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Presentation of the content

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Survey and analysis of the indicators of intellectual capital in MiPymes of León, Guanajuato under the Intellectus Model approach

Análisis de la correlación de indicadores de la gestión del capital intelectual en Mipymes de León, Guanajuato bajo el enfoque del Modelo Intellectus

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Abstract

This paper presents the result of a correlational study derived from the exploratory analysis of a previous work in 2019 on the behavior of key indicators of intellectual capital management under the approach of socio-evolutionary models such as the Intellectus Model from which a 27-question-survey was designed and applied to a sample of 69 companies of different sizes and lines of work in the city of León. The results of the study show that in the companies subjects of the research are found significant positive correlations in the behavior of key indicators such as levels of integration and motivation of staff, promotion mechanisms, level of involvement in decision-making, levels of education, propensity to change or improvement in products and processes, transfer of knowledge in the form of intangible assets as trademarks and patents which allow companies to increase their chances of permanence and growth in the long term. The above gathered from the statistical analysis applied to the database constructed from the results of the field research among the companies that agreed to answer the initial survey.

Knowledge Economy, Intellectual Capital, intangible assets, Intellectus Model

Resumen

Este artículo presenta el resultado de un estudio correlacional derivado del análisis exploratorio de un trabajo previo en 2019 sobre el comportamiento de indicadores clave de la gestión del capital intelectual bajo el enfoque de modelos socioevolutivos como el Modelo Intellectus a partir del cual se diseñó y aplicó a una muestra de 69 empresas de diferentes tamaños y líneas de trabajo en la ciudad de León. Los resultados del estudio muestran que en las empresas objeto de investigación se encuentran correlaciones positivas significativas en el comportamiento de indicadores clave como niveles de integración y motivación del personal, mecanismos de promoción, nivel de implicación en la toma de decisiones, niveles de formación, propensión al cambio o mejora de productos y procesos, transferencia de conocimiento en forma de activos intangibles como marcas y patentes que permitan a las empresas incrementar sus posibilidades de permanencia y crecimiento en el largo plazo. Lo anterior extraído del análisis estadístico aplicado a la base de datos construida a partir de los resultados de la investigación de campo entre las empresas que aceptaron responder la encuesta inicial.

Economía del Conocimiento, Capital Intelectual, Activos intangibles, Modelo Intellectus

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The studies related with the management of intellectual capital are part of a new generation approach within business management that acquired great relevance as part of the emergence of the fourth industrial revolution and the trends of the new styles of leadership and management related to the industries associated with information and communication technologies.

The era of digitization developed widespread rapidly at an international level, as consequence the main companies associated with that industry began to turn their attention to intangible assets as part of their business strategy. Innovation as a key concept along with R&D in English, also known as I+D were part of the discussion in the public policy agenda at national and regional levels during the first decades of this century. Hence, in the last 15 years, business strategies that increasingly recognize the value of intangible assets through intellectual capital have been developed. In this work, evidence of a positive correlation is shown between the indicators associated with forms of work aimed at participation, creativity and knowledge flow and the propensity to innovate through patenting or intellectual property registration initiatives in the companies, subjects of the investigation, located in the city of León and neighboring cities.

Introduction

This article presents a correlational analysis of indicators result from the exploratory study proposed by the research group on intellectual capital and innovation in organizations which takes as a starting point, key concepts in the Knowledge Economy and in particular it tries to discuss the relevance of intellectual capital as one of the intangible assets that generate value for innovation in organizations and that show analytical trends to evaluate organizational management styles in local and regional economies. In this regard, there is an extensive literature that has documented the changes in the business management paradigm in terms of the management of human and intellectual capital. In particular, the Intellectus Model proposed by Bueno and Merino in 2008 and updated in 2015, proposes an methodological analysis that sums up 3 dimensions for the study of intellectual capital and that were taken up in this work to organize a survey directed to the personnel of Guanajuato companies.

In this sense, the measurement and analysis of indicators of the intellectual capital of the Intellectus Model is part of the investigation of this phenomenon in which we find some key dimensions that explain some trends in the results of a management oriented to the use of intangible assets. In this way, the results of the exploratory study, started in 2019, allowed the construction of a database which was statistically analyzed to find significant correlations amongst the variables analyzed in addition to prove the hypothesis about the positive relationship between the management styles oriented to motivation and promotion of human talent, and the changes in the generation of products for innovation translated into intellectual property registrations, in particular patents, trademarks, software copyright registrations and utility models for the local and regional industry.

The results obtained yielded significant correlations that are shown in the results section. The conclusions of the work seek to offer data to confirm that the management of intellectual capital (knowledge, innovation, link with the environment) will continue to be key in the administration of organizations as part of their strategic planning to remain in the market.

Today, more than ever, faced with a scenario of uncertainty for decision-making, the work carried out within work teams aimed at managing creativity and innovation become assets of great value to guarantee the survival of companies in microregions such as those that were the subject of the study. Next, some approaches are presented about the frame of reference that guide the assumptions of the analysis work in order to justify the theoretical and methodological relevance of the field work and the contrasting of empirical evidence against trends in the field of business management.

Knowledge management and Intellectual Capital

The vertiginous evolution of the capitalist industrialization model and its worldwide expansion from the second half of the 20th century gave rise to new paradigms to explain the emergence of new factors of production. In particular, the intervention of technology as a detonator of production and with it a need to establish new schemes of relationship with human capital (formerly known as labor or personnel).

DÍAZ-GONZÁLEZ, Claudia, ORDAZ-PICÓN, Carla and GÓMEZ-NEGRETE, Guadalupe de Jesús. Survey and analysis of the indicators of intellectual capital in MiPymes of León, Guanajuato under the Intellectus Model approach. Journal-Business Administration-Marketing; Accounting. 2021

Until then, technological change was considered an exogenous factor to this function. Apparently, the incorporation of innovation and knowledge variables began to better explain why industrialized economies achieved higher growth rates than emerging economies, which, despite investing more in capital, did not show a better performance.

In the last decade of the 20th century, the main literature on Knowledge Management and Intellectual Capital in organizations began its development and with it came the first efforts to evaluate this last concept. The knowledge society, according to Castells (2002), is a society in which the conditions for the generation of knowledge and information processing have been substantially altered by a technological revolution focused on information processing, the generation of knowledge and the information technology

The arrival of the information society and its evolution towards the knowledge society has placed intangible assets as one of the main sources of creating a sustainable competitive advantage for the company. In this context, the concept of Intellectual Capital arises as a strategic perspective of the intangibles of the organization.

According to Edvinsson and Malone (1999), Intellectual Capital refers to the value resulting from the set of intangible assets created by the company. This intangible resource is based whether on knowledge or human intellect and developed in the organization. It therefore includes a set of assets such as organizational systems, brands, databases, patents, customer relations, among others. These assets, as Lev (2001) points out, respond to the process of value creation, innovation, or cognitive base of R&D of organizational practices and policies or of management of the function of people as possessors of knowledge. Kristandl and Bontis (2007) incorporate other relevant elements into the analysis by pointing out that intellectual capital is defined as “those strategic organizational resources that allow it to create sustainable value, but that are not available to a large number of companies. (shortage). They generate potential future benefits that cannot be taken by others (appropriability) and that are not imitable by competitors or substitutable by other resources. They are not transferable due to their organizational nature.

Under this definition, assets of an intangible nature are combined so they can generate new knowledge and be transformed into business competencies or the creation of competitive advantage.

In recent years, administrators have accepted that the intangible asset is formed by human capital, structural capital, relational capital, leadership, feelings and employee turnover, and knowledge management; and not by the cash, the building or the equipment, which make the most important and critical difference of the organization, besides that this can be transformed into financial gains and in support of the innovation capacity of an organization (Bontis and Fitz -enz, 2002).

Intellectual capital is part of knowledge management, it resides in the organization because it is the knowledge created by same organization and that creates a sustainable competitive advantage, which it develops to increase business performance (Bontis and Fitz-enzy, 2002).

Within the studies carried out on the performance of companies in Latin America, such as the one carried out by Fernández-Jordán and Martos (2013) in Mipymes (Micro, small and medium size companies) in some regions of Brazil, there is empirical evidence that the way of managing human capital can define the company's positioning in the market, increase its competitive advantages derived from investment in training, process certification, improvements in organizational communication and better management of work teams, thus increasing the possibilities for innovation and improvement.

The importance of intellectual capital today is associated with competitive advantage, with the creation of distinctive competencies, and with the creation of technology management and knowledge transfer amongst the individual, the team, and the organization (Chaharbaghi and Cripps, 2006).

Nonaka and Takeuchi (cited by Bontis and Fitz-enzy, 2002) mention that knowledge management includes three primary activities: 1) knowledge generation, which describes the way in which employees improvise and innovate in the organization;

2) knowledge integration, which describes how employees transform their tacit knowledge into explicit knowledge by encoding their ideas within the organization's systems, and 3) knowledge sharing, which describes the socialization process through which employees share knowledge with others.

Finally, the definition proposed in the studies of Bueno (2008) in which he poses intellectual capital as “accumulation of knowledge that creates value or cognitive wealth owned by an organization, composed of a set of assets of an intangible nature or resources and capacities based on knowledge that when put into action, according to a certain strategy, in combination with physical or tangible capital, is capable of producing goods and services and of generating competitive advantages or essential skills for the organization in the market”.

Although the first studies interested in addressing the issue have been carried out in developed countries where companies are listed on the stock market as part of their financial dynamics, and which showed differences between their book value and their market value, it is interesting to observe the behavior of economic agents, particularly small and medium-sized companies in the face of the changes imposed by the economic and commercial dynamics strongly interconnected with the leading industries of the international economy.

Today, concepts, ideas, images — not things — are the real valuable items in the new economy. For this reason, it is essential to observe, and even encourage, that local companies recognize this value and begin to make decisions that introduce processes aimed at taking advantage of the new opportunities that the new context of the international economy represents.

According to Osio Havriluk (2016) “it should be understood that, in the 21st century, the predominant technological matrices are becoming obsolete, and this has considerable effects on markets and organizational structures. IT has revolutionized organizations and has generated new ways of working that require more specialized and knowledgeable people.

The know-how has become a totally strategic factor in the production process, and one of the most profitable investments in the entire economy. In this new society, capital must focus on the productivity of knowledge and service workers, which constitutes real challenges for the different sectors.

Intellectus Model for Measurement and Management of Human Capital

As part of the development of the theoretical and methodological approaches around knowledge management, the proposal of Eduardo Bueno and the Intellectus Model (2011) is retaken. Such model, provides a new and adequate tool to measure, inform and strategically systematically and integrally direct the organizational resources based on the knowledge that comprise it.

Within the development of models for the measurement and management of Intellectual Capital in organizations, three main approaches are proposed. The first one called “financial-administrative” with a clear accounting influence; the second “corporate strategic approach” and the third “social-evolutionary approach” that initiates the development of Intellectual Capital for the following years.

The Intellectus Model that is taken as a reference in this work is framed within the socio-evolutionary approaches that result from the most evolved models and with concern for more dynamic components or capital such as “social”, “cultural”, “innovation” or of “entrepreneurship.”

The Intellectus Model for the measurement and management of intellectual capital emerged in 2003 having as a precedent the Intellectus Model of the Euroforum Escorial University Institute. Subsequently, and derived from studies and findings in empirical research, an updated version was proposed in 2011 led by Bueno and Merino.

In this way, in 2011 the model that incorporated the elements to do so was proposed: systemic, open, adaptive and flexible and that is observed in Figure 1.

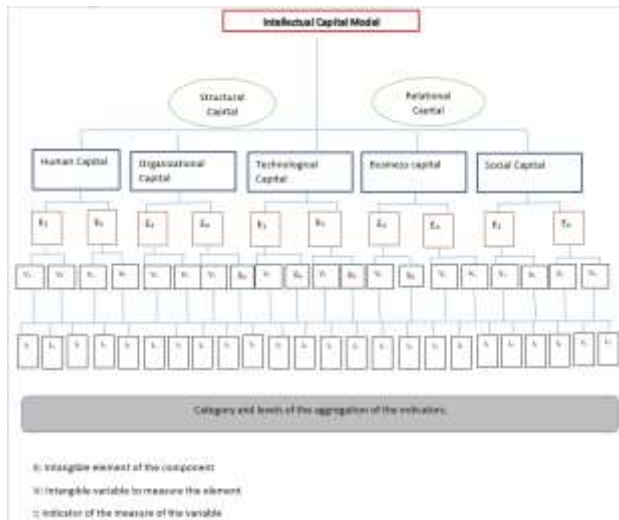


Figure 1 Intellectus model: Basic structure and its components

Source: CIC-IADE (UAM, 2003)

Figure 1 shows the “pertinence tree” analysis technique, which allows observing the elements of a topic in an increasingly detailed way by subdividing topics into smaller and smaller subtopics.

The Intellectus Model aims to provide an orderly framework for reflection on the management of the Intellectual Capital of the organization. Although in principle the model adopted as a starting point companies dedicated to R&D, financial institutions, consulting firms, or evolving towards new applications that have shown a degree of adjustment for the private and public sector, as shown by the case studies of Spanish companies in where the proposal of the model was born.

The model distinguishes dimensions of intellectual capital: human capital, structural capital (subdivided into organizational and technological capital) and relational capital (business capital and social capital).

For the Intellectus Model, **human capital** is defined as those attitudes, skills and abilities that are in line with the challenges and values of the organization. These abilities and skills can be acquired throughout life, either through formal studies or through informal knowledge, which people acquire through experience. In this sense, it is emphasized that many workers increase their productivity by learning new techniques on the job or by perfecting old ones.

Structural capital is made up of two subgroups such as organizational capital and technological capital, the first associated with the structural scope of designs, processes, and culture and the second linked to the effort in R&D, the use of technological endowments and the results of R&D.

Social relational capital, in whose framework are the relationships outside the business environment (social commitment, public image, reputation, prestige, social action) In this regard, the study by Martín de Castro and Alama (2009) shows that there is a positive relationship between this type of capital and the innovation of products and services derived from inter-organizational knowledge, from the relationship with clients, suppliers and alliances with competitors in the same industry, moving towards a new vision of innovation based on intellectual capital.

Finally, **Entrepreneurship and innovation capital** that encompasses efforts to improve or new products of the company whose benefits are perceived in costs, quality, time, and performance, as well as innovations that cause technological and social impact. It also adds the valuable component (Be+ Being), which contemplates the willingness of people to generate the innovations referred to. This last dimension consisted in the identification of accelerating elements of the original capitals of the model, which were integrated to form the latter capital. (See Figure 1)

According to the interpretation of the Intellectus Model, the sum of these dimensions of intellectual capital generates a systemic composition that allows obtaining an overview of the intangible assets that the organization owns, thus generating the necessary information for making decisions with a strategic sense for proper management of knowledge.

The exercise of identification and measurement of Intellectual Capital is an essential requirement to act coherently from the management of assets that add value to organizations due to their relationship, with the capabilities that drive the set of tangible available resources. For the purposes of this work, the Intellectus Model helps us to identify indicators that allow periodic monitoring of the evolution of such assets in organizations.

This work seeks to validate and improve the measurement instruments under a mixed approach (quantitative and qualitative) different spheres, agents, and contexts. In this case, it was decided to use it as part of the frame of reference for an exploratory and descriptive study on the dynamics observed in the management of intellectual capital within a sample of companies in León, Guanajuato.

According to Bueno, Intellectual Capital allows for an appropriate methodology to generate a key instance for reflection that involves moving from the “creation of a company” to the “development of a business”.

Methodology and Results

In this research, it was taken as a starting point the results of the survey applied in 2019 published in the Journal of Economic Studies (Díaz and Ordaz, 2020). In this work an analysis was carried out using the statistical technique of linear regression.

The linear regression forecast model allows to find the expected value of a random variable a when b takes on a specific value. The application of this method implies an assumption of linearity when the demand presents an increasing or decreasing behavior, for this reason, it is essential that prior to the selection of this method there is a regression analysis that determines the intensity of the relationships between the variables that make up the model.

The simple linear regression forecast is an optimal model for patterns of demand with a trend (increasing or decreasing), that is, patterns that present a linear relationship between demand and time.

The goal of a regression analysis is to determine the relationship between a dependent variable and one or more independent variables. In order to carry out this relationship, a functional relationship between the variables must be postulated.

When it comes to an independent variable, the functional form that is most used in practice is the linear relationship. The regression analysis then determines the intensity between the variables through correlation and determination coefficients. The following is the straight-line equation formula:

$$Y = a_0 + a_1 X \quad (1)$$

In this second stage of data analysis that was carried out with the database derived from the 2019 survey, the possible relationships between the results obtained were reviewed; for such purpose, the variables were confronted, in the spirit of seeking answers to the following hypothesis:

There is significant statistical evidence on the positive correlation of the variables of the Intellectus Model associated with the management of human capital and innovation capital in the MIPYMES (Micro, small and medium size companies) of Silao, León and San Francisco del Rincón which were part in the study.

Therefore, a review process was started, to compare the results, so that question by question of the survey was reviewed, first to verify that each variable had been measured and then to identify some type of relationship between the variables.

To obtain the result of whether there was a relationship between each question, comparison matrices were made, and graphs were designed through the result obtained to see how their behavior was and, thus finally establish the correlation analysis. Table 1 shows the operationalization of the questions in the initial questionnaire (Díaz and Ordaz, 2020).

Elemento	Variable	Indicator	Question
Values and attitudes	Self-motivation	Number of people who value positively the working environment	1
	Satisfaction	Number of people satisfied with the relationship collaborator/superior	2
Aptitudes	Experience	Labor seniority in the working position	4
Aptitudes capabilities	Personal development and conciliation of working life	% of people with family responsibilities	6
Aptitudes capabilities	Leadership	% of people satisfied in their job positions	3
Capabilities	Collaboration (teamwork)	Number of people who participate in two or more teams at work	7
		Number of people who participate in two or more teams at work outside work	8
Capabilities	Communication (knowledge exchange)	Number of contributions taken at practice	9

Table 1 Classification of questions by variable
Source: Own elaboration based on the MiPymes Survey (Díaz and Ordaz, 2020)

Table 2 shows the result of the analysis and presented in the previous table allows to affirm that there is a possible relationship between the feeling of belonging, self-motivation, and the variable of patents and utility models, communication (knowledge exchange), proposed by the Intellectus Model.

As well as, sociability and customer orientation, so the following analysis first involved the graphic technique to identify possible correlations, which were identified, so linear correlation models were used to obtain a straight line of best fit, using least squares, basing this analysis on the following models.

List of questions from the questionnaire to Company / employee		
Variable	Question	Relation
Feeling of belonging and commitment and self-motivation	1 y 3	Yes
Sociability and customer orientation and Self-motivation	6 y 1	Yes
Flexibility and adaptability and creativity	8 y 9	No

Table 2 List of questions from the questionnaire to Companies / employee

Source: Own Elaboration based on data from the Survey of MSMEs (Díaz and Ordaz, 2020)

Regarding the correlation between the variables "Patents and utility models and communication (exchange and knowledge)", using linear regression. Feeling of belonging, commitment and self-motivation, the line of best fit was used from the straight line of least squares regression.

$$Y = a_0 + a_1 X \tag{2}$$

Where:

Y = Straight line of best fit

a₀= Constant

a₁=Constant

X= Variable

Same that are obtained from the following normal equations:

$$a_0 = \frac{(\sum y)(\sum x^2) - (\sum x)(\sum xy)}{N(\sum x^2) - (\sum x)^2} \tag{3}$$

$$a_1 = \frac{N(\sum xy) - (\sum x * \sum y)}{N(\sum x^2) - (\sum x)^2} \tag{4}$$

To obtain the values of a₀ and a₁, the following table was made where the values of x, y, x², xy, y²

Development of the last 3 years (X)	Proposals or projects (Y)	X ²	XY	Y ²
76	86	5776	6536	7396
39	66	1521	2574	4356
23	51	529	1173	2601
22	42	484	924	1764
0	30	0	0	900
0	12	0	0	144
160	287	8310	11207	17161

Table 3 Initial values. Variables: feeling of belonging, commitment, and self-motivation

Source: Own elaboration based on data from the MiPymes Survey (Díaz y Ordaz, 2020)

Which allows identifying the best fit equation as:

$$Y = 24.3961253 + .8788953X \tag{5}$$

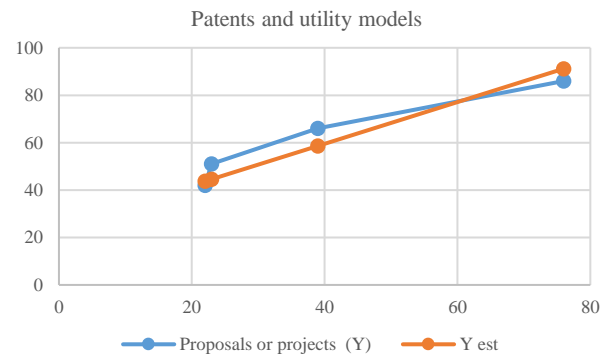
From this equation, it is possible to establish a linear correlation as can be seen in Table 4.

Development of the last 3 years (X)	Proposals or projects (Y)	Yest	Y-Yest	(Y-Yest) ²	Y-Ym	(Y-Ym) ²	yest-Ym	(Y Est-YM) ²
76	86	91.19216818	-5.192168178	26.95861039	38.16666667	1456.694444	43.35883484	1879.988559
39	66	58.67304204	7.326957955	53.68431288	18.16666667	330.0277778	10.83970871	117.4992849
23	51	44.61071723	6.38928277	40.82293431	3.16666667	10.02777778	3.222616103	10.38525455
22	42	43.73182193	-1.731821929	2.999207194	-5.833333333	34.02777778	-4.101511404	16.8223958
0	30	24.39612531	5.603874691	31.40341155	-17.83333333	318.0277778	23.43720802	549.30272
0	12	24.39612531	-12.39612531	153.6639227	-35.83333333	1284.027778	-23.43720802	549.30272
160	287	287		309.532399		3432.83333		3123.30093

Table 4 Variables correlation: feeling of belonging, commitment and self-motivation

Source: Own Elaboration based on Survey data (Díaz and Ordaz, 2020)

The correlation becomes significant if you observe the behavior of the correlation of associated variables between dimensions of human capital and innovation capital (expressed in the indicator of patents and utility models).



Graph 1 Linear correlation for the variables feeling of belonging, commitment and self-motivation

Source: Own Elaboration with database data (Díaz and Ordaz, 2019)

The next step is to obtain the coefficient of determination (r²), by substituting its formula.

$$r^2 = \sqrt{\frac{\sum(Yest - Ym)^2}{\sum(Y - Ym)^2}} \tag{6}$$

Substituting the values we have that the result identifies that the fit to the model is very good, since the maximum value should be 1.

$$3123.30093/3432.83333 = 0.9098318 \tag{7}$$

With this last result, the percentage of unexplained information is obtained.

Percentage of unexplained information 1 - R = (1- 0.9098318) = 0.0901682, which is proof that the behavior is totally linear.

The next correlation that we sought to test were the variables associated with "Patents and utility models and communication (exchange and knowledge)", using linear regression. Socialization and customer orientation and self-motivation as shown in Table 5. The size of sample the was defined in the following statistic model:

$$n = p * q (Z/e)^2 \tag{6}$$

Donde

- n= Sample size
- p= Suces
- q= Failure
- z= Area down the curve
- e= Allowed error

Where:

- p=0.50
- q=0.50
- Confidence level= 90%

Calculate:

- n= (0.50) * (0.50) (1.65/0.10)²
- n= 68.0625
- n= 69 questionaries

Years working (X)	Promoted people (Y)	X ²	XY	Y ²
2	4	4	8	16
10	10	100	100	100
15	16	225	240	256
42	39	1764	1638	1521
69	69	2093	1986	1893

Table 5 Initial values. Socialization and customer orientation and self-motivation
Source: Own Elaboration based on Survey data (Díaz and Ordaz, 2020)

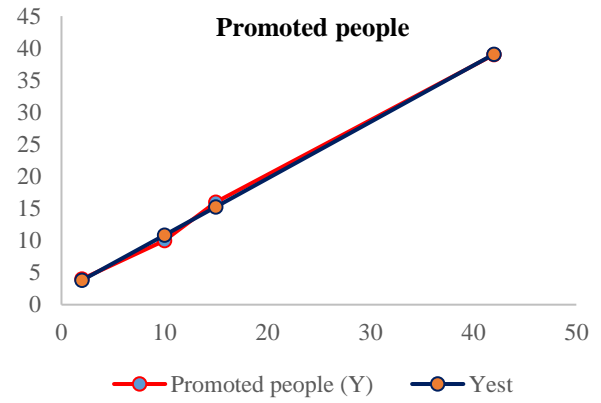
This allows to identify an improvement in the fit of the equation such as:

$$y = 2.04458599 + .88147328 x \tag{8}$$

Table 6 shows the results of the correlation of the variables that were considered in the initial survey of MSMEs in 2019.

Years working (X)	Promoted people (Y)	Yest	Y-Yest	(Y-Yest)2	Y-Ym	(Y-Ym)2	Y Est- YM	(Y Est- YM)2
2	4	3.807533	0.192467	0.037044	-13.25	175.5625	-13.4425	180.699114
10	10	10.85932	-0.85932	0.738429	-7.25	52.5625	-6.39068	40.840606
15	16	15.26669	0.733315	0.537751	-1.25	1.5625	1.5625	3.933378
42	39	39.06646	-0.06646	0.004417	21.75	473.0625	21.31646	475.990833
69	69	69		1.317041		702.75		701.4323595

Table 6 Correlation results. Socialization and customer orientation and self-motivation
Source: Own Elaboration based on Survey (Díaz and Ordaz, 2020)



Graph 2 Linear correlation. Socialization and customer orientation and self-motivation
Source: Own Elaboration based on the 2019 Survey (Díaz and Ordaz, 2019)

Substituting the values in the equation:

$$\frac{\sum (Y Est - Y_M)^2}{(Y - Y_M)} \tag{9}$$

You can see a completely linear fit.

$$\frac{701.4323595}{702.75} = .998125 \tag{10}$$

$$r^2 = \sqrt{.998124}$$

$$r^2 = .9990$$

Therefore, it is considered that the fit is favorable, and the percentage of unexplained information is obtained. That is, the percentage of unexplained information 1 - r = (1- 1.0018785) = -0.0018785 with this result it is concluded that all the information was explained or received.

This result then allows us to respond to the proposed hypothesis in a positive way, that is:

It is possible to affirm that there is statistical evidence of the correlation of variables associated with motivation, training, sense of belonging, self-motivation and customer orientation (human capital) and the management of innovation capital in the MSMEs of Silao, León and San Francisco del Rincón that were surveyed in 2019.

Specifically, these companies are accepting project proposals from their employees, which is allowing them to have an impact on patenting, through some legal figure, thus enabling communication and knowledge exchange.

On the other hand, this involvement of the personnel in strategic areas of the company makes it possible to have a permanence in the company, better working conditions when achieving promotions and consequently a better identification with it.

The value of the intangible assets of these companies must be calculated in the medium term from their participation in the market or from the growth of their innovation capital and their relational capital such as relationship with clients, suppliers, strategic alliances, among others.

Conclusions

The statistical analysis presented in this article confirms the theoretical assumptions that have been discussed throughout the papers around the management of intellectual capital and intangible assets as part of the new approaches to business management in the 21st century.

The effects of the COVID 19 pandemic have significantly redefined the strategies of all economic agents worldwide and actions aimed at modifying personnel, fixed assets and financial management schemes have been accelerated.

Therefore, research on the operating conditions of companies at the local level should direct its attention to the use of human capital as a source of innovation around the use of technological capital.

The Intellectus Model arises from the evolution of schemes that seek to explain how intangible assets explain the behavior of productivity.

The proposed analysis of intellectual capital from the 3 dimensions (human capital, structural capital and relational capital) provides an important methodological value to carry out longitudinal studies on the evolution of these elements as part of the new business economic scenario.

This study generally establishes some important associations that may lead to a subsequent statistical validation based on the results of the surveys applied in 2019 by those responsible for the project.

Human capital indicators are strongly associated with the increase in structural and technological capital in companies that are older and show greater interest in the motivation and incentives of human capital. On the other hand, technological capital increases to the extent that educational levels also increase and this works as an accelerator of the use of intangible resources.

The possibilities of participating in processes to improve products and services are increased in environments in which there is a human capital with greater motivation and a feeling of belonging. The generation of knowledge then allows us to be at the center of the initiatives, aimed at having better structured businesses and participating in the new industrial ecosystems that are developing in the region.

Ultimately, this work starts from the premise that beyond industrial and technical approaches, the engine of socioeconomic development must be linked to the human being and their relationships, as a system for the creation and transfer of information and basic knowledge in the cumulative process that leads to innovation, well-being and quality of life. The use of talent and the set of organizational capacities are aimed at developing innovation and improvement tasks.

This will enable those companies called PYMES (Small and Medium Enterprises) or Microenterprises to have new elements of judgment or key aspects for their management. In this sense, they should consider the execution of continuous improvement plans in terms of quality, to identify or design their competitiveness strategies not only at the local level but also globally based on the use of intellectual capital derived from new approaches to human capital. In the short term, these strategies would tend to ensure the achievement of the mission and vision objectives that guarantee the competitiveness and future sustainability of the organization. Finally, the evidence obtained in the study and analysis of the behavior of the indicators confirms it is necessary to focus on professionalization strategies that allow people to train and grow within the organization; b) develop competency and performance measurement systems to achieve, through learning, the elimination of existing gaps,

c) implement better recruitment and selection systems in order to choose the optimum personnel aligned with the culture of lifelong learning and willing to train ; d) create incentive systems, both monetary and non-monetary, which encourage learning and knowledge transfer within and outside the company or organization.

Finally, the results of this exploratory research reach to a conclusion that it is necessary to continue observing the trend of the Intellectus Model indicators at the local and regional level in Mexico, since in the case of Guanajuato, there are important knowledge transfer chains that can trigger linkages and innovation among development agents at the micro level with a significant impact on the competitiveness of companies in the region. The need to have longitudinal studies through observatories of trends around intellectual capital are relevant if we consider that the strengthening of human capital will have therefore an increase in the capital of entrepreneurship and innovation.

Future work aims to continue monitoring the indicators in a greater number of companies and above all to observe how the indicators will behave in the post-COVID era that has accelerated the need for a change in the style and means of conventional management.

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Systemic review of the context of external financing of MSMEs in Mexico

Revisión sistémica del contexto del financiamiento externo de las Mipymes de México

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Abstract

MSMEs are a key component for the economic and social development of countries, in Mexico they generate approximately 70% of jobs and contribute around 35% of GDP. There is great empirical evidence that shows that the lack of financing affects the economic growth of companies. Microenterprises are those that face the most external financing restrictions and indicate that high interest rates are their main limitation for not accessing external financing, therefore, they are the most affected in their economic growth. The objective of this research is to carry out a systemic review of the context of external financing of MSMEs in Mexico. The results infer that it is urgent to implement adequate public policies to strengthen the financial system and facilitate access to external financing under the best conditions for MSMEs to improve their competitiveness and economic growth.

External financing, Economic growth, MSMEs

Resumen

Las Mipymes son un componente clave para el desarrollo económico y social de los países, en México generan aproximadamente el 70% de empleos y aportan alrededor del 35% del PIB. Existe una gran evidencia empírica que demuestra que la falta de financiamiento afecta el crecimiento económico de las empresas. Las microempresas son las que enfrentan más restricciones de financiamiento externo e indican que las altas tasas de interés son su principal limitante para no acceder a financiamiento externo, por lo tanto, son las más afectadas en su crecimiento económico. El objetivo de esta investigación es realizar una revisión sistémica del contexto del financiamiento externo de las Mipymes de México. Los resultados infieren que es urgente la implementación de políticas públicas adecuadas para fortalecer el sistema financiero y facilitar el acceso al financiamiento externo en las mejores condiciones a las Mipymes para mejorar su competitividad y su crecimiento económico.

Financiamiento externo, Crecimiento económico, Mipymes

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1. Introduction

Micro, small and medium-sized enterprises (MSMEs) are recognized as a key component for the economic growth and social development of the countries because they comprise more than 99% of formal companies in Latin America, generate 61% of jobs and contribute to the 25% of the GDP of this region (Dini and Stumpo, 2018). In this sense, when comparing the 25% of GDP generated by Latin American MSMEs against the 56% contributed by those of the European Union, we realize that these companies can improve their performance to be more competitive (Dini and Stumpo, 2018).

One of the main barriers that prevents improving competitiveness and affects the economic growth of MSMEs is the lack of financing and its high cost. Likewise, there is great empirical evidence that shows that the lack of financing affects the economic growth of companies and that the most affected are microenterprises.

Given the importance of MSMEs for the economy of the countries, it is of great relevance to find solutions to this problem of lack of financing and its high cost. Currently, the large initiatives of support programs for MSMEs, created by governments and cooperation organizations, are still scarce, isolated and their results are not as expected.

Therefore, the objective of this research is to carry out a systemic review of the context of external financing of MSMEs in Mexico. This study contributes to providing a broad perspective to redesign public policies for access to external financing to improve the competitiveness and growth of MSMEs.

2. Literature review

2.1. MSMEs and their economic contribution

The economic importance of MSMEs is because they comprise 99% of formal companies in Latin America, contribute 61% of employment and contribute 25% of the Gross Domestic Product (GDP) of this region, for this reason, they represent a key factor in the economic and social development of the countries in this region (Dini and Stumpo, 2018).

Table 1 shows that there is a very evident contrast in the proportion of companies, as well as in jobs between MSMEs and large companies. Microenterprises in Colombia are those with the highest share of jobs generated with 50.6%, followed by Peru, Ecuador, and Mexico with 48.5%, 47.3% and 45.7%, respectively. In contrast, in Brazil and Costa Rica, large companies are those that provide the most jobs with 58% and 56.13%, respectively. In general, MSMEs in most countries are positioned as the main source of employment (Ferraz and Ramos, 2018).

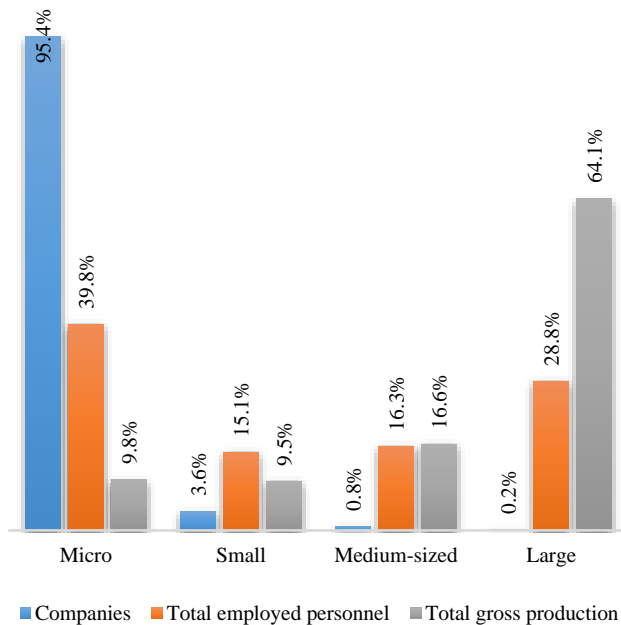
Country	Companies (%)			Job positions (%)		
	Micro	SMEs	Large	Micro	SMEs	Large
Argentina	69.7	28.4	1.9	11.5	39.6	48.9
Brazil	90.1	9.3	0.6	13.7	28.3	58.0
Colombia	96.4	3.5	0.1	50.6	30.3	19.1
Costa Rica	68.0	29.3	2.7	8.4	35.5	56.1
Ecuador	95.4	4.4	0.2	47.3	29.8	22.9
Mexico	95.5	4.3	0.2	45.7	23.6	30.8
Peru	94.5	4.9	0.6	48.5	19.2	32.4

Table 1 Proportion of companies and jobs created in Latin American countries

Source: Own elaboration with data from Gonzales, Hommes and Mirmulstein (cited in Ferraz and Ramos, 2018)

Something similar happens in Mexico, according to data from the 2014 economic census, issued by the National Institute of Statistics and Geography (INEGI), microenterprises represent 95.4% of the total economic units in Mexico, small 3.6%, medium-sized 0.8% and large companies 0.2%. Regarding the total gross production, micro-companies contribute 9.8%, small 9.5%, medium-sized 16.6% and large companies 64.1%.

Regarding the employed personnel, micro-enterprises employ 39.8% of the total jobs, small companies 15.1%, medium-sized companies 16.3% and large companies 28.8%. In total, MSMEs correspond to 99.8% of all companies, contribute 35.9% of total gross production and generate 71.2% of jobs, as shown in Graph 1 (INEGI, 2015).



Graph 1 Distribution of companies, employed personnel and total gross production

Source: Own elaboration with data from economic censuses 2014, INEGI (2015)

2.2. Impact of external financing on MSMEs

Various studies show that, in both developed and developing countries, small companies that have less access to external financing are more limited in their operation and growth (Berger and Udell, 1998).

In this sense, Beck, Demirgüç - Kunt and Maksimovic (2005); Beck, Demirgüç-Kunt, Laeven and Maksimovic (2006) in their research confirmed that SMEs face greater obstacles to access to credit and high financing costs than large companies and that the magnitude of the impact of these obstacles on the growth of a company is inversely related to the size of the company, with the smallest being the ones that are constantly more affected by these factors.

Demirgüç-Kunt, Love and Maksimovic (2006) showed that companies are more likely to prosper in countries with better access to external financing and better protection of investors, as well as to establish themselves as companies in countries with developed financial sectors and efficient legal systems, strong rights of shareholders and creditors, low corporate tax rates and few regulatory burdens because they face fewer financial, legal, and regulatory obstacles to their development.

In this sense, Beck and Demirgüç-Kunt (2006) point out that empirical studies show that financial and institutional development has a great impact on the economic growth of SMEs by reducing financial restrictions and increasing their access to formal sources of financing. This is also reflected in financing patterns, compared to large companies, small companies finance a lesser part of their investment and working capital with bank financing, while they finance a greater part with informal sources such as moneylenders, family, and friends.

Beck, Demirgüç-Kunt and Martínez-Peria (2008, 2011) showed that the most significant differences in bank financing to companies are found between banks in developed and developing countries. Banks in developing countries tend not to favor SMEs, grant them a lower proportion of investment loans, charge them higher fees, as well as higher interest rates, compared to large companies.

According to De Mel, McKenzie and Woodruff (2008) and McKenzie and Woodruff (2008) increasing access to financing has confirmed to generate benefits for companies regardless of their size, however, the impact is usually greater in smaller companies. In the same sense, Beck, Demirgüç-Kunt and Honohan (2009) indicate that access to business financing allows companies to diversify their risks, increase their operations and invest in innovation. Bermudez and Bravo (2019) mention that a debt with vision and responsibility can be beneficial for MSMEs to obtain funds to improve their business competitiveness. However, according to data from the World Bank Enterprise Surveys, 28.9% of companies in the world identify the lack of financing as their most important barrier to their growth, while in Mexico 29.6% point out this limitation (CNBV, 2016 and CNBV, 2017).

According to the OECD, at the international level, business financing granted to MSMEs represents only 40% in countries with middle-income economies (OECD, 2019). There is a consensus in various studies that SMEs have severe problems of limited access to external financing through supply-side factors, largely due to the information asymmetry between SMEs and lenders or investors. Faced with this problem, most smaller companies prefer to resort to internal sources of financing such as accumulated and retained earnings (Xiang, Worthington, and Higgs, 2015).

2.3. Determinants of external financing in MSMEs

In accordance with Kumar, Sureka, and Colombage (2020), the capital structure of a company is the result of market conditions, the rationing of financing from funders, and the financial decision-making of the company. Studies on the capital structure of SMEs have gained great relevance in recent years due to the economic importance of these companies for the countries and because most research on capital structure has been carried out only in large companies.

Michaelas, Chittenden and Poutziouris (1999) in their research on the capital structure of UK SMEs, found that most of the determinants of capital structure presented by finance theory are relevant to small businesses. It is inferred that variables such as size, age, profitability, growth and future growth opportunities, operational risk, asset structure, stock turnover and net debt influence the level of debt at short and long term in small businesses. In addition, the results indicate that the capital structure of small companies depends on time and industry, the short-term average indebtedness ratios of SMEs tend to increase during periods of economic recession and to decrease as economic conditions improve in the market.

Watson and Wilson (2002) in their research empirically demonstrated some of the implications of the hierarchical order model using a sample of UK SMEs. One of the main implications of this model is that any hierarchical order will be positively related both to the common interests between the current owners and the managers or directors of the company, as well as to the degree of information asymmetry between internal and external. This implies that in practice decisions are made in companies for a financial structure consistent with a hierarchical order in which internal sources of financing will be preferred to external ones.

López-Gracia and Sogorb-Mira (2008) in their research on a sample of Spanish SMEs empirically tested two of the most important theories about financing in SMEs, the hierarchical order theory and the compensation theory.

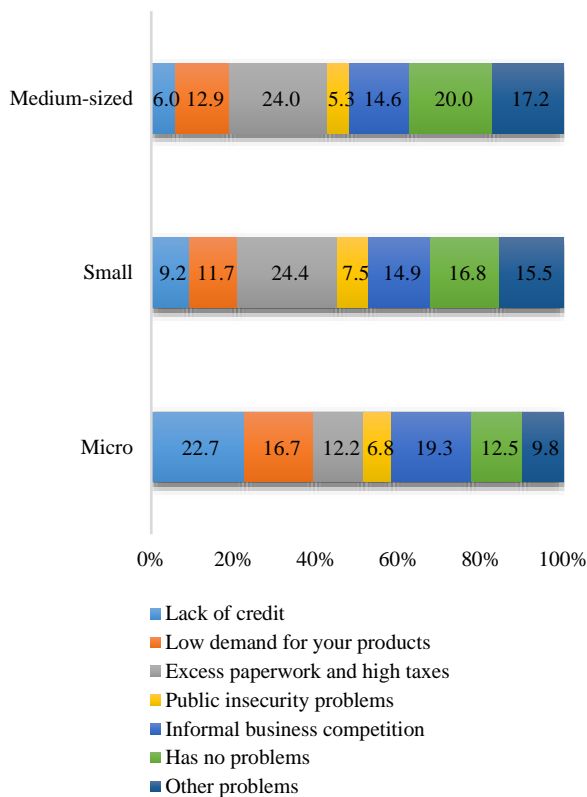
The main results infer that both theories help to explain the capital structure of SMEs. However, despite finding clear evidence that SMEs follow a hierarchy of financing sources according to the hierarchical order model, the results highlight that there is greater confidence in SMEs that seek to achieve optimal leverage according to the model of compensation. Another important result is that both the size and the age of the companies are relevant factors in the financing of SMEs.

On the other hand, Xiang et al. (2015) in their research studied the effects of factors such as size, profitability, number of employees, business strategy and life cycle on the search for financing in Australian SMEs. Their results indicate that the lack of success in obtaining financing in the past continues to have a significant and cumulative impact on the behavior of seeking financing in the future. This situation and the capital rationing commonly observed in SMEs underestimates the real level of the problem, since many SMEs based on their bad experiences simply do not seek financing because they predict that they will be rejected. Bank financing can be affected by various factors, such as excessive documentation requirements; delays in evaluation processes; the high guarantees required, the high interest rates; ignorance of the instruments and products offered; the disinterest of some financial institutions; among others (Ferraz and Ramos, 2018).

Gómez, García and Marín (2009) found that interest rates are the main limitation when applying for a bank loan, followed by excess paperwork or the enormous amount of information required, commonly known as “banking bureaucracy” and thirdly there are the guarantees required by the banks. Likewise, mature (more than ten years) and medium-sized companies are more prone to credit approval. Additionally, it is relevant to have an endorsement with financial solvency. On the other hand, the lack of financing is linked to various factors such as the lack of guarantees, high transaction costs, insufficient development of alternative financial instruments, problems in the supply of credit from financial intermediaries, among others (Castillo, Figal, Maffioli and Ohaco, 2016).

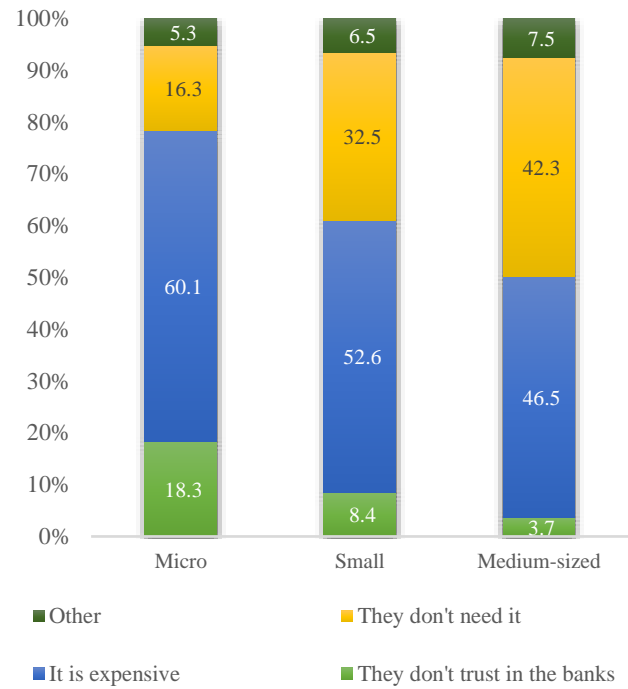
Another limitation of financing is the voluntary exclusion of access to credit, according to Zuleta (cited in Ferraz and Ramos, 2018) points out that it is very important to identify the reasons why this situation is created, because many companies consider that they do not need it, although they really do have a high financial dependence. One possible cause is the lack of financial knowledge, which makes it impossible for owners to perceive the need for financing. The requirements to access external financing represent obstacles in themselves for MSMEs because many of these companies are informal, that is, they do not have tax registration nor do they have real guarantees (Banco de México, 2015, cited in León and Saavedra, 2018).

Graph 2 shows that micro-enterprises indicated that the most important problem for which they consider that their businesses are not growing is the lack of credit with 22.7%. In contrast, small and medium-sized companies only indicate this problem in 9.2% and 6% respectively (INEGI, 2016).



Graph 2 Main cause why they consider that their businesses are not growing
 Source: Own elaboration with data from ENAPROCE 2015, INEGI (2016)

Despite this problem, Graph 3 shows that 60.1% of micro-enterprises, 52.6% of small ones, and 46.5% of medium-sized ones indicated that the main reason why they would not accept a bank loan is because they consider that they credits are very expensive.



Graph 3 Main reasons why they would not accept a bank loan.
 Source: Own elaboration with data from ENAPROCE 2015, INEGI (2016)

León and Saavedra (2018) indicate that credit to MSMEs in Mexico is widely more expensive than that of large companies. Micro and small businesses pay interest rates around three percentage points higher than medium-sized businesses. In this sense, according to data from Banco de México (2017), MSMEs must cover higher interest rates (12.7% weighted average) than large companies (7.9%). Likewise, the smaller the company, the higher the interest rate, which is why micro-companies have a weighted average rate of 14.5%, small ones 12.2% and medium-sized ones 10.8%.

3. Methodology

Due to its characteristics, the methodology used in this research corresponds to a qualitative approach with an exploratory scope. The technique used in this research was the collection and analysis of secondary data from the National Survey of Business Financing (ENAFIN) 2018, which was carried out jointly by the National Banking and Securities Commission (CNBV) and the National Institute of Statistics and Geography (INEGI).

The data collection instrument used in ENAFIN 2018 was a questionnaire made up of 75 questions divided into 4 sections:

1. Characteristics of the company - 22 questions.
2. Financing and loan applications - 28 questions.
3. Capital contributions and reserves - 7 questions.
4. Banking and financial services - 18 questions (CNBV, 2019).

The collection of information from ENAFIN 2018 was direct from the companies through a printed questionnaire or through the internet during the period from August 6 to October 5, 2018 (INEGI, 2019).

The target population of ENAFIN 2018 is made up of companies in Mexico that have six or more employed persons (micro, small, medium, and large), corresponding to the construction, manufacturing, trade and non-financial private services sectors, located in localities with 50,000 or more inhabitants (CNBV, 2019).

The sampling frame was made up of companies registered in the National Statistical Framework of Economic Units (MENUE), which is fed by the Statistical Business Registry of Mexico (RENEM) updated to the third quarter of 2017 (INEGI, 2019).

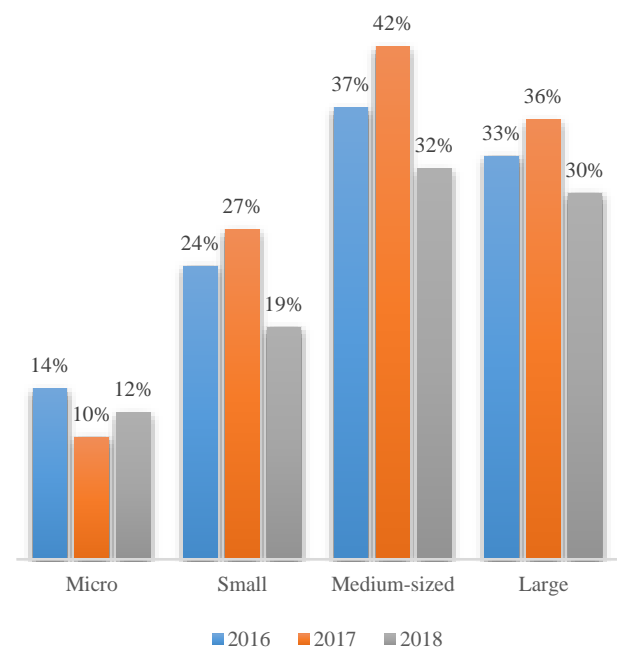
The sampling scheme used was probabilistic and stratified. For each company size, economic sector and locality size, a sample was calculated with a confidence level of 95% and a relative error of 10.8% for micro and small companies, 10% for medium and 9% for large companies. Therefore, ENAFIN 2018 is representative at the national level, by economic sector, company size, and locality size (INEGI, 2019). The original sample size was 4,188 companies. However, from the total original sample, information was obtained from 78.9% of the companies, so the information from the remaining 21.1% sample was not collected. Therefore, the final sample in which the complete information was collected was 3,296 companies, which represent a universe of 273,909 companies (CNBV, 2019).

The research design is non-experimental. In addition, the data used were collected from ENAFIN 2018, which was carried out from August 6 to October 5, 2018, for this reason it corresponds to a transectional or cross-sectional research design, because the data collection was carried out in a single moment or in a single time (Hernández-Sampieri and Mendoza, 2018).

Once the information was collected, the data was analyzed to carry out an exhaustive analysis of the context of the financing of MSMEs in Mexico and obtain greater objectivity in relation to the objective and the premises raised in this research.

4. Results

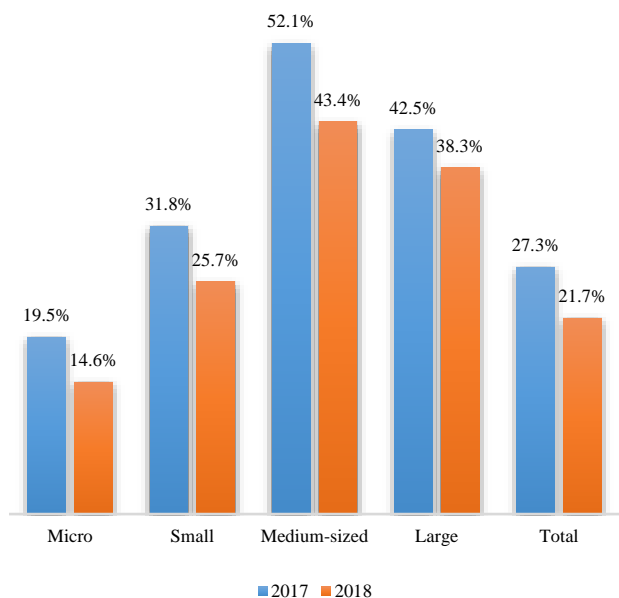
According to data from ENAFIN 2018, with respect to loan applications, the proportion of companies that requested financing decreased, in general, between 2016 and 2018. It is also confirmed that micro-businesses are those that made the least loan applications, while the medians are the ones that made the most credit applications, see Graph 4.



Graph 4 Percentage of companies that applied for credit. Source: Own elaboration [Excel] with data from ENAFIN 2018, CNBV (2019)

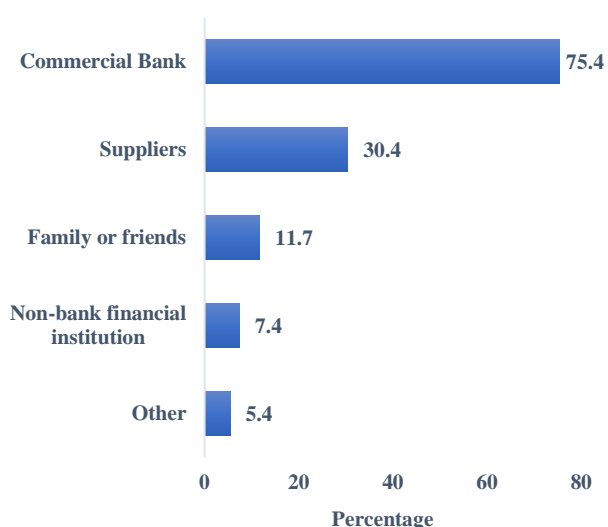
Regarding the companies that did grant them financing during 2017 and 2018, the microenterprises with the lowest percentage of financing stand out with 19.5% and 14.6%, respectively; while the medians with the highest with 52.1% and 43.4%, respectively.

In general, there is a slight decrease in companies with financing from 2017 to 2018, see Graph 5.



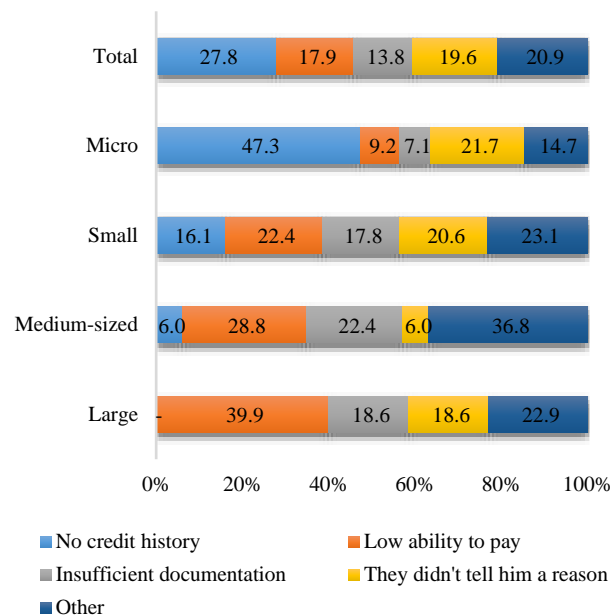
Graph 5 Companies with financing in 2017 and 2018.
Source: Own elaboration [Excel] with data from ENAFIN 2018, INEGI (2019)

In relation to the sources of financing in 2018, it stands out that commercial banking was the main channel through which companies accessed credit with 75.4%. Credits granted by suppliers represented the second most recurring source of financing with 30.4% and in third place is financing with family and friends with 11.7%, as shown in Graph 6.



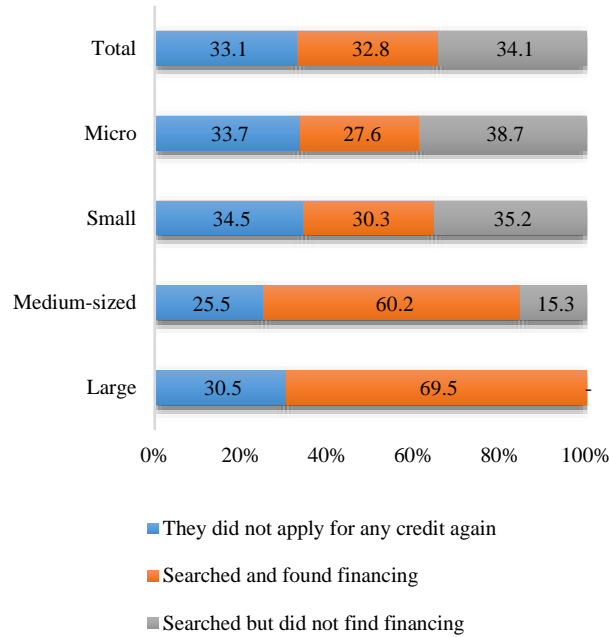
Graph 6 Financing sources in 2018.
Note: The percentages do not add up to 100 percent because companies may select more than one source. The Others option includes: Development banking, Government programs and Crowdfunding.
Source: Own elaboration [Excel] with data from ENAFIN 2018, INEGI (2019).

On the other hand, Graph 7 shows that in general, 27.8% of the companies that were rejected a loan in 2018 indicated that the lack of credit history was the main reason why they did not grant them financing. The same reason was also the main one indicated by micro-businesses with 47.3%. On the contrary, 39.9% of large companies indicated that the most important reason for not receiving financing was due to low payment capacity.



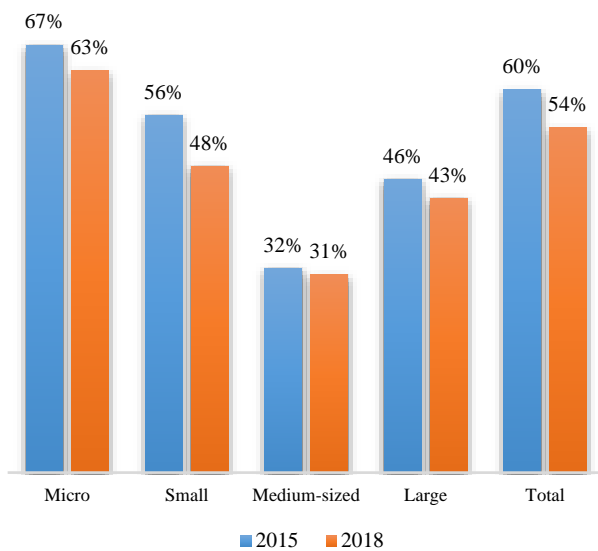
Graph 7 Main reason why they did not grant financing to companies, 2018.
Note: The "Other" option includes: Failed to prove income, No guarantee or collateral, Bad credit history, and Over-indebtedness.
Source: Own elaboration [Excel] with data from ENAFIN 2018, INEGI (2019).

Now, of the rejected credit applications, it is highlighted that in general 33.1% of the companies did not request any bank credit again, see detail in Graph 8.



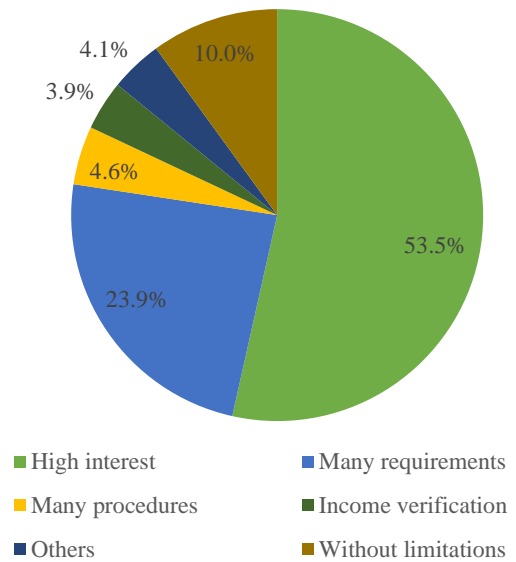
Graph 8 Action taken after credit rejection, 2018
 Source: Own elaboration [Excel] with data from ENAFIN 2018, INEGI (2019).

Graph 9 shows a worrying situation, 54% of companies have never requested or had financing since the beginning of their operations, this Graph is lower than the 60% reported in 2015. Again, micro-companies are the most affected, the 63% have never had or requested financing, in contrast to 31% of medium-sized companies and 43% of large companies.



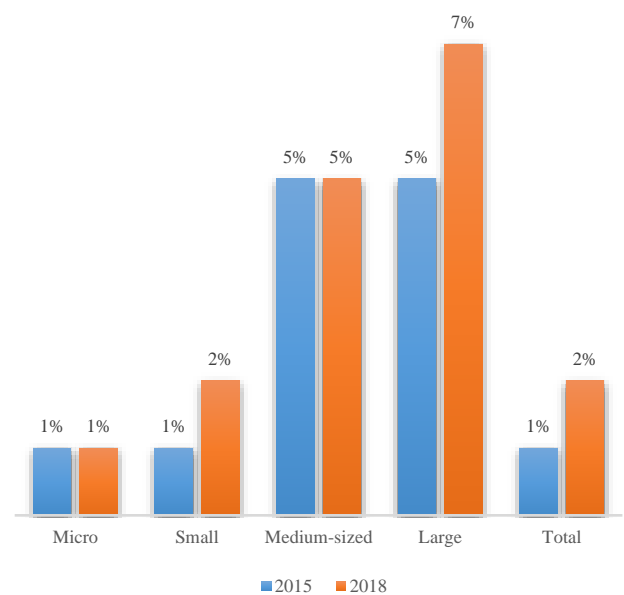
Graph 9 Companies that since the beginning of operations have never requested or had financing.
 Source: Own elaboration [Excel] with data from ENAFIN 2018, CNBV (2019).

In this sense, Graph 10 shows the main factors that companies indicated as limiting access to credit, of which two stand out: “high interest” with 53.5%, followed by those that indicated “many requirements” with 23.9%.



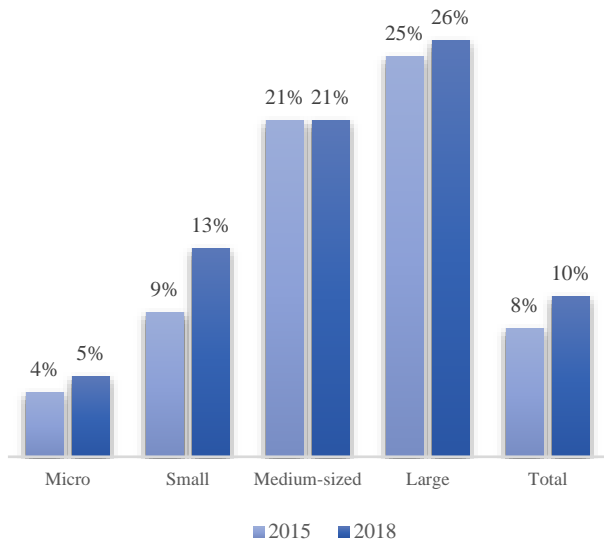
Graph 10 Main limitation of access to financing, 2018.
 Source: ENAFIN 2018, INEGI (2019).

In addition to the more popular sources of financing, there are other financial products, such as factoring and financial leasing. Graph 11 shows that financial factoring is used very little by companies, only 2% of all companies used it in 2018. Large companies are those that use this scheme most frequently with 7%, while that micro-enterprises only use it 1%.



Graph 11 Companies that used financial factoring
 Source: ENAFIN 2018, CNBV (2019).

On the other hand, Graph 12 shows that financial leasing is also little used, only 10% of all companies temporarily leased an asset in 2018. This proportion increases significantly with company size, while 5% of micro leased an asset in 2017, in large companies this activity increased to 26%.



Graph 12 Companies that use financial leasing.
Source: ENAFIN 2018, CNBV (2019).

5. Conclusions

MSMEs are recognized as an essential component in the social development and economic growth of Latin American countries because they are great contributors to the national GDP and because they are the main source of jobs, they generate an average of 61% of jobs. In Mexico, MSMEs create approximately 70% of jobs and contribute around 35% of GDP. In general, in any country in Latin America the proportion of smaller companies that use bank financing is lower than that of large companies, this situation originates because banks require higher guarantees from MSMEs than from large companies at the moment granting credits (Ferraz and Ramos, 2018).

Despite the efforts made in Mexico, the proportion of companies that have access to bank financing is low, compared to most countries in the world, and the companies that present the most this restriction are microenterprises.

In Mexico, the lack of financing is one of the main problems that hinder the economic growth of MSMEs, which causes high corporate mortality. Micro-enterprises considered the lack of credit as the most important problem for which their businesses do not grow.

In general, MSMEs that obtain financing from the private sector must pay higher interest rates than large companies. According to Banco de México, the average interest rate in 2017 was 7.9% for large companies, 10.8 for medium-sized companies, 12.2 for small companies, and 14.5 for micro-companies.

For this reason, MSMEs that have never requested or had financing since the beginning of their operations pointed out as the main limitation of access to credit, the "high interest" with 53.5%, this situation confirms that the high cost of financing is one of the main obstacles to not accessing external financing.

This context affects microenterprises much more because in 2018 only 14.6% of these companies had financing and the smaller the companies, it is more common that the lack of financing and its high cost hinder its development and economic growth

In this vein, the penetration of business financing in Mexico is a challenge that must be addressed urgently. Likewise, derived from the importance of MSMEs for the Mexican economy, it is necessary that the involved actors implement innovative public policies to strengthen the financial system and facilitate MSMEs access to external financing in the best conditions and thus improve their competitiveness and its economic growth.

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Business empowerment of women in the Mypes. Francisco I. Madero Case

Empoderamiento empresarial de la mujer en las Mypes. Caso Francisco I Madero

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Abstract

Objectives. The objective of this work is to focus on the presence of women in the Mypes of the Municipality of Francisco I Madero, their impact on the social, economic and family environment. **Methodology.** A quantitative instrument is used to evaluate and analyze the management of women as directors of the Mypes of the municipality and make a contrast with the operation of their male counterpart. **Contribution.** The contribution of this document is the exploration of the female gender in the management of companies, to investigate if there is inequality and inequality of gender and to inquire about the business empowerment of women and their entrepreneurial capacity to direct, control and achieve the profitability of Mypes.

Business empowerment, Mypes, Women

Resumen

Objetivos. El objetivo de este trabajo es centrarse en la presencia de las mujeres en las Mypes del Municipio de Francisco I Madero, su impacto en el ámbito social y económico y familiar. **Metodología.** Se utiliza un instrumento cuantitativo para evaluar y analizar la gestión de las mujeres como directores de las Mypes del municipio y efectuar un contraste con la operación de su contraparte masculino. **Contribución.** La aportación de este documento es la exploración del género femenino en la dirección de las empresas, investigar si existe desigualdad e inequidad de género e indagar sobre el empoderamiento empresarial de las mujeres y su capacidad empresarial para dirigir, controlar y conseguir la rentabilidad de la Mypes.

Empoderamiento empresarial, Mypes, Mujeres

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Introduction

The participation of women as economically active members of society is increasingly determining in the world. In some dimensions, significant advances have been made that have a preponderant impact on the development of regions and countries. Among them are the educational level, economic participation in different social contexts. However, although progress has been made on the issue of gender equality, the participation of women in the economy and its implications in society represent the great challenge of this decade, as an area of immense opportunity for the development of countries

At the end of the 20th century and the beginning of the 21st, entrepreneurship has been given a privileged place as an engine of economic growth in societies (Blenker et al., 2008); It has been the subject of reflection, closely related to gender inequalities, in different settings at the national and international level, and from various spheres: political, economic, social and cultural. Examples include: the International Labor Organization (ILO), which presented the document "Competences and entrepreneurship: reducing the technological gap and gender inequalities" to the community, and the Economic Commission for Latin America and the Caribbean, which highlights in its 2004 report the increasing labor participation of women, their educational achievements, the consequent changes in family relationships and their importance, although still insufficient, access to decision-making processes.

The entrepreneurship of women in the municipality of Francisco I. Madero, is based on the constitution of Micro and Small Companies MYPE (formed by a number of workers between 1 and 10 for Microenterprises and between 11 and 100 for Small Companies) and Independent Workers. In this sense, a significant part of the population seeks, through their participation in these business initiatives, either as entrepreneurs or as workers, to obtain an income level that allows them to leave the poverty lines and access the minimum means of employment subsistence. However, Mypes and Independent Work, far from solving the problem of poverty, accentuates it even more, since these initiatives hide abusive, illegal and unfair business practices, which ignore the most basic rights related to work.

Thus, these companies are characterized by generating very low average income levels, lower in most cases than the basic consumption basket, which is the one that guarantees a minimum level of income to access essential goods. In addition, more than 80% of the Mypes are not legally registered, forming part of informal networks of companies based on illegal practices and negative impacts on the population. In this socio-economic context, the legal reforms undertaken, far from recognizing reality and introducing improvements aimed at improving them, have further aggravated the situation, by establishing more liberalized and permissive rules than those that traditionally existed.

Methodology to be developed

The objective of this research was to understand the experiences of women regarding the issue of MSMEs, the way in which they have started from being employed, to even entrepreneurs and what this has meant in their environment, both culturally, socially, and In the home. The research has a quantitative analysis, based on surveys, which determine the number of women who have found work in an MSME and women who own them; The research is also of a qualitative type since it is based on direct observation, so it is discerned that this research is Mixed.

For the research, an information collection instrument was developed, prepared expressly and applied in the Mypes of the municipality of Francisco I. Madero Hgo. This questionnaire was applied to 105 women who was the determined sample of a universe of 15,570 women who live within the Municipality of Francisco I. Madero (INEGI); considering a confidence level of 90%, and a margin of error of 5%. (Survey Monkey).

Results

The ideosicrancia of the Mexican, hindered the academic training of women, arguing that their role was only reproductive and that men were given a greater opportunity for professional training; women within their reach chose careers that belonged to the female sphere.

However, the social, political and economic changes that have occurred in the last 50 years would turn around the predefined roles for men and women.

The results Based on the surveys carried out with women in the Municipality of Francisco I. Madero, the following data are obtained:

The training of people is a determining factor for both their personal and professional development. In the business environment, this knowledge should be considered as a factor that undoubtedly affects the competitiveness between business and business. With question number one in this case focusing on the subject of academic training.

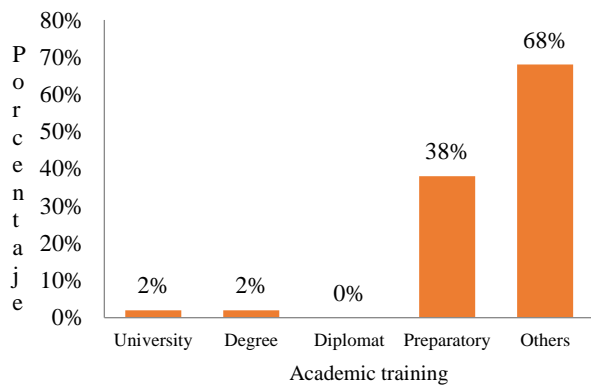


Figure 1 What degree of academic training do you have?
Source: Own Elaboration

While two out of every 100 people have a university degree, 38% own their own business. In other words, for reasons of academic preparation they are forced to undertake; Since getting a good job becomes more and more difficult as almost no companies employ people who do not have the relevant knowledge.

On the other hand, “Few companies change their businesses so drastically and only a minority last that long” (Geus, 2016). Undoubtedly today studies are a factor to survive to be able to find possible strategies; But on the other hand, there are businesses that survive for more years than they even expected to last, for this reason they were questioned how many years they have been with this activity in order to know if the idea of creating empowerment was with good satisfaction; The responses with the highest number were more than 10 years, the percentage is 47, which tells us that they are businesses that have paid off well, however less than one year and two years are at least 39%.

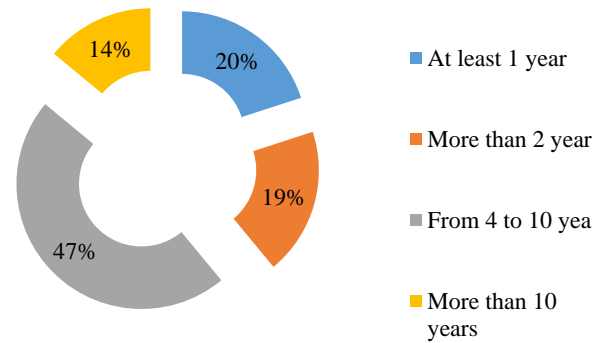


Figure 2 How long have you been developing your activity?
Source: Own Elaboration

Women who are self-employed or work on their own, either within their own projects or within family businesses, or who are organized with other women to produce goods or services and sell them, regardless of their scales of production. considers a global breakthrough on gender equality. It is an objective achieved, however, in the same way, knowing the scale of the size of the business is a very important factor to know which companies are led by women, or, where appropriate, to know if there are women working in slightly larger companies.

The following shows the percentage of women's empowerment according to the size of the company in Francisco I. Madero, although it can be said that most of the businesses in this municipality are microenterprises because it still has most of its communities as a rural region; The decisive option was they are Microenterprises with 93% which means that they are the only workers in this business and with 4% small companies that have women working.

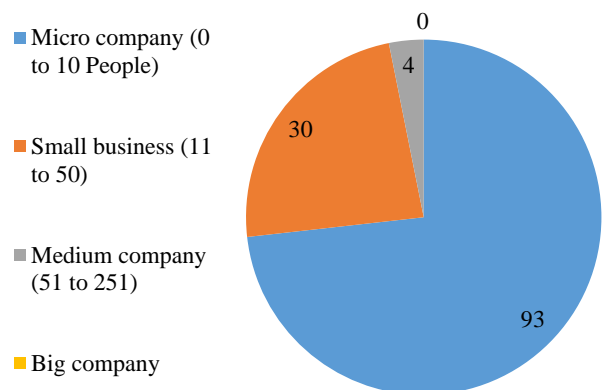


Figure 3 Type of Company
Source: Own Elaboration

In the data analysis, it was found that most of these MSEs are not registered with the Ministry of Finance and Public Credit (SHCP), that is, they do not have any type of association, which could lead to problems later on temporary closures or closure. In addition to the fact that they are evading laws, only 5% is registered as a professional service. On the other hand, companies registered in the Tax Incorporation Regime (RIF) are 15%; This is because it is one of the most widely used tax regimes due to the benefits and facilities that exist in this tax regime, for example:

You do not pay ISR for the first year of being enrolled, since you have a 100% reduction, which gradually decreases 10% each year. (Secretary of Finance and Public Credit, 2018). As an employer, business owner or independent worker, as well as your family, you will be able to access health services and various social benefits provided by the Mexican Institute of Social Security.

If your income in the previous year was up to 300,000 pesos, you do not pay VAT or IEPS for the operations you carry out exclusively with the general public. (Secretary of Finance and Public Credit, 2018). Options that they could use to avoid conflicts, in addition to contributing to Mexico's GDP.

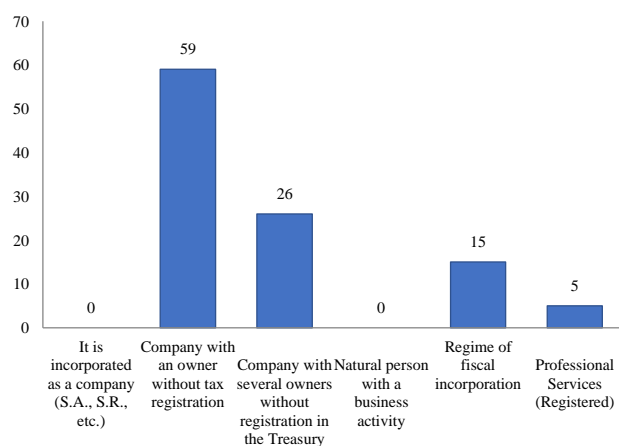


Figure 4 Type of association best describes your company
Source: Own Elaboration

The interviewees expressed the opinion that by not having a completed academic training, or at least high school, they are forced to work at home, without employment benefits and with longer working hours and with a minimum wage, which in most cases implies ; in addition to the labor abuse that this entails;

On the other hand, they mentioned that they are women who had never worked, which puts their company at risk due to lack of experience; However, each one of them took the step of undertaking, empowering themselves and making themselves seen; earn an income of your own. (Figure 5: Graph of the previous job in which I work).

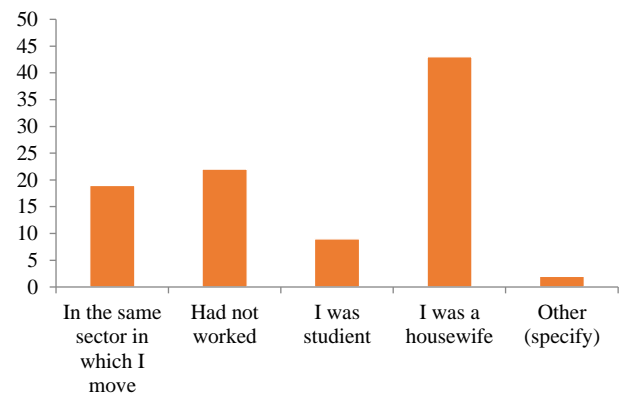


Figure 5 Previous job in which I work?
Source: Own Elaboration

The financial support is very important to know how it was obtained, since although the government offers support, it is also necessary to know if they themselves looked for a way to obtain it by other means, after obtaining the data the response was surprising, since they did not have not a single business that was supported by government; While on the other hand, getting the money by their own means has been number one with a percentage of 70% which leaves more than one thinking, because despite the fact that the government has many supporters, the information is not sent to them. to be able to request support in addition to the many complications involved in requesting it; 7% of those surveyed consider asking loan associations for support, which implies interest and the possibility of being deceived.

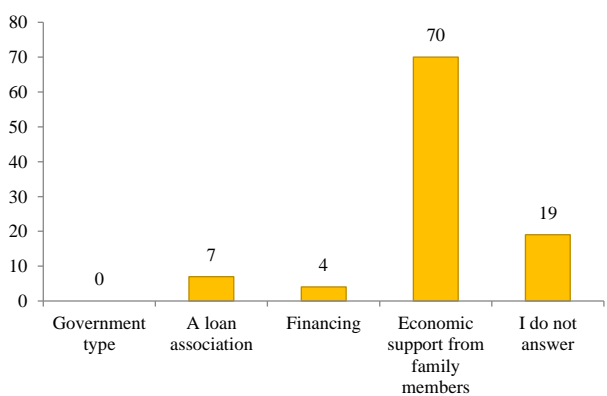


Figure 6 What kind of government support did you have for the creation of your business?
Source: Own Elaboration

On the other hand, and with the same weight of interest, they were asked what they thought about the relationship between becoming an entrepreneur, and at the same time, in some cases, being mothers; since having a child and running a business becomes a challenge for anyone being a man or a woman. To which it was obtained that they are incompatible with a percentage of 49%, as I said well, it is not an easy task, it requires sacrifices of time, and sometimes of attention, which many times the children do not understand; 30% consider that they are relatively compatible since they have not found themselves in big problems such as oversight; while only 18% consider that they are perfectly compatible; while 13% do not know / do not answer or do not have children.

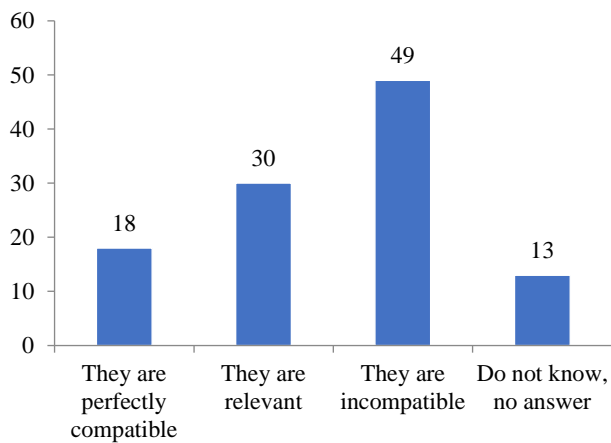


Figure 7 How is the Maternity / business relationship?
Source: Own Elaboration

To which I lead to think what role does the spouse play in the activities of the house, that is, what happens after work; know if husbands help since this is a way of knowing if they agree and if they support one hundred percent of their wives or romantic partners; However, the answer “it is reduced” was the option with the most choice, which makes us see that the majority of romantic partners do not support their partner in other tasks; While 13% say that they have increased what they say they are supporting in what they can since in the same way there is the probability that they have a job. While totally null has a 6% and the unanswered question in 15%.

The question with the greatest impact was: Do you consider that gender equality in the region where you live has become a significant change compared to previous years where it is remembered that inequality existed? It is a somewhat strong question, but that Likewise, it takes us to the reality of the place where you live.

In previous times, people lived in the spare part of men, it was very difficult to stand out and few women achieved it and became inspiration, but although 43% of women thought “it continues to exist relatively, but that it is less and less” which means that the path of this municipality is going along prosperous directions, without a doubt ending it is not easy, because it is a custom place and deeply rooted traditions, however, 11% of the surveyed sample concluded that “it is a place where the culture will hardly change”. And even more alarming is the number of people who say they do not know or even better do not answer with 36%.

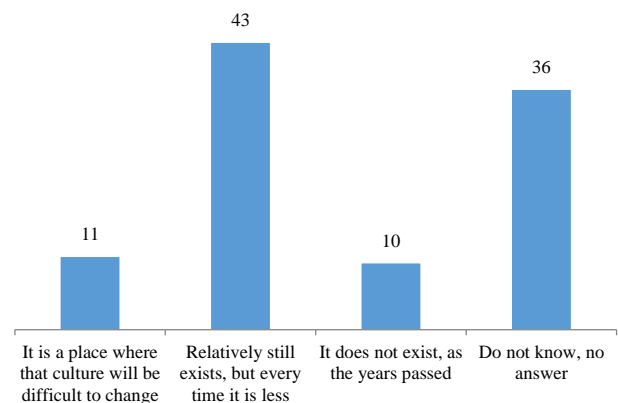


Figure 8 He considers that gender equality in the region where he lives has made the change significant, compared to previous years where inequality existed
Source: Own Elaboration

In figure 9 it is observed that the difficulty of starting a business is centered on money with 54% relevance; It is worrying that the second most important factor was the family; When the family should be there to support, however, many times the same family is the one that hinders its opening, the woman always carries a double burden in the family nucleus.

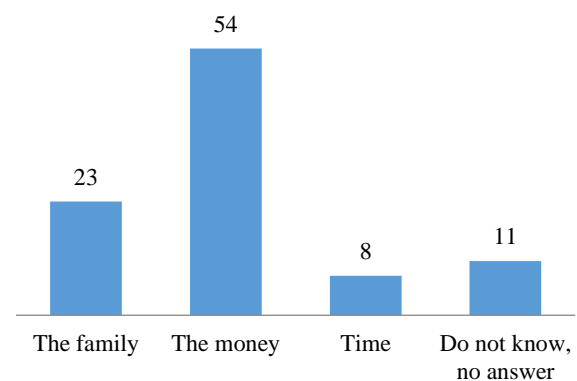


Figure 9 What do you consider to be the main difficulty in starting a business?
Source: Own Elaboration

Conclusions

In the municipality of Francisco I. Madero it was found that women are mostly working in micro-businesses, of course there are no large companies and that if there were, there would also be women employed in those businesses; However, 68 women out of 100 interviewed do not have previous studies, that is, not even finished high school, which makes it very difficult to get a job, and for this reason they are forced to start a small business of which they do not have experience for now. that her only experience was that of housewives; Another significant factor is the family that hinders the development and empowerment of women in MSEs and paradoxically 70% of the businesses were constituted by financing from relatives, and the economic support from the government is null, since when requesting it they find many Obstacles, the main one is being in the informal trade since one of the main requirements to access these financing is to have the Federal Taxpayers Registry;

Therefore, there is no financial support and the only entities that lend money charge a high interest rate, however when they open their businesses they find more problems, in the family they range from the separation of the spouse, even the rejection of the children, since they claim the hours of work that have to be worked in the company, on the other hand, not having the knowledge and experience that implies starting a business and not knowing about which business can be successful in the market in this municipality, as well as finding clients and making themselves known, in addition to what it entails from registration, payments to the Treasury, tax burden, preparation of a business plan, etc.

That not knowing implies serious consequences such as more hours of work, less earnings, a lot of investment and perhaps that money will not be recovered and even total bankruptcy; As a recommendation, it is suggested to detonate courses in each delegation that contribute to the country's economy through its development, as well as economic support for its implementation and a linkage of the government, universities and entrepreneurs.

The empowerment of women in the Mypes of the Municipality of Francisco I Madero, they are not very fortunate because there are several factors that prevent them from empowering themselves and it is necessary to develop virtuous circles between the university, government and entrepreneurs that dynamize this activity with clarity the results obtained and the possibilities for improvement.

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Risk management in local micro-enterprises

Gestión de riesgos en la microempresa local

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Abstract

Risk management within the microenterprise implies the identification of future impacts, as well as anticipating the negative impacts to face effects that make the production process impossible, so that from this, actions are designed to eliminate the possibility of the risk occurring. Hence the importance derives since with the design of prevention actions and with the implementation of this, by the workers themselves it is feasible to avoid its occurrence, in order to achieve safer work spaces. The research was carried out in a local carpentry workshop whose objective is: to design an Occupational Risk Prevention Plan. Method used: and carried out the risk assessment, key risk factors were identified, to later define the appropriate preventive measures and the management of the business training plan. This research contributed to the design of a plan fully adapted to the productive characteristics of the company, which responds to more specific situations and that can be implemented during the working day, to achieve the sustainability of the organization by obtaining workspace cleaner and safer.

Risk management, Preventive actions, Business training

Resumen

La gestión de riesgos dentro de la microempresa implica la identificación de afectaciones futuras, así como anticipar los impactos negativos para hacer frente a efectos que imposibiliten el proceso productivo, para que a partir de ello se diseñen acciones para eliminar la posibilidad de que ocurra el riesgo. De ahí deriva la importancia ya que con el diseño de acciones de prevención y con la puesta en marcha de ésta, por los propios trabajadores es factible evitar su ocurrencia, para el logro espacios de trabajo más seguros. La investigación de llevó a cabo en un taller de carpintería de la localidad cuyo es objetivo es: diseñar un Plan prevención de riesgos laborales. Método utilizado: se llevo a cabo la evaluación de los riesgos, se identificaron de factores clave de riesgos, para posteriormente definir las medidas preventivas oportunas y la gestión del plan de formación empresarial. Con esta investigación se contribuyó con el diseño un plan totalmente adaptado a las características productivas de la empresa, que dé respuesta a situaciones más concretas y que pueden implantarse durante la jornada laboral, para lograr la sostenibilidad de la organización a través obtención de espacio de trabajo más limpio y seguro.

Gestión de riesgos, Acciones preventivas, Formación empresarial

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Introduction

Micro-enterprises play an important role in the development of the regions, as they generate employment and wealth, which is why it is important to take decisions in an assertive manner. Bad decisions can represent losses and good decisions can represent advantages and profitability in the case of taking advantage of opportunities (Alonso López Aguilar).

In all organisations there are possibilities of positive and negative effects in each of its areas, and the organisation must be prepared to manage risks properly according to the impact and incidence that they can generate inside and outside the organisation.

For risk management in an organisation, the following must be considered: identify everything that at any given time may affect the organisation, so it must be properly prepared to deal with those effects and, based on that, develop plans, strategies and actions and implement procedures, so that based on that: eliminate the possibility of the risk occurring (prevent or avoid), on the other hand reduce the probability of it happening (mitigate), also outsource the effects of that risk (transfer) or, if necessary, accept that the risk may occur (COSO, 2004).

The Committee of Sponsoring Organisations of the Treadway Commission defines a framework with essential components for enterprise risk management, which discusses key principles for enterprise risk management (ERM) as well as concepts, suggests a common language with a business approach to risk management, as well as concepts such as: risk appetite, risk tolerance, portfolio view. Eight components are proposed:

1. Internal control environment: objectives and strategies are set out to raise human resource awareness and culture building for risk assessment and control engagement.
2. Establishment of objectives: the definition of objectives allows the identification of risks of deviation and facilitates the establishment of strategic actions and the mapping out of compliance.
3. Identification of events: considers internal and external factors that affect the achievement of the objectives, for which questions such as: "Could it happen, how would it affect us? External factors are considered, such as: economic and environmental situations, changes in government, changes in tax, commercial and labor legislation, changes in technology, changes in consumer habits and the evaluation of trends, among others. Internal factors include: infrastructure, personnel, processes, technology, generation of new products and salary compensation.
4. Risk assessment: define methods to assess the risks detected, using techniques such as: brainstorming on risks and opportunities, identifying risks, identifying the origin of the causes of the risk, calculating the impact that the risks will have and their impact on the objectives, identifying the key risks that require strategic attention, quantifying the monetary effect of the risks.
5. Risk response: once the risks have been established, the measures that will prevent them from occurring are determined in order to minimise their impact and control the causes that originate or trigger them during the process, defined for each risk, and the tolerance levels that may exist for each of them are measured.
6. Control activities: these include the policies and procedures established by the organisation, establishing What and how it should be done, the procedures How it should be done, the types of activities consist of business performance reviews, physical controls, segregation of duties, changes in methodology.
7. Information and communication: a communication process is defined for all levels of the organisational structure, sufficient and adequate, so that the human resources that make up the organisation identify the message that is being transmitted and assume the role that corresponds to them, in order to ensure the achievement of objectives and goals.

8. Follow-up: This involves the systematic supervision carried out by capable and responsible people in the detection, evaluation and response to risks, reducing possible weaknesses that may arise in the organisational structure.

This is in recognition of the perceived need for principles-based guidance to help entities design and implement effective enterprise-wide risk management approaches.

(COSO, Enterprise Risk Management Integrated Framework) COSO-ERM defines Risk Management as: A process carried out by the management of a business entity, which is directed and controlled. It involves the participation of all personnel, is applied before the definition of the business strategy and involves the participation of the entire entity, and is designed from the identification of potential events that may affect the organisation (diagnosis), its purpose is to manage these risks, which may be real and potential, these occur during the production process and have been accepted as feasible and real, so that their administration and control provides reasonable assurance that the objectives set will be achieved.

Risk management in organisations represents having the powers to:

- Align the detected risk, as well as and strategy and integrate it into the evaluation of strategic alternatives, whereby corresponding objectives are established and strategic actions are developed to manage the associated risks.
- Improve risk response decisions as formally within organisational processes procedures are in place to identify risks and select different response alternatives to: avoid, reduce, share or accept risks.
- Reducing operational surprises and losses in organisations by increasing their ability to diagnose and identify potential events and establish appropriate responses, associated costs or losses.

- Identify and manage the diversity of entity-wide risks in the different areas that make up the organisation, facilitating effective and practical responses.
- Seize opportunities by considering that a variety of potential events may occur, so management is in a position to identify and seize opportunities early.
- Improve the allocation of resources to obtain sound risk information, enabling management to assess risk effectively and better manage the allocation of its resources.

These capabilities, inherent in enterprise risk management, help management achieve the organisation's performance and profitability objectives and prevent loss of resources. Risk management in organisations helps in ensuring effective reporting and compliance with laws and regulations, as well as avoiding damage to the image and status of the entity, in its environment and context of location, as well as the consequences that may be derived as a result of events with a negative impact on the organisation.

(ebook-iso-31000-risk-management-organisations.pdfs, 2021) At the corporate level, risk is defined as the uncertainty that arises during the achievement of an objective. It is, in essence, adverse circumstances, occurrences or events that impede the normal development of a company's activities and that, in general, have economic repercussions for those responsible for them. All activities of an organisation that involve a risk. Organisations must implement a system for risk management by identifying the risk, analysing and then assessing whether the risk needs to be modified by treatment. Throughout this process it is important to communicate and consult with stakeholders, monitor and review the risk and implement controls in order to ensure results.

(Pirani, 2021) There are several methods to carry out the process including the Failure mode and effective analysis (FMEA) method which seeks to identify, classify and eliminate failures of projects or processes of a company in advance.

This method begins with the identification of errors, which are then classified by scoring the risks according to frequency, severity and detection. After ranking and prioritisation, the most serious failures are identified and addressed as a priority.

The study was carried out in a local carpentry company, with the aim of designing an occupational risk prevention plan and disseminating it among the staff, so that they become aware that risks exist and that there are ways of carrying out routine operations within the production processes that allow for the prevention, mitigation and control of risks. Method used: a risk assessment was carried out, key risk factors were identified by functional areas, in order to subsequently define the appropriate preventive measures and the management of the company's training plan. Development.

In order to carry out the research, information was collected by means of an interview with the company's workers and the head of the administrative area, an observation matrix in the company's areas and a questionnaire applied to the workers to find out what type of risks both the company and the workers are exposed to during the production process.

The identification of functional areas, according to the company's operations, in accordance with its capacities (see figure 1).

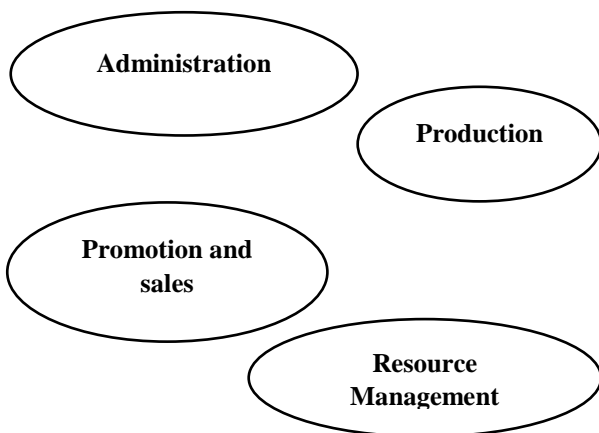


Figure 1 Distribution of functional areas in the carpentry workshop

Once the functional areas were defined, the identification of risks within the areas was carried out.

- Administration: accounting and marketing.
- Production: design, carpentry, painting and installation.
- Promotion and sales: Budgets and collections.
- Resource management: material resources and services, environmental care.

The procedures and the origin of the risks were identified, having: (See table 1)

Area of risk identification	Procedure	Source of risk
Accounting	Generation of Invoices and R.H.	Failure to complete calculations on time
Marketing	Generate Appointments by Social Networks	Failure to generate sales
Design Carpentry	Dimensioning	Poor communication; ideas expressed by the customer are not reflected in the product design, or are not feasible to implement, nor are they functional.
	Generate the design	Sales management
Painting	Elaboration of the furniture	Lack of information
Installation	Retouching and painting of the furniture	Not to the customer's liking
Clients	Installation and placement	Wrong measurements taken for the installation of the piece of furniture.
Budgets	Increasing sales, and appointment management	Appointment cancelled
Collection	Generate quotation	High quotation
Material resources and services	Collections	Lack of full payment
Care of the environment	Control of materials and machinery in stock	Lack of material
Area of risk identification	Waste and by-product management	Accumulation of sawdust
	Water consumption	High water consumption
	Electricity consumption	High electricity consumption
	Urban and hazardous waste	Waste spillage

Table 1 Procedures and origin of risks in the carpentry workshop company

Once the origin of the risk by area was determined, the risk index was determined taking into consideration the impact, classifying it as: Low, Medium and High, and the probability of occurrence: Improbable, Rare, Possible and Probable.

Determination of risk index as shown (See table 2 and 3).

Probability	Impact
Unlikely 1	Low 1-8
Rare 2	
Possible 9-16	Medium 9-16
Likely 17-25	High 17-25

Table 2 Risk index classification

Risk	Evidence	Probabilidad	Impact	Risk Ratio
No payroll	Disgruntled workers	Improbable	Low	1
Lack of publicity	Facebook page, Instagram and website	Rare	Low	3
After-sales service	Nothing is generated	Rare	Low	8
Failure to complete the sale	Advance 60% and design	Rare	Low	8
Incorrect furniture, of inadequate dimensions	after sales service	Rare	Low	4
Customer asks for colour change	Full payment for new colour	Improbable	Low	1
Return for adjustment	Nothing	Rare	Low	4
Failure to complete quotation	Cancellation message or email	Possible	Medium	16
Failure to complete sale	Sketch for taking measurements	Rare	Low	8
Late payment or failure to pay in full	60% down payment	Rare	Low	8
Ancillary costs	Proof of purchase or Invoices	Probable	High	25
No sale	Accumulation in the carpentry shop	Probable	High	17
More water consumed	Receipt	Rare	Low	8
More electricity is consumed	Receipt	Rare	Low	8
A worker gets burned or falls to the floor	Troughs in warehouse	Rare	Low	8

Table 3 Determination of the risk index

Two impacts have been identified with a high risk index for the performance of the activities and achievement of the objectives of the carpentry workshop company, which puts the operation of the organisation at high risk, These are located in the area of resource management: material resources and services, where a purchasing process is required to avoid purchases with ant costs, and with regard to environmental care, for obvious reason of the company's line of business, if the accumulation of waste is generated, the risk index is very high, ranging from level 1 to level 25.

Results

In order to define the strategic actions to be implemented in the organisation, the functional areas have been identified, the identification of the risk by area, the procedure carried out in the area, the origin of the risk, the evidence and probability of occurrence and its impact, as well as the definition of the risk index and its consequence, the area of impact and the proposed treatment as a preventive measure, the latter considered in Table 4.

Functional areas in the company	Risk identification area	Procedure	Risk	Consequence	Impact area	Preventive action	
Administration Production	Accounting	Generation of Invoices and R.H.	No payroll	Work stoppage	Production, sales and administration	Generate payrolls on time	
	Marketing	Generate Appointments via Social Networks	Lack of publicity	Loss of sale	Production, sales and administration	Set a picture or video reminder	
Promotion and sales Functional areas in the company Administration Production Functional areas in the company	Design Carpentry	Dimensioning	Dissatisfied customer	Modification of the furniture	Production	Design an effective communication process with the client: oral, graphical, documentary, electronic	
		Generate design	Failure to complete the sale	Loss of sale	Production, sales and administration	Generate proposals in line with the client's budget	
	Painting	Material resources and warehouse m	Accumulation of waste and sawdust	Fire	Company-wide	Implement an effective health and safety procedure.	
		Installation	Elaboration of the furniture	Incorrect furniture, of inadequate dimensions	Delay of delivery	Production and sales	Clear the warehouse area to avoid accumulation of sawdust and wood waste in the area.
	Clients	Retouching and painting of the furniture	Customer asks for colour to be changed	Delay of delivery	Production and sales	Manufacture by-products from sawdust and waste wood cuttings.	
		Quotations	Installation and fitting	Return for adjustment	Delay of delivery	Production and sales	Verify measurements during the manufacturing process
	Administration	Risk identification area	Generate strategies to increase sales	Failure to make appointment	Loss of sale	Production, sales and administration	Verify customer decision during the manufacturing process.
		Accounting	Generate budget	Failure to finalise sale	Loss of sale	Production, sales and administration	Verification of measurements integrated in the process
		Collections	Collections	Late payment or non-payment in full	Revenue shortfall	Accounting	Contacting the customer to verify the appointment and to make them aware of the products of interest.

Table 4 Risk management proposal for a carpentry workshop

Acknowledgements

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Conclusions

It is very important for companies to have risk management programmes at their disposal, given that there are major profitability problems, often due to a lack of knowledge that in each of their areas there is the possibility of risks that can have a high impact on the organisation. The participation of the scholarship student has contributed greatly, given that the approach with the company has made it possible to achieve the objective of the research, which was: to design an occupational risk prevention plan with the use of an established method, carrying out the risk assessment, identifying key risk factors, in order to subsequently define the appropriate preventive measures and the management of the company's training plan.

This research contributed to the design of a plan fully adapted to the productive characteristics of the company, which responds to more specific situations and which can be implemented during the working day, in order to achieve the sustainability of the organisation by obtaining a cleaner and safer work space.

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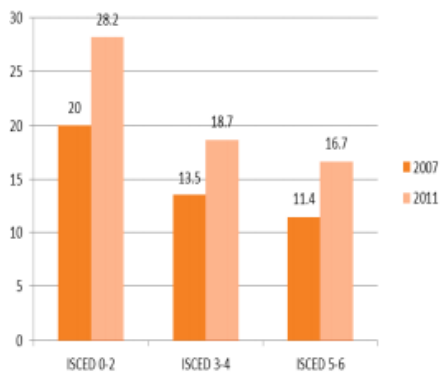
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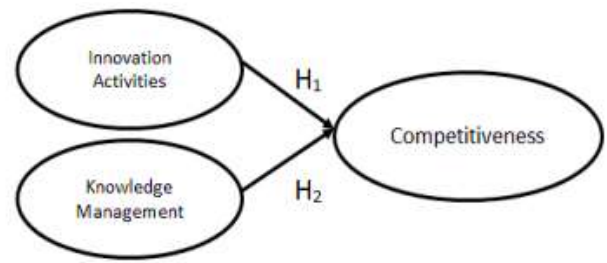


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