Analysis of Risk Factors in the MIPyMES of the Trade Sector in the State of Tlaxcala

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Abstract. The present investigation approaches the problematic evidenced by diverse studies about the management of risks in the Micro, Small and Medium Companies (MIPyMES), the commerce sector is taken in the State of Tlaxcala since the statistics indicate that it is the most vulnerable sector, for this a questionnaire is applied to a sample of 511 companies of which 436 were micro-enterprises, 57 were small and 18 medium-sized companies, the objective is to measure the perception by employers about the risk factors that have a greater impact on business performance indicators typified as annual sales, annual profits, number of employees and overall performance, The descriptive analysis carried out concluded that technological risk and environmental risk are perceived by businessmen as the most important risk factors and that these decrease when business size increases. Likewise, performance indicators improve as the size of the company, which confirms that micro-enterprises are the most vulnerable sector.

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1. Introduction:

Several studies have clarified the problem of own business management in PyMES, In 1985, NAFIN conducted a survey of the medium and small industry, where a sample of 20,923 companies was analyzed and which identified 9 problems associated with the internal and external management of the company: lack of organization, technological delay, industrial obsolescence, lack of integration and association, lack of staff training, problems in the placement of products, lack of financial resources, lack of accounting records and lack of access to financing. In 1987 SECOFI carried out a study called "The industry by productive scale" covering 35,000 companies that at that time represented 40% of the national industry and in which six factors of the problem of microenterprise were identified:

Problems to acquire supplies due to lack of purchasing power, high operating costs, contracted market, lack of access to credit, lack of raw materials and lack of financial liquidity (Jurado, Vivar, & Pérez, 1997, cited by Palomo González, 2005. p.26). The reports of the economy secretariat through the inter-secretarial commission of Industrial policy (CIPI) are an important source of analysis that has allowed to identify the problem of PyMES in Mexico, in document 6 factors are highlighted: Limited participation in foreign trade, limited access to sources of financing, disengagement from the most dynamic sectors, deficient training of human resources, lack of linkage with the academic sector and lack of a culture of process innovation and technological development (CIPI, 2001, cited by Palomo González, 2005. p.28). The secretariat of the economy (SE) in conjunction with the Inter-American Development Bank (IDB), the University of Bologna in Argentina and the National Institute of Statistics, Geography and Information Technology (INEGI), developed in 2002 the pilot test for the conformation of the PyME observatory in Mexico. In the first report of 2002 results of the observatory, the needs and problems of PyMES are identified, where the following aspects stand out: Family business structure, about 90% of companies do not have any type of quality certification, the sales structure is highly concentrated as well as the supply chain and only 9% of PyMES are involved in the export activity (CIPI, 2003, p.76).

The national institute of statistics and geography (INEGI, 2015), published the national statistical directory of economic units (DENUE, 2015), likewise was published in the press release 087/15 (INEGI, 2015), a comparison with the DENUE 2010, where important results are observed related to the life expectancy of the businesses, among which the following stand out: In DENUE 2010, 4.3 million businesses were registered and by 2015, 1.6 million of these establishments died. In the DENUE (2015), 4.9

million establishments were registered, observing that 2.2 million were new (births). Of the deaths that occurred during the 5-year period, 17.4% corresponded to Commerce, 14.4% to Services, 3.5% to Manufacturing and 2.3% to other sectors. It is also observed that the greatest volatility occurs in companies that have 0 to 5 people employed that reflected 34.3% of deaths.

With regard to the state of Tlaxcala, the same trend is observed, since the life expectancy of company increases with age and with size, in the same period of 5 years there is a 32.5% of deaths and a 55.5% % of births, the life expectancy of a new business at birth is 6.8 years while the national average is 7.7, However, the study conducted by the INEGI reveals that in Tlaxcala 76% of companies die during the first 5 years, 85% during the first 10 and that only 10% exceeds 20 years of life.

The commerce sector is the most vulnerable at both national and state level, in Tlaxcala, it has a life expectancy at birth of 4.8, while the manufacturing sector has the highest life expectancy with 7.8 years, and the service life of 6.6 years. The study shows that the commercial sector is the most vulnerable at any age. Regarding the size measured by the number of people employed, the cumulative mortality rate of businesses per 100 born for businesses with 0 to 5 people is 67% at 5 years and 79% at 10 years, while for businesses that have 6 and more people employed is 45% at 5 years and 58% at 10 years. (INEGI, 2016). The above data originates the presentation of research that has as one of its main objectives to analyze the risk factors that can impact the vulnerability of newly created companies in the commercial sector of the State of Tlaxcala.

1.1. Characteristics of the MIPyMES:

MIPyMES have their roots in the artisanal production that gave rise to family businesses as a source of income and transmission of knowledge and productive and administrative skills, but it was not until the 1960s that the organization of the United Nations for industrial development ONUDI coins the term PyME to define the sector in which the policies of reconstruction of the productive apparatus and the generation of employment would be oriented, after the effects of the Second World War, (Garcia, 2001, page 11); After the Second World War and thanks to the creation of progressive and modernizing economic policies worldwide, an evolution has been achieved that has allowed first, to leave informality and then advance in the industrial production chain insertion through subcontracting to large companies either as suppliers of parts or providing support services to processes, in this sense there are successful experiences documented in Italy, Japan, Brazil, Colombia and Chile (Castillo & Cortellese, 1988, pp. 140-150); In Mexico, the law on the development of the competitiveness of micro, small and medium enterprises that classifies companies according to Table 1; (Cámara de diputados del H. Congreso de la Unión, 2015, p. 2).

Table 1. Stratification by Number of Workers

Sector/ Size	*Industry*	*Commerce*	*Services*
Microenterprise	0-10	0-10	0-10
Small company	11-50	11-30	11-50
Medium company	51-250	31-100	51-100

Source: Adapted from (Chamber of Deputies of the H. Congress of the Union, 2015)

Manay and Melina, conclude that according to data from the national institute of statistics and geography, in Mexico there are approximately 4 million 15 thousand business units, of which 99.8% are PyMES that generate 52 % of PIB and 72% of employment in the country, this reflects the importance of these economic units for national development (Manay & Giselhy, 2012, page 11).

Valdés Díaz de Villegas and Sánchez Soto (2012), made an analysis about the role played by the MIPyMES in the globalized world, in the analysis of the problem highlight that in addition to access to financing are very important aspects such as Lack of knowledge in culture of organizational development; Lack of clarity to take your products to the final consumer; Deficient marketing and resistance to change. However, they also comment that in recent years there have been important efforts in terms of public policies to support this type of companies, such as the PyME Fund and the Mexico Emprende program.

1.2. Business Risks in MIPyMES:

In accordance with the ISO 31000: 2011 standard (Colombian Institute of Technical Standards and Certification (ICONTEC, 2011) which refers to the GTC 137 (ISO Guide 73: 2009, definition 1.1), Risk is the effect of uncertainty on the objectives, and establishes in Note 1, that an effect is a deviation from what is expected, whether positive, negative or both, in note 2, says that the objectives may have different aspects as financial, health and safety and environmental goals and that can be applied at different levels such as strategic, throughout the organization, in projects, products, and processes.

The ISO 31000 and ISO 31010 standards are intended to help organizations of all types and sizes to manage risk effectively, and for this one of the key elements is the risk management process reproduced in Figure 1.

As has been mentioned, MIPyMES are very important economic units in the generation of jobs and in the development of countries for their ample contribution to PIB (Gross domestic product), However, the failure rate is very high, in any country, according to Alcaide (2012), 70-80% of companies fail before in the first five years, this experienced consultant states that it is possible to identify 6 capital sins committed by entrepreneurs: Poor initial business planning of the enterprise, Poor sales

management, Poor production and operation of the company, Deficient control of marketing metrics, Deficient strategic planning and Deficient general management approaches.

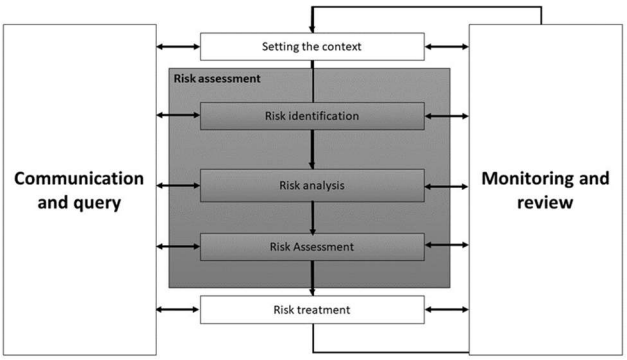

Figure 1. Risk management process.
Source: NCh-ISO 31010: 2013, p.8

Gerardo Villafranco, according to several specialists, identifies 7 deadly risks for the operation of a PyME: Strategic, Compliance, Financial, Operational, Environmental, Information Technology and Human Risks. (Villafranco, 2014).

2. Methodology

The research process was defined in a sequence of activities that has as its starting point the research question and the activities range from the definition of the variables, the construction of the instrument, calculation of the sample size , the collection of the data through the questionnaire, which requires a lot of interaction with the entrepreneurs of the selected sample; later, the construction of the database to proceed to the descriptive statistical analysis.

2.1. Research Question

What are the risk factors that have a greater impact on the performance of MIPyMES in the commercial sector in the State of Tlaxcala?

2.2. Definition of the Research Variables

The overall performance of the company was established as a dependent variable and the 7 types of risks presented in Table 2 as independent variables.

2.3. Design of the Data Collection Instrument

A questionnaire used in 2016 was reviewed to perform a systemic analysis of micro and small enterprises in a national study (Aguilar, Posada & Peña, 2016), this instrument was considered as a reference for the structure of the different sections of the questionnaire that is finally composed of a total of 118 items, organized into the following sections: characteristics of the company, permanence in the market, technology, human capital, strategic focus, social commitment, orientation to change, innovation and improvement, financial risks, operational risk, environmental risk, compliance risk, strategic risk, technological risk, resource risk and organizational structure. Each of the risk variables were measured on a Likert scale typified as 5 = strongly agree, 4 = agree, 3 = disagree, 2 = strongly disagree, 1 = do not know/do not apply, where opinion 5 it means a perception of a maximum of risk and 1 a perception of minimum risk. Each variable contains several items ranging from 4 to 14 depending on the complexity of the variable; to calculate the value of each variable, the average of all the items was taken.

Table 2: *Conceptualization of variables*

VARIABLE	CONCEPTUAL DEFINITION	DIMENSIONS OR INDICATORS
PERFORMANCE	State of the fulfillment of the objectives set by the organization	Annual sales Annual profits Number of employees
STRATEGIC RISKS	Threats are transverse to the organization related to their environment.	Threats Opportunities Increase Long-term plans Commercial image
FINANCIAL RISKS	Possibility of decapitalization of the organization	Fixed costs Debt level Past due portfolio Financing liquidity
ENVIRONMENTAL RISKS	Potential adverse effects on the environment as a consequence of the operation of the business	Legal compliance Waste management Contingency plans Technology
RESOURCE RISKS	Potential adverse effects due to lack of infrastructure and personnel to offer the service	Training Infrastructure
TECHNOLOGICAL RISKS	The threat of suspension of service due to outdated technology	Obsolete technology
OPERATIONAL RISKS	The situation of a threat to the productive system due to contingencies in the safety of the process	Security Process control
COMPLIANCE RISKS	The situation of the danger of a suspension of service due to lack of organizational capacity	Capacity index Customer satisfaction

2.4. Population and Sample

For the delimitation of the sample, the first thing that must be done is to determine the sampling units, that is, what or who will be observed or studied during the research

process, can be individuals, organizations, communities, produced pieces, events, and so on. Depending on the approach of the problem and the scope; Subsequently, the population or universe is delimited, which is the set of all the cases that agree with the specifications established for the study (Hernández, Fernández, & Baptista, 2014).

Based on the above, we proceeded to calculate the sample size using the formula for calculating the sample size for finite population

$$n = \frac{(Z)2*p*q*N}{e2*(N-1)+Z*p*q}$$

Where:

n is the sample size

N is the size of the population, in this case, N = 35064

Z is the typical score associated with the confidence level adopted, for 95% confidence Z = 1.96

e represents the standard error or error due to sampling, is considered e = .05

p and q are two complementary proportions that can take any value between 0 and 1, the most frequent option occurs when p = 0.5 and q = 0.5

Substituting the values in the formula You get the following

$$n = \frac{1.96*1.96*.5*.5*35064}{.05*.05*(35063)+1.96*.5*.5} = 382$$

According to the calculations, a sample size of 382 companies is required, which should be stratified according to the data of the population. However, thanks to the enthusiastic collaboration of local businessmen, 511 questionnaires were applied, of which 436 were microenterprises, 57 small businesses, and 18 medium companies.

3. Results

3.1 Reliability analysis

For the statistical analysis of the data the SPSS software was used, as the first step the reliability analysis was carried out by the split halves method, the result was a Guttman coefficient of 0.838 and subsequently the coefficient was determined Cronbach's alpha of 0.914, the different procedures to calculate the reliability, produce reliability coefficients that oscillate between 0 and 1, where a coefficient of zero means null reliability and a 0.9 represents a maximum of reliability, (George and Mallery 1999), propose the following criteria to evaluate the coefficients of Cronbach's alpha:

- Cronbach's alpha >.9 it is excellent.
- Cronbach's alpha >.8 it is good.
- Cronbach's alpha >.7 It is acceptable.
- Cronbach's alpha >.6 it is questionable.
- Cronbach's alpha >.5 it is poor.
- Cronbach's alpha <.5 It is unacceptable.

In accordance with the above, it was concluded that the reliability of the instrument is excellent.

3.2. Descriptive statistics

Table 3 presents the data obtained for the total sample, while tables 4, 5 and 6 contain the results corresponding to the micro, small and medium enterprises respectively.

Table 3: *Analysis of the total sample*

	n	Medium	Standard deviation
Annual sales	511	3.79	.918
annual profits	511	3.66	.938
Number of employees	511	3.51	.847
Financial risk	510	3.2541	.83510
Operational risk	510	3.1458	.79670
Environmental risk	511	3.0144	1.15560
Compliance risk	510	3.4294	.91458
Strategic risk	511	3.5978	.85854
Technological risk	511	2.5786	.92597
Resources risk	511	3.2573	.93611
Overall performance	511	3.6517	.76525
N valid (per list)	508		

Table 4: *Analysis of microenterprises*

	n	Medium	Standard deviation
Annual sales	436	3.74	.922
annual profits	436	3.60	.953
Number of employees	436	3.45	.802
Financial risk	435	3.2176	.81880
Operational risk	435	3.1060	.78334
Environmental risk	436	2.9622	1.14945
Compliance risk	435	3.3669	.83230
Strategic risk	436	3.5760	.85096
Technological risk	436	2.4931	.91245
Resource risk	436	3.2150	.93637
Overall performance	436	3.5956	.76333
N valid (per list)	433		

Table 5. *Analysis of small businesses*

	n	Medium	Standard deviation
Annual sales	57	3.95	0.110
annual profits	57	3.86	.718
Number of employees	57	3.74	1.009
Financial risk	57	3.4073	.91034
Operational risk	57	3.2500	.85793
Environmental risk	57	3.2398	1.21377
Compliance risk	57	3.7754	1.36960
Strategic risk	57	3.6623	.95576
Technological risk	57	3.0214	.87172
Resource risk	57	3.4254	.96126
Overall performance	57	3.8480	.68739
N valid (per list)	57		

Table 6: *Analysis for Medium Companies*

	n	Medium	Standard deviation
Annual sales	18	4.39	.850
annual profits	18	4.56	.616
Number of employees	18	4.22	.943
Financial risk	18	3.6508	.86927
Operational risk	18	3.7778	.64391
Environmental risk	18	3.5648	.91669
Compliance risk	18	3.8444	.70479
Strategic risk	18	3.9236	.66024
Technological risk	18	3.2469	.77315
Resource risk	18	3.7500	.64169
Overall performance	18	4.3889	.56302
N valid (per list)	18		

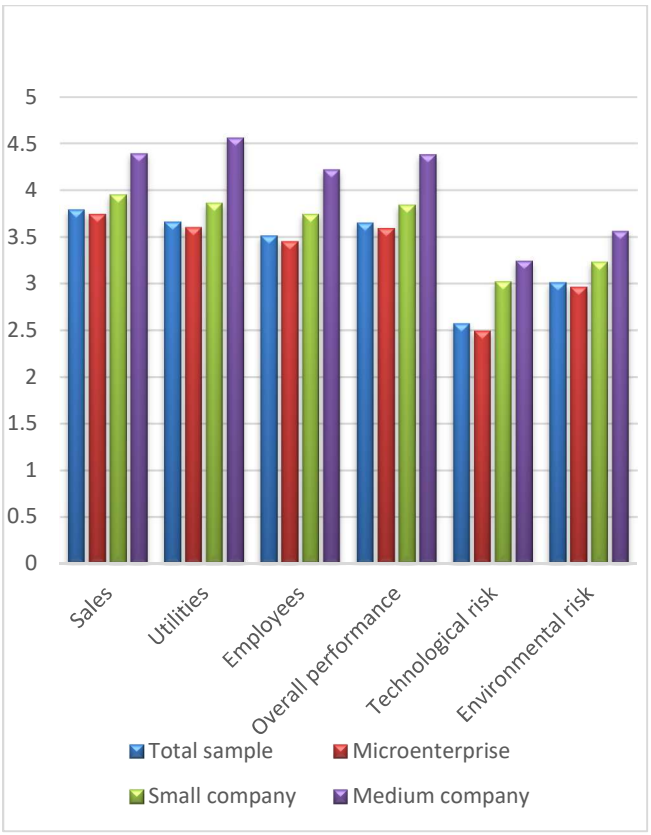

Figure 2. Comparison of performance indicators

4. Discussion

The analysis of the sample allows observing that the risks with the most unfavorable rating are technological risk (2.57) and environmental risk (3.01), likewise, tables 4, 5 and 6 indicate that the situation is repeated for microenterprises that have a technological risk of (2.49) and environmental risk of (2.96), small companies that register a technological risk of (3.02) and environmental risk of (3.23) as well as medium-sized companies that have a technological risk of (3.24) and environmental risk of (3.56) when the samples are analyzed separately. In contrast, the risk with the most favorable rating for the total sample is strategic (3.59), as well as for micro-enterprises (3.57) and medium-sized (3.92), while for small companies this item corresponds to the risk of compliance (3.77).

Figure 2 confirms that the indicators of annual sales performance, annual profits, number of employees and overall performance are related to the size of the company since the perception of entrepreneurs is favorable as the size of the business increases. example, microenterprises have an overall performance of (3.59), small companies have (3.84) and medium companies (4.38) in that indicator.

Similarly, it is observed that a decrease in risk is perceived as the size of the business increases, for example microenterprises perceive a technological risk of (2.49), small companies register (3.02) and medians (3.24) in the same risk, the same trend is observed in environmental

risk, this according to the scale used where 5 means a perception of greater risk and 1 a perception of lower risk, suggests that risk management improves as the risk increases. size of the company.

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References:

1. Aguilar, O., Posada, R., & Peña, N. (2016). El estrés y su impacto en la productividad: Estudio en los directivos de las micro y pequeñas empresas de México. *Ciudad de México: Pearson Educación*.
2. Alcaide, J. C. (2012). *Marketing de servicios*. Obtenido de. www.thinkepi.netnotascrecs-2012-slidesalcaide.pdf
3. Cámara de Diputados del H. Congreso de la Unión. (2015). Ley Para El Desarrollo De La Competitividad De La Micro, Pequeña Y Mediana Empresa. *Diario Oficial De La Federacion (DOF)*, pág. 2.
4. Castillo, M., & Cortellese, C. (1988). La pequeña y mediana industria en el desarrollo de América Latina. Revista de la CEPAL.
5. Comisión Intersecretarial de Política Industrial CIPI. (2003). *Observatorio PyME México, Primer reposte de resultados 2002.* México D.F.: CIPI.
6. García, T. (2001). La universidad y su compromiso con las PYMES. *Industrial Data*, *4*(2), 11-17.
7. George, D., & Mallery, P. (1999). *SPSS® for Windows® step by step: A simple guide and reference*. Allyn & Bacon.
8. Hernández, R., Fernández, C., & Baptista, M. (2014). Metodología de la Investigación (6ta. ed.) Mc Graw Hill.INEGI. (2016). *Esperanza de Vida en los Negocios por Entidad Federeativa.*
9. INEGI. (2015). *Directorio Estadístico Nacional de Unidades Económicas (DENUE 2015)*.
10. Instituto Colombiano de Normas Técnicas y Certificación (ICONTEC). (2011). RISK MANAGEMENT. PRINCIPLES AND GUIDELINES. *NTC-ISO 31000*. Bogotá, Colombia.
11. ISO Guide 73:2009, Risk Management. Vocabulary
12. Jurado, A., Vivar , V., & Pérez, R. (1997). Programa de apoyo a la micro y pequeña empresa. *Tercer Congreso Nacional de Vinculación ANUIES*, 409-430.
13. Manay, M., & Giselhy, M. (31 de Enero de 2012). *Cesla.com*. Obtenido de http://www.cesla.com/pdfs/LAS%20MIPYMES%20Y%20SU%20PARTICIPACION%20EN%20EL%20DESARROLLO%20SOCIAL%20Y%20CREMIENTO%20ECONOMICO%20DE%20AMERICA%20LATINA.pdf
14. Palomo González, M. Á. (septiembre de 2005). Los procesos de gestión y la problemática de las PyMES. Ingenierías, VIII (28), 25-31.
15. Valdés Díaz de Villegas, J. A., & Sánchez Soto, G. A. (2012). Las MIPYMES en el contexto mundial: sus particularidades en México. *Iberóforum. Revista de Ciencias Sociales de la Universidad Iberoamericana*, *7*(14).
16. Villafranco, G. (2014). *Forbes México*. Obtenido de https://www.forbes.com.mx/author/gerardo-villafranco

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