaboration, with the UTS Instrument

Results

Next, the results of the application of 350 surveys to the MSMEs of the city of León, Guanajuato, Mexico, applied to managers and owners, about block three corresponding to productivity in the area of costs, finances and production during and after COVID-19.

The following Table shows the return on investment persisted by managers and business owners, with 46% agreeing that they have recovered their investment.

Description	Number	Percentage
Total agreement	53	15%
In agreement	110	31%
Neither agree nor disagree	122	35%
In disagreement	47	13%
Total disagreement	18	5%
	350	100%

Table 4 Our return on investment has been very good in the last three years

Source: Own elaboration

The following Table shows how the managers of MSMEs perceive their sales in the last three years, 48% of entrepreneurs perceive

Description	Number	Percentage
Total agreement	51	15%
In agreement	123	35%
Neither agree nor disagree	118	34%
In disagreement	43	12%
Total disagreement	15	4%
	350	100%

Table 5 Our sales have been very good in the last three years

Source: Own elaboration

The following Table shows how the executives of the companies under study perceive their financial results and 47% respond that they agree that they have been very good.

Description	Number	Percentage
Total agreement	46	13%
In agreement	119	34%
Neither agree nor disagree	124	35%
In disagreement	45	13%
Total disagreement	16	5%
	350	100%

Table 6 Our financial results have been very good in the last three years

Source: Own elaboration

This Table shows how the managers of MSMEs perceive that their profits have been in the last three years and 41% agree that their profits have been very good.

Description	Number	Percentage
Total agreement	47	13%
In agreement	97	28%
Neither agree nor disagree	125	36%
In disagreement	56	16%
Total disagreement	25	7%
	350	100%

Table 7 Our profits have been good for the last three years
Source: Own elaboration

This Table shows that employers perceive that their debts have decreased in the last three years, 50% agree on the decrease in their debts during and despite the post-covid-19 pandemic.

Description	Number	Percentage
Total agreement	68	19%
In agreement	109	31%
Neither agree nor disagree	104	30%
In disagreement	47	13%
Total disagreement	22	6%
	350	100%

Table 8 Our debts have decreased significantly in recent years
Source: Own elaboration

In this Table it is observed that only 36% of entrepreneurs obtained a loan in the last three years at preferential rates, this being the question with the lowest obtaining, which could show that MSMEs have problems contracting the best financing at preferential and low rates.

Description	Number	Percentage
Total agreement	46	13%
In agreement	81	23%
Neither agree nor disagree	118	34%
In disagreement	52	15%
Total disagreement	53	15%
	350	100%

Table 9 The loans contracted in the last three years have been at preferential rates
Source: Own elaboration

Now in the next block it is time to analyze competitiveness according to the costs of products, raw materials and services.

The following Table shows that 41% of managers agree that the costs of coordinating with suppliers are low.

Description	Number	Percentage
Total agreement	48	14%
In agreement	94	27%
Neither agree nor disagree	139	40%
In disagreement	45	13%
Total disagreement	24	7%
	350	100%

Table 10 Coordination costs with our providers are low
Source: Own elaboration.

In this Table it is observed that the costs of orders with suppliers according to what the directors of MSMEs perceive are low and 38% agree.

Description	Number	Percentage
Total agreement	43	12%
In agreement	91	26%
Neither agree nor disagree	144	41%
In disagreement	49	14%
Total disagreement	23	7%
	350	100%

Table 11 The costs of orders with our suppliers are low
Source: Own elaboration

The following Table shows that 24% of employers agree that transportation costs with suppliers are low.

Description	Number	Percentage
Total agreement	36	10%
In agreement	85	24%
Neither agree nor disagree	147	42%
In disagreement	52	15%
Total disagreement	30	9%
	350	100%

Table 12 Transportation costs with our suppliers are low
Source: Own elaboration

In this Table it is observed that only 37% of the entrepreneurs agree that the cost of delivering the products with their suppliers is low.

Description	Number	Percentage
Total agreement	39	11%
In agreement	91	26%
Neither agree nor disagree	142	41%
In disagreement	48	14%
Total disagreement	30	9%
	350	100%

Table 13 The costs of delivering the products with our suppliers are low
Source: Own elaboration

The following Table shows that managers perceive that the costs of raw materials are high because only 33% agree that they are low,

Description	Number	Percentage
Total agreement	33	9%
In agreement	85	24%
Neither agree nor disagree	137	39%
In disagreement	59	17%
Total disagreement	36	10%
	350	100%

Table 14 The costs of raw materials and supplies with our suppliers are low

Source: Own elaboration

Description	Number	Percentage
Total agreement	39	11%
In agreement	88	25%
Neither agree nor disagree	145	41%
In disagreement	47	13%
Total disagreement	31	9%
	350	100%

Table 15 The production costs of our company are low

Source: Own elaboration

Now it is the competitiveness block according to the use of technology and production processes, this assignment has the following six items. In this Table it is shown that 43% agree to use the technology in their production and administration of their company.

Description	Number	Percentage
Total agreement	50	14%
In agreement	101	29%
Neither agree nor disagree	95	27%
In disagreement	43	12%
Total disagreement	61	17%
	350	100%

Table 16 Technology Development

Source: Own elaboration

This Table shows that 50% agree that they use technology to develop products and services.

Description	Number	Percentage
Total agreement	67	19%
In agreement	108	31%
Neither agree nor disagree	79	23%
In disagreement	37	11%
Total disagreement	59	17%
	350	100%

Table 17 Product and / or service development

Source: Own elaboration

In this Table, 45% of entrepreneurs agree to use technology in the development of processes and products and 29% do not agree that they use technology in their processes.

Description	Number	Percentage
Total agreement	56	16%
In agreement	101	29%
Neither agree nor disagree	89	25%
In disagreement	40	11%
Total disagreement	64	18%
	350	100%

Table 18 Product and / or service process development

Source: Own elaboration

In this Table, 44% agree that I use technology in project planning is the perception that MSMEs managers have.

Description	Number	Percentage
Total agreement	54	15%
In agreement	103	29%
Neither agree nor disagree	78	22%
In disagreement	43	12%
Total disagreement	72	21%
	350	100%

Table 19 Project planning

Source: Own elaboration

In this Table it is observed that 47% of employers agree that their machinery and equipment have been improved and 30% do not agree that their machinery has been improved.

Description	Number	Percentage
Total agreement	58	17%
In agreement	104	30%
Neither agree nor disagree	81	23%
In disagreement	40	11%
Total disagreement	67	19%
	350	100%

Table 20 Improvement of machinery and equipment

Source: Own elaboration

This Table shows that 41% of entrepreneurs have the perception that they had development of information technologies. And 35% do not agree with having had development in technology.

Description	Number	Percentage
Total agreement	53	15%
In agreement	90	26%
Neither agree nor disagree	84	24%
In disagreement	53	15%
Total disagreement	70	20%
	350	100%

Table 21 Information technology development

Source: Own elaboration

Now the final data of this research are presented for each competitiveness block.

This Table shows the mean and standard deviation of the block of financial performance of MSMEs during the pandemic and post-pandemic COVID-19.

The perception of managers with an average of 3.44 of the MSMEs in this block is that their debts have decreased in the last three years, the increase in sales and the perception of the increase in profits being related, which makes it possible for them to pay their debts in the short and medium term, and the perception shown is that the loans contracted in the last three years were not at the best rates that is shown by the average of 3.04 that this variable has.

Financial Performance Variables	Mean	DT
DF1. Our Return on Investment has been very good in the last three years	3.39	1.05
DF2. Our sales have been very good in the last three years	3.43	1.02
DF3. Our financial results have been very good in the last three years	3.38	1.01
DF4. Our profits have been good in the last three years.	3.25	1.09
DF5. Our debts have decreased significantly in the last three years	3.44	1.13
DF6. The credits contracted in the last three years have been at preferential rates	3.04	1.23

Table 22 Financial performance variables
Source: Own elaboration

In this Table it is observed that the managers of the MSMEs perceive the costs of coordination with their suppliers as low, but not the cost of the raw material that occupies the lowest variable, which means that with an average of 3.06 only the managers perceive an increase in your raw material costs.

Cost performance variables	Media	DT
RC1. Coordination costs with our providers are low	3.29	1.057
RC2. The costs of orders with our suppliers are low	3.23	1.05
RC3. Transportation costs with our suppliers are low	3.13	1.064
RC4. The delivery costs of our products are low	3.19	1.065
RC5. The costs of raw materials and supplies with our suppliers are low.	3.06	1.096
RC6. The production costs of our company are low.	3.16	1.078

Table 23 Cost performance variables
Source: Own elaboration

In the present block of variables of productive performance and the use of technology, it is observed that entrepreneurs perceive that they have developed products and services but have as an opportunity area to make use of tools and technology. To increase your levels of productivity and competitiveness.

Productive performance and technology variables	Mean	DT
UT1. Technology development	3.1	1.294
UT2. Product and service development	3.25	1.341
UT3. Development of production processes and services	3.13	1.328
UT4. Project planning	3.07	1.363
UT5. Improvement of machinery and equipment.	3.13	1.352
UT6. Information technology development.	3.01	1.349

Table 24 Productive performance and technology variables
Source: Own elaboration

Acknowledgments

We are grateful to the Technological University of León and the Research Network of technological universities for the generation of this project and the application of the national productivity surveys during and after covid-19.

Discussion and Conclusions

With the data obtained with the ANOVAS, the following conclusion is reached, in the analysis of the three blocks to measure the competitiveness of the MSMEs of León, Guanajuato, Mexico.

Financial performance is 51.1% correlated with cost reduction and is significant at 99% reliability.

Financial performance is 43.3% correlated with the use of technology and is significant at 99% reliability

Cost reduction is correlated by 37.6% with the use of technology and is significant at 99% reliability.

Competitiveness was affected by the health crisis, which triggered several crises, including the economic one that directly affected micro, small and medium-sized companies in the world, Mexico and León Guanajuato, many companies closed their doors definitively and those that remained they saw the effects on competitiveness, mainly in the costs of transportation of their merchandise and in the lack of use of technology for production processes, the reduction of costs is related to the use of tools and technology. In turn, cost reduction is related to financial performance, there is an increase in profit because they make cost savings.

MSMEs are the backbone of the economy by contributing to GDP and generating jobs, it is very important to analyze that there are states that require the use of formality to provide their employees with the benefits of the Law and access to health services, in the world indices Mexico fell back in competitiveness levels and in the state indices Guanajuato is in 17th place out of 32 sites.

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