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Indicadores de la cadena de valor y cadena de suministros que aplican las MYPES de Mixquiahuala de Juárez Hidalgo

Value chain and supply chain indicators applied by MYPES in Mixquiahuala de Juárez Hidalgo

Indicadores da cadeia de valor e cadeia de abastecimento aplicados pelo MYPES de Mixquiahuala de Juárez Hidalgo

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Resumen

Las pymes hoy en día contribuyen de manera significativa al crecimiento económico de un de un país, por ello la importancia del desarrollo de estrategias que permitan la creación de una ventaja competitiva que asegure su crecimiento y supervivencia en un mercado cada días más competitivo.

Por ello la presente investigación muestra los resultados obtenidos a un estudio realizado a 347 MYPES del municipio de Mixquiahuala de Juárez Hidalgo, con la finalidad de identificar de qué manera aplican indicadores de la cadena de valor y suministros las MYPES de Mixquiahuala Hidalgo, con la intención de visualizar en una siguiente investigación de qué forma dichos indicadores están directamente relacionados con la competitividad de las empresas y la factibilidad para diseñar un modelo de colaboración entre las MYPES mediante un análisis correlacional de las variables, que a su vez contribuya a mejorar la competitividad de las MYPES del Municipios de Mixquiahuala de Juárez y que dicho modelo pueda ser replicables en las demás MYPES del estado de Hidalgo. En este sentido Mixquiahuala cuenta con un total de 4,941 empresas, (INEGI, 2020).

Palabras clave: MYPES, cadena de suministro, cadena de valor .

Abstract

SMEs today contribute significantly to the economic growth of a country, hence the importance of developing strategies that allow the creation of a competitive advantage that ensures their growth and survival in an increasingly competitive market.

For this reason, this research shows the results obtained from a study carried out on 347 mypes in the municipality of Mixquiahuala de Juárez Hidalgo, with the purpose of identifying the cameras that apply indicators from both the value and supply chain to the mypes of Mixquiahuala Hgo, with the intention visualize in a subsequent investigation how these indicators are directly related to the competitiveness of companies and the feasibility of designing a collaboration model between mypes through a correlational analysis of the variables, which in turn contributes to improving the competitiveness of the companies. mypes of Municipalities of Mixquiahuala de Juárez in this sense, Mixquiahuala de Juárez and this model can be replicated in the other mypes of the state of Hidalgo, in this sense Mixquiahuala has a total of 4,941 companies, (INEGI, 2020).

Keywords: Mypes, supply chain, value chain.

Resumo

As MYPES contribuem hoje significativamente para o crescimento económico de um país, daí a importância de desenvolver estratégias que permitam a criação de uma vantagem competitiva que garanta o seu crescimento e sobrevivência num mercado cada vez mais competitivo.

Por este motivo, esta pesquisa apresenta os resultados obtidos em um estudo realizado em 347 mypes do município de Mixquiahuala de Juárez Hidalgo, com o objetivo de identificar as câmeras que aplicam indicadores da cadeia de valor e de abastecimento aos mypes de Mixquiahuala Hgo. , com o intuito de visualizar numa investigação posterior como estes indicadores estão diretamente relacionados com a competitividade das empresas e a viabilidade de desenhar um modelo de colaboração entre mypes através de uma análise correlacional das variáveis, o que por sua vez contribui para melhorar a competitividade das empresas . mypes dos Municípios de Mixquiahuala de Juárez neste sentido, Mixquiahuala de Juárez e este modelo pode ser replicado nos demais mypes do estado de Hidalgo, neste sentido Mixquiahuala tem um total de 4.941 empresas, (INEGI, 2020).

Palavras-chave: Mypes, cadeia de suprimentos, cadeia de valor.

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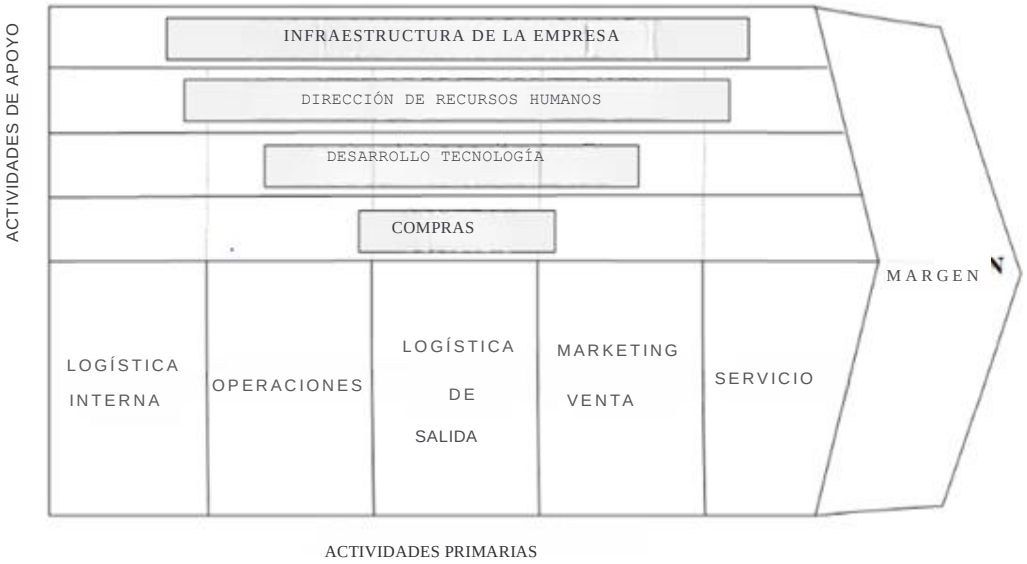
Introduction

There are various methodologies that contribute to the generation of competitiveness in companies, among which the value chain and the supply chain stand out. The value chain refers to a sequence of activities that aims to create value in a product or service from the consumer's perspective, which facilitates its positive acceptance in the market. On the other hand, the supply chain encompasses all the processes necessary to satisfy the customer's needs, from the collection of raw materials and their transformation into finished products, to their distribution to the customer or final consumer (Figueiras , 2021, para. 1).

Llados *et al.* (2018, para. 26) point out that the value chain must recognize the activities of organizations as an integral system that allows the development of products or services with value for the market. This covers the system from the creation of the product to its consumption or use by consumers, demonstrating the added value in each of the activities involved, whether direct or indirect (See Figure 1. Value chain).

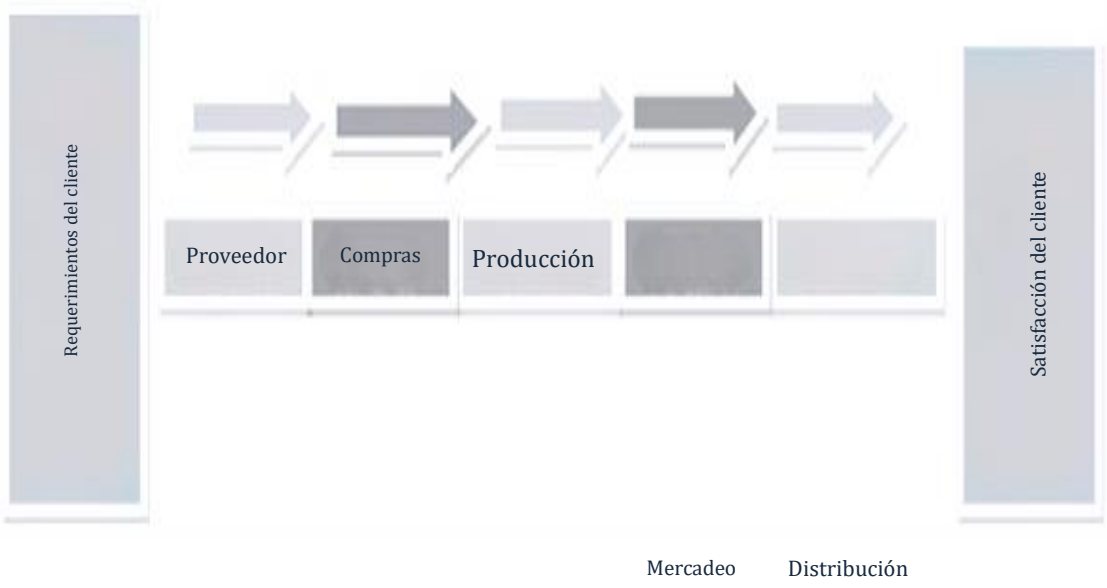
Figure 1. Value chain



Source: Vaca, H. and Contreras, F. (2019).

For Manuel *et al.* (2019, Paragraph 1), the supply chain is a succession of links (processes) that aim to satisfy the customer through valuable products or services, where each process must generate a part of the product through techniques, processes, or methods that generate value for the company, the product, service, and the end user, as shown in Figure 2.

Figure 2. Supply chain.



Source: (Manuel *et al.* , 2019) .

As can be seen, both the elements of the value chain and those of the supply chain, when properly managed and articulated with correct planning and execution, can generate competitiveness in the industry. Although various studies have shown that micro and small enterprises (MYPES) tend to operate empirically, it is essential to identify how they manage each of the elements of the value chain and the supply chain. This will allow the development of strategies in accordance with the specific characteristics of these companies, facilitating the obtaining of a competitive advantage and extending their market share.

Globally, the economy of many countries is largely supported by micro, small and medium-sized enterprises (MYPES). According to Forbes (2021), in Mexico there are nearly 4.9 million MYPES , which contribute 52% of the Gross Domestic Product (GDP). In particular, 174,800 of these companies are MYPES , which generate 78% of jobs in the country, making them a crucial driver of the economy. It should be noted that this information only includes those MYPES registered in the latest INEGI economic census (2020).

Materials and methods

The research is quantitative with a descriptive approach. According to Hernández, R. (2018), the quantitative approach aims to describe phenomena, events and variables, among others, in order to determine antecedents, compare cases, identify anomalies, correlate phenomena, establish causes and effects, evaluate interventions, develop applied sciences and solve problems. In this research, data is collected through surveys that allow obtaining quantitative (numerical) information and, through statistical analysis, it is sought to identify how each indicator is applied in the MYPES of Mixquiahuala de Juárez.

Instrument

It is important to note that this research is based on instruments previously developed and defined in previous explorations by the authors of this text. In particular, a questionnaire composed of 124 items organized on a Likert scale is used, covering the following variables: Sales Management, Production and Operation, Market Analysis, Finance, ISO 26000 Issues, Management, Marketing, Human Resources, Suppliers, Environmental Analysis and Production and Operation. These variables are presented in Tables 1 and 2.

Where :

N = Tot a l of the population

Z α = Level of trust , 1.96 squared (if safety and 95 %

p = estimated percentage of the sample (in this almost 50 % = 0 . 5)

q = 1 – p (e n This case 1 - 0.5 = 0.5)

d = e r r o r (5 %) .

Values :

N = Z^2 * p * q * N / [e^2 * (N-1)] + Z^2 * p * q

Data:

N = Total population = 3618

Z = 1.96 (95% confidence level)

P = 0.5

Q = 0.5

E = 0.05 (5% maximum admissible error)

Replacing values:

N = (1.96)^ 2 * 0.5 * 0.5 * 3618 / [(0.05)^2 * (3618-1)] + (1.96)^2 * 0.5 * 0.5

N = 347

Sampling distribution:

Stratum 1 (Clients): 3618 * (3618/3618) = 347 surveys

Interpretation:

The minimum sample size required is 347.

To analyze the indicators of the value chain and the supply chain, and their direct relationship with the competitiveness of companies in a subsequent investigation, both the dependent and independent variables were identified.

- Dependent Variables Table 1 and 2
- Independent Variable Table 3

Table 1. Operational definition of value chain variables

VALUE CHAIN	VARIABLES	OPERATIONAL DEFINITION	ITEMS
Logistics	Provision	Actions carried out by the organization related to the input, processing and output of raw materials, supplies and/or products that satisfy consumer needs efficiently.	6
Operations	Production	Actions carried out by the organization in the manufacturing area that make the products or services generate value for the customer.	5
Marketing	Market research	Collect, analyze and process information about the market, customers and competitors to make correct decisions in the design, production, sales, price and distribution of a product or service in the market.	19
Sales	Finance	It includes the analysis and control of the company's cash inflows and outflows for decision-making.	13
Service	Customer Service	It involves having knowledge of customer requirements and the degree of satisfaction with products and services that contribute to having healthy and long-lasting relationships with both customers and consumers and also with the company's external environment.	6
Infrastructure	Facilities	It is the degree of installed capacity that meets the requirements for the correct functioning of the company and its objectives.	8
Development	Innovation	It demonstrates a company's ability to be	8

Innovation		flexible and adapt to changes in the internal and external environment in order to transform resources, processes, products, areas, etc. and the company becomes competitive in the changing environment.	
Human Resources	Human Capital	It comprises a series of steps and procedures that an organization carries out to attract and train human capital .	12

Source: Own elaboration

Table 2. Operational definition of supply chain variables

SUPPLY CHAIN ELEMENTS	VARIABLES	OPERATIONAL DEFINITION	ITEMS
Suppliers	Suppliers	The degree to which organizations comply with the supply of materials, raw materials and inputs through their suppliers.	6
Transport		The mechanisms by which an organization moves products, goods, people, from one point to another, whether local, national or international.	13
Production	Production and Operation	The actions carried out by organizations internally in the production area that contribute to the generation of value of their products in the market.	5
Communication	Marketing	The way in which a company has an organization to inform, provide and market products or services to its consumers, clients or the environment that surrounds it, in a creative and assertive manner.	11

Source: Own elaboration.

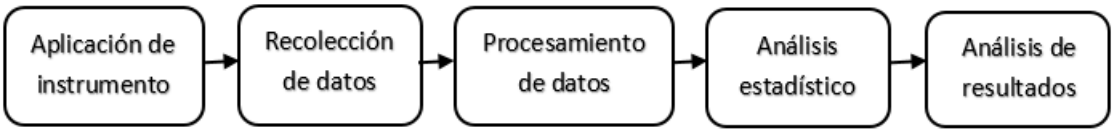
Table 3. Tactical definition of competitiveness variables

COMPETITIVENESS	VARIABLES	OPERATIONAL DEFINITION	ITEMS
Sales j,j	Accounting and Finance	It identifies the degree of economic profitability that the company has.	9

Source: Own elaboration.

The study identifies how MYPES in Mixquiahuala de Juárez, Hidalgo, apply each of the indicators of the value chain and the supply chain, with the aim of determining which factors are contributing to the lack of competition. The mechanism for preparing this information is shown in Figure 3.

Figure 3. Sequence of results assessment



Source: Own elaboration.

Results

For processing and study of The information obtained was used statistics descriptive decade a of the variables of study with regard to the value chain and the supply chain, in which a n a l i z e r each one of the items with their respective dimensions, where the object of study was 347 companies from Mixquiahuala Gentleman .

The information collection instrument was designed using the Likert scale where the meaning of each one is shown in Table 4.

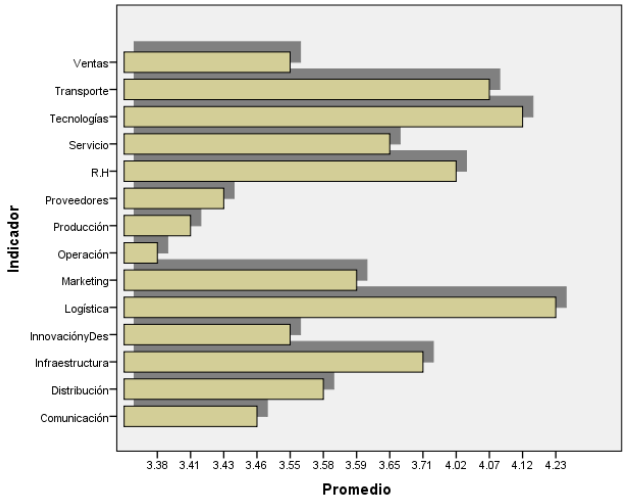
Table 4. Likert scale

Worth	Meaning
1	Strongly disagree
2	Disagree
3	Not applicable
4	OK
5	I totally agree

Note: Own elaboration.

In this sense, the deductions are shown in Figure 4. It is important to mention that the results are the average of both the value chain and supply chain indicators.

Figure 4. Average of the results of the survey application.



Note: The results of the indicator were obtained by calculating the individual average of each item, values <= 3 would be those not used by MYPES.

Source: Own elaboration.

The result shows us that the indicators of Transportation, Technologies, Services, Human Resources, Marketing, Logistics and Infrastructure are applied and managed within the MYPES studied.

In this context, it is important to highlight some of the questions formulated to obtain the results of the study, such as: Are we interested in the supply of goods and raw materials in the organization? Has the company identified the geographic location of its customers and plans routes based on this variable? Do my users have control over the company's negotiations? Do I take actions to identify and generate new customers for the organization? Do users prefer us for the way we treat them? Are we oriented towards satisfying our customers' requirements? Do I clearly identify market trends and the movements of my competition? Has the time that employees are physically in the company been reduced? Is their salary paid in full? Does the company have a distribution plan segmented by type of customer? Are there clear and well-defined distribution and transportation management policies? Is it more convenient for my company to buy the supplies and requirements for my organization via the Internet? Do new technologies generate security in my company's economic businesses?

On the other hand, the value chain and supply chain indicators to which SMEs should pay greater attention are: Sales, Suppliers, Production, Operation, Research and Development and Communication.

These indicators, within the survey, were analyzed under questions such as: Does my organization generate enough capital for me ?, Am I very clear about the value of what I sell each month?, Are the inventories of raw materials or finished products classified by categories, subcategories, families?, Are inventory control policies implemented and does everyone in the warehouse know them?, Is there improvement or payment to innovate the way I market my products or services?, Do I encourage employees to propose changes in my products, services and processes?, Does the operations manager understand the impact of the costs of their activity?, Do I focus a lot on adapting my products or services to satisfy each client?

Now , according to the statistical analysis, some elements that should be paid more attention to or that directly impact the competitiveness of companies are shown below. In this context, although it is expected that all dimensions of the variables X1 and X2 are present within the value chain and supply chain administrative tool, special attention should be paid to the items that meet the 0.05 requirement at the significance level. This is because such items contribute more significantly to the competitiveness of MYPES.

Where:

X1 is the value chain

X2 is the supply chain

Table 5. Dimensions of the value and supply chain that increase the competitiveness of MYPES.

Model	Unstandardized coefficients		Standardized entities	t	Next.	Collinearity statistics	
	B	Standard error	Beta			Tolerance	VIF
A logistics indicator management system is in place, which feeds management indicators.	0.14	0.047	0.164	2.975	0.003	0.089	11.247
I am looking for strategies to reduce costs in my organization.	0.071	0.024	0.117	2.924	0.004	0.169	5.903
Customer satisfaction is continuously measured in operational terms (surveys, interviews or others).	-0.095	0.034	-0.118	-2.826	0.005	0.156	6.419
I have designed effective methods that allow me to identify whether the prices of my products or services are appropriate.	0.158	0.033	0.214	4.763	0	0.135	7.409
I consider effective methods to identify the needs and preferences of my clients.	-0.074	0.031	-0.113	-2.354	0.019	0.119	8.433
I don't consider marketing strategies without first doing trial and error.	0.108	0.036	0.172	2.98	0.003	0.082	12.245
I give my clients discounts to strengthen sales.	0.158	0.026	0.26	6.04	0	0.147	6.797
We are focused on meeting our customers' needs .	-0.069	0.028	-0.098	-2.486	0.014	0.174	5.735
There is a customer outreach program to improve the level of service provided.	0.078	0.034	0.098	2.26	0.025	0.144	6.957
I make adjustments ~~to~~ my products or services to secure a sale.	0.111	0.029	0.187	3.84	0	0.114	8.74
I consider appropriate methods to assess the quality of my clients' care.	-0.08	0.033	-0.126	-2.445	0.015	0.101	9.855
I keep a record of my personal expenses, either physically or electronically .	0.067	0.028	0.114	2.408	0.017	0.121	8.285
Controlling income, savings and expenses is essential for my organization.	0.131	0.034	0.162	3.88	0	0.156	6.39
The development possibilities of my organization have been very high in the last year.	0.104	0.026	0.164	3.968	0	0.158	6.312
My workers' salaries are paid in full.	-0.082	0.021	-0.162	-3.843	0	0.153	6.548
Workers' salaries are reduced.	-0.053	0.021	-0.113	-2.603	0.01	0.144	6.948
He said goodbye for good.	0.075	0.021	0.123	3.489	0.001	0.217	4.603
Improvement or payment to innovate the way I market my products or services.	0.101	0.038	0.15	2.614	0.01	0.082	12.201

I identify the cost of what I buy from my suppliers each month.	0.107	0.035	0.124	3.098	0.002	0.169	5.913
There is a purchasing manual with clear policies that are known to those responsible for supply.	-0.113	0.041	-0.148	-2.778	0.006	0.096	10.434
There is a documented procedure that clearly describes inventory control.	-0.095	0.034	-0.13	-2.769	0.006	0.123	8.142
A storage model based on the ABC of Inventories is implemented.	-0.092	0.034	-0.123	-2.744	0.007	0.136	7.36
Rigorous control is carried out on the entry and exit of warehouse inventories.	0.088	0.037	0.11	2.39	0.018	0.128	7.786
I continually share my company's achievements with other organizations.	0.072	0.025	0.134	2.832	0.005	0.122	8.203
For my organization, online buying and selling is a very important tool since it allows me to do it at any time and from any place.	0.06	0.025	0.109	2.417	0.016	0.134	7.48
The development of new security technologies for virtual economic transactions gives me the confidence to buy online.	0.048	0.02	0.086	2.414	0.017	0.213	4.692
Our products are identified and purchased by our customers because they are considered to have the highest value in the market.	-0.149	0.031	-0.216	-4.817	0	0.135	7.427
Customers prefer us because of our large supply of products and their availability.	0.064	0.031	0.075	2.074	0.039	0.205	4.875
I attend ~~courses~~, conferences, fairs or any other activity that allows me to promote my company or organization.	0.045	0.023	0.071	2.013	0.045	0.216	4.627

Source: Own elaboration.

Discussion

It was observed that many of the MYPES give little importance to the planning of actions and available resources. Instead, many operate in a reactive manner, without forecasting the real demand. This finding contrasts with the perspective of Calderón, J. and Cruz, E., (2005) , who argue that the supply chain must be managed properly, which implies planning, organization of resources and control in each of its phases. Despite the various studies and research, the correct implementation of the supply chain in SMEs remains one of the least performed activities. This is mainly due to the lack of knowledge of managers or the lack of trained personnel, which limits the effectiveness of these practices in MYPES.

On the other hand, Galón (2020) establishes that companies must create a fully integrated supply chain to reduce their weaknesses and foster links between them. However, the results obtained show a lack of interest in collaborating with other companies, which limits their ability to face the threats posed by large companies in the region.

Similarly, the results coincide with those of García et al. (2021), who highlight a lack of financial culture among microentrepreneurs. This lack of culture prevents them from taking advantage of opportunities and taking risks to grow their businesses, expand or avoid the closure of actions through corrective measures. In addition, it limits the optimization of resource management and the search for continuous improvement and quality, leading many to settle and stagnate.

Conclusions

Although this research was carried out with the aim of identifying how MYPES apply the different elements of the value chain and the supply chain, it is important to highlight that various previous investigations have shown that a correct application of these methodologies contributes significantly to the competitiveness of organizations. In this sense, the purpose of the research is to generate tools, methodologies or models that can be replicated in other regions or states. Progress has been made in knowledge by identifying the elements that are directly related to the competitiveness of MSMEs in the municipality of Mixquiahuala de Juárez, Hidalgo. It has been determined that there are primary and secondary activities within the value chain that could allow MSMEs to face current difficulties and increase their participation in state and national markets. This could contribute to their growth, as long as adequate strategic planning is carried out that allows each of the activities in the value chain to be analyzed to verify whether they generate value individually.

Future lines of research

With the information obtained, correlational research can be carried out to identify which variables impact the competitiveness of MYPES, which will allow the design of a collaboration model between them in order to take advantage of the potential of each one of them, and this in turn will allow their survival in an increasingly larger market.

With the information obtained, correlational research can be carried out to identify the variables that impact the competitiveness of MYPES. This analysis will allow the design of a collaboration model between companies to take advantage of the potential of each one, thus favouring their survival in an increasingly competitive market.

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