Analysis of the relationship between Financial Culture and the Economic Sector of MSMEs in Yucatán, México

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ABSTRACT

Research was conducted to measure the financial business culture of micro, small and medium-sized enterprises (MSMEs) through four elements: financial attitude, access to financing, behavior and financial experience. MSMEs are recognized for their contribution to job creation and economic development in many regions and countries, which is why they are considered key organizations in the implementation of the SDGs by contributing to multiple areas, such as economic growth, equality, environmental sustainability and poverty eradication.

Yucatan, the state of Mexico where the study is being carried out, has had a great growth in the last few years, which has made it an interesting pole in the country for national and foreign investors, and its logistical infrastructure makes it attractive to companies from different economic sectors.

The objective of the research is to establish if there are differences in the level of financial culture among the economic sectors to which the MSMEs of Yucatan belong. The subjects of the study are 84 MSMEs, randomly selected. The information was collected through an online questionnaire.

The results of the Analysis of Variance in one-factor (ANOVA) show that medium-sized companies showed a better performance in all the indexes (financial knowledge, attitude towards financing, financial behavior and financial experience) compared to micro and small companies. It is shown that construction and commerce companies have the lowest performance in the Financial Culture Index (IFC), even though these segments are a key factor in Yucatan's economy.

KEY WORDS: Financial Culture, Economic Sectors, MSMEs, Yucatán

INTRODUCTION

Financial Culture

Financial culture is comprised of several interrelated elements, among the most important being financial knowledge and education. According to Molina, Diéguez, Galache, and Campos (2023) in a recent study on small and medium enterprises, four key elements form the foundation of corporate financial culture: financial attitude, access to financing, financial behavior, and experience.

Financial culture is generally understood to include all tools, indicators, and concepts that lead to better decision-making. According to Higuera and Serrano (2009), financial culture refers to the ideas, perceptions, attitudes, customs, and rules that we share regarding the world of money and the institutions involved in financial matters.

The OECD (2005) defines financial education as a process by which individuals improve their understanding of financial concepts and products. This formation requires multiple components, such as developing financial skills, making informed decisions, enhancing comprehension of financial concepts and products, and evaluating financial risks and opportunities.

Financial culture and financial education are closely related but slightly different concepts; financial education is a fundamental component for enhancing and strengthening the financial culture of a society, as it provides individuals with the tools and knowledge necessary to make informed and responsible financial decisions. In turn, a healthy financial culture can promote the importance of financial education and foster responsible financial practices within the community.

According to Aguilar (2023), several elements are required to strengthen financial culture, with financial inclusion being one of them. Financial inclusion refers to the accessibility and availability of formal financial services. In this regard, the National Banking and Securities Commission (CNBV, 2012) indicates that financial

inclusion involves access to and use of financial services under appropriate regulations that ensure consumer protection and promote financial education to improve the financial capabilities of all population segments. For Ouma, Odongo, and Were (2017), financial inclusion is a key element for enhancing economic development, while for Goel and Madan (2019), financial inclusion is the means to promote business creation and growth, enabling MSMEs to access financial products.

Micro, Small, and Medium Enterprises (MSMEs) and their contribution to Sustainable Development

MSMEs represent a group of businesses that form the base of the corporate structure in terms of size and revenue. The Official Gazette of the Federation of Mexico (DOF, 2009) defines the classification of MSMEs as those with an annual revenue ranging from \$4 to \$250 million MXN and a workforce of 10 to 250 employees. This classification may vary depending on the economic sector in which an MSME operates, but the revenue and employee limits remain constant.

MSMEs are recognized for their contribution to job creation and economic development in many regions and countries. According to Branson (2016), MSMEs must adapt to change, and due to their structures, they are flexible and adaptable, enabling them to respond quickly to changing market conditions.

MSMEs play a significant role in job creation and economic development within countries, which is why they have been the focus of studies by the United Nations (UN). The UN's 2030 Agenda comprises 17 Sustainable Development Goals (SDGs) with a total of 169 specific targets. These SDGs were adopted by all UN Member States in September 2015 and outline a global plan to address a range of social, economic, and environmental challenges worldwide. The 2030 Agenda is based on the concept of "leaving no one behind" and aims to improve people's quality of life and protect the planet (United Nations, 2018).

The SDGs aim not only to eradicate extreme poverty and meet people's basic needs but also to promote economic prosperity, equality, and environmental sustainability worldwide. Each of the 17 goals is broken down into specific targets and supported by measurable indicators to track progress toward their achievement. The target deadline to achieve these goals is the year 2030.

MSMEs have a significant connection to the Sustainable Development Goals (SDGs) due to their capacity to contribute to the achievement of several of these goals at local, national, and global levels.

The following presents a brief overview of the relationship between some SDGs and MSMEs (UN, 2018):

- Decent Work and Economic Growth (SDG 8): MSMEs are often significant sources of employment in many economies. By fostering the growth of these businesses, more jobs can be created, thus contributing to SDG 8, which aims to promote sustainable economic growth and decent work.
- Reduced Inequality (SDG 10): MSMEs can help reduce economic and social inequalities by providing economic opportunities to individuals and communities that might otherwise be marginalized. This aligns with SDG 10, which seeks to reduce inequalities within and among countries.
- Access to Financial Services (SDGs 1 and 8): By providing access to financial services to individuals and communities historically excluded from the financial system, MSMEs can contribute to poverty eradication (SDG 1) and sustainable economic growth (SDG 8).
- Innovation and Technological Development (SDG 9): MSMEs can drive innovation and technological development by creating new solutions and products. This is related to SDG 9, which promotes building resilient infrastructure, sustainable industrialization, and fostering innovation.
- Responsible Consumption and Production (SDG 12): MSMEs can adopt sustainable and responsible business practices, including waste reduction, energy efficiency, and sustainable resource management.

In summary, MSMEs can play an important role in implementing the SDGs by contributing to multiple areas, such as economic growth, equality, environmental sustainability, and poverty eradication. Their ability to adapt quickly and operate at the local level makes them key players in promoting sustainable development.

Business Economic Sectors

Before focusing on the research problem, it is essential to have a clear definition of economic sectors and subsectors, as well as an up-to-date overview of the economic growth in Yucatán, since the sampling of businesses is conducted in this Mexican state.

The classification of economic sectors into primary, secondary, and tertiary is a widely used concept in economics. There is no specific person or entity credited as the sole author of this classification, as it has evolved over time. According to Clark (1940), there are three main sectors:

- Primary Sector: Includes activities related to the production and extraction of natural resources.
- Secondary Sector: This is the industrial sector, which includes activities involving the transformation of raw materials into finished products.
- Tertiary Sector: This sector focuses on the provision of services.

The United Nations (UN, 2008) uses the International Standard Industrial Classification of All Economic Activities (ISIC) an internationally recognized standard for classifying economic activities. This classification divides the various economic sectors into multiple levels of detail and categorizes economic activities into 18 sectors.

Economic Profile of Yucatán, Mexico

The state of Yucatán is located in southeastern Mexico, and its economy is primarily supported by trade and service activities, which contribute the most to the state's Gross Domestic Product (GDP). However, due to its job creation and contribution to added value, the industrial sector—particularly manufacturing and construction—could be considered the strongest (Secretariat of Economic Development, 2018).

As of 2021, Yucatán experienced steady economic growth and had been attracting investments in sectors such as technology and manufacturing. Mérida, the capital of Yucatán, is considered to be emerging as a technological hub (National Institute of Statistics and Geography, 2023).

Yucatán has shown substantial growth in recent years, with strong financial stability and considerable appeal for both national and international investors. Additionally, its logistical infrastructure makes it attractive to companies from various economic sectors.

METHODOLOGY

As outlined in previous paragraphs, the research question is: Are there differences in the level of financial culture among the economic sectors to which MSMEs in Yucatán belong? Hypothesis 1: There are differences in the Financial Culture Index (FCI) among MSMEs based on the sector of activity to which they belong.

This research adopts a quantitative, descriptive, non-experimental, and cross-sectional approach. The population consists of MSMEs in Mérida, Yucatán. The sample comprises 84 randomly selected Yucatecan MSMEs. Information was collected through an online questionnaire directed to the business owner, general manager, and business administrator, with follow-up phone calls to facilitate responses. This fieldwork was conducted during September and October 2023. Data analysis was performed using IBM SPSS Statistics version 21. The statistical test used was ANOVA, a technique employed to compare the means of three or more independent groups.

The scope of this work focuses solely on analyzing the relationship between financial culture and the economic sector in a sample of Yucatecan MSMEs at a single point in time, so it does not examine their evolution or causality.

The variables involved in this study are:

- Financial culture in MSMEs, measured through the Financial Culture Index (FCI).
- The economic sector of activity of the micro, small, and medium enterprises.

The variables used in the study and how they were measured are described below, noting that prior to conducting the analyses, construct and scale validation were performed. Exploratory and confirmatory factor analyses were applied, as well as the calculation of the Kaiser-Meyer-Olkin (KMO) sampling adequacy coefficient and Bartlett's test of sphericity, to verify the validity of the instrument. Additionally, Cronbach's alpha coefficient was obtained for the various sections of the instrument's content to establish its reliability. The corresponding results are presented in Table 1.

Table 1. Construct Validity and Reliability of the Scales

Section	KMO Coefficient	P-value of Bartlett's Sphericity Test	Percentage of Variability Explained by the First Component	Cronbach's Alpha Coefficient	
Financial Knowledge	0.742	0.000	83.4	0.899	
Attitude Towards Financing	0.823	0.000	53.2	0.817	
Financial Behavior	0.809	0.000	61.7	0.840	
Financial Experience	0.866	0.000	73.7	0.908	

^(*) Percentage of variability explained by the first two components.

Source: Own elaboration.

According to the previous results, the applied questionnaire is considered valid and reliable.

Variable 1. Financial Culture Index (FCI)

This variable was created to measure financial culture in MSMEs. Previous studies by Diéguez, Duréndez, García, and Molina (2023) suggest that financial culture consists of the level of financial education, the existing level of financial knowledge, the financial attitude toward debt and self-financing, financial behavior, and, lastly, the financial experience of the general manager. To measure financial culture, managers or administrators of the surveyed companies were asked, using a Likert-type scale, about their perception of the evolution of their financial knowledge (where 1 indicates unfavorable evolution and 5 indicates very favorable evolution) in relation to other aspects within their company during 2023.

The 4 aspects addressed (subindices) are:

- Financial Knowledge
- Attitude Towards Financing
- **Financial Behavior**
- Financial Experience.

Based on the responses to the Likert-scale items in the survey, the Financial Culture Index (FCI) was constructed on a scale of 0 to 100 for each unit of observation (in this case, the surveyed managers or administrators), by summing the responses to the ordinal scale items, using the following expression:

$$FCI_{j} = \frac{V_{max}(\sum_{i=1}^{n} x_{ij} - V_{minant})}{V_{maxant} - V_{minant}}$$

 $FCI_{j} = \frac{V_{max}\left(\sum_{i=1}^{n} x_{ij} - V_{minant}\right)}{V_{maxant} - V_{minant}}$ where FCIj is the index value corresponding to the observation unit j (i.e., entrepreneur j), the summation corresponds to the accumulated points reached in the original ordinal scale, Vmax is the maximum value in the new scale (i.e., 100), and Vmaxant and Vminant are the maximum and minimum values in the original ordinal scale from 1 to 5.

Variable 2. Economic Sector of the MSME (SEMSME)

This variable was created to classify the economic segment of the studied MSMEs. The definition used is the current classification of The National Classification of Economic Activities (NCEA), which is responsible for classifying all companies by assigning a numerical code based on the activities they carry out.

The classification used in the survey consisted of 11 options. The first ten options were specific, and option 11, labeled "Other," was used to classify companies that did not fall into the first ten categories.

- 1. Agriculture, animal husbandry, and exploitation of animals, forestry, fishing, and hunting
- 2. Construction
- 3. Manufacturing industries
- 4. Wholesale trade
- 5. Retail trade
- 6. Real estate services and rental of movable and intangible goods
- 7. Professional, scientific, and technical services
- 8. Educational services
- 9. Health and social assistance services
- 10. Recreational, cultural, and sports services, and other recreational services
- 11.Other

RESULTS

Descriptive analysis of the Financial Culture Index (FCI) by company size and economic sector of

In previous paragraphs, it was established that Financial Culture is composed of 4 aspects that are measured in the owner, manager, and/or general manager of the company: financial knowledge, attitude towards financing, financial behavior, and financial experience. This section describes the results of each of these components (presented as sub-indices) and the Financial Culture Index (FCI) (variable 1), obtained from the total sample and from the sample grouped by company size (micro, small, and medium enterprises) and by the economic sector to which they belong (variable 2).

In Table 2, it can be observed that, in general, the average values of the knowledge index (71.23), behavior index (75.17), and financial experience index (68.45), as well as the Attitude towards Financing index (50.74) and the Financial Culture Index (FCI) (66.40), are higher for medium-sized companies compared to those recorded by micro and small companies. Meanwhile, between the latter two, there appear to be no significant differences in the average values of these indices. These results are consistent with Diéguez, Duréndez, García, and Molina (2023) in the Empirical Study of Financial Culture in SMEs, published by the Spanish Association of Accounting and Business Administration (SAABA). The study indicates that medium-sized companies have a higher financial knowledge index than micro and small companies, and they are even more inclined to take risks and make better decisions regarding financing. This can be supported by the fact that medium-sized companies, with an FCI of 74.92, the highest of all companies, also demonstrate the best attitude towards financing, with a score of 54.17 (Duréndez-Gómez-Guillamón and Molina, 2023).

Table 2. Financial Culture Index (FCI) by Company Size

Company Size		Financial Knowledge Index	Attitude towards Financing Index	Financial Behavior Index	Financial Experience Index	Financial Culture Index (FCI)
Micro	N	49	49	49	49	49
	Mean	70.408	50.510	76.429	68.469	66.461
	Median	75.000	50.000	80.000	75.000	67.100
	Std. Dev	22.5658	21.5428	21.3356	22.6891	16.9124
Small	N	31	31	31	31	31
	Mean	71.503	50.674	71.452	67.258	65.219
	Median	75.000	50.000	75.000	60.000	67.500
	Std. Dev	21.4967	20.6960	21.5713	24.7938	18.4610
	N	4	4	4	4	4
Madium	Mean	79.175	54.175	88.750	77.500	74.925
Medium	Median	75.000	45.850	95.000	77.500	76.050
	Std. Dev	14.4241	36.3280	16.5202	14.4338	14.4648
Total	N	84	84	84	84	84
	Mean	71.230	50.745	75.179	68.452	66.406
	Median	75.000	50.000	80.000	75.000	67.600
	Std. Dev	21.7371	21.7142	21.3610	23.0632	17.3259

Source: Own elaboration.

It is important to remember that the size of SMEs is determined by the number of employees, and although it is not a strict rule, a medium-sized company typically has more years of operation and a higher number of employees than a micro or small company. This is why medium-sized enterprises also have a higher financial experience index (77.5) compared to micro and small companies.

Finally, it can also be observed that medium-sized companies have a higher financial knowledge index (79.17) and financial behavior index (88.75) compared to micro and small companies. These results closely align with those reported by Duréndez-Gómez-Guillamón and Molina (2023), who state that medium-sized companies, due to their size, are more likely to increase their equity contributions as a source of financing. They also highlight that a company's size is strongly correlated with these indexes.

In Table 3, it can be observed that, in general, the average values of the indexes are higher in the services sector. These indexes are as follows: financial knowledge index (75.92), financial behavior index (77.96), and financial experience index (70.92), with the attitude towards financing index (57.25) and the financial culture index (70.52) also being higher compared to the construction or manufacturing, commerce, and other sectors. The data obtained in Table 3 is very important when related to information from the construction or manufacturing sectors, which are considered the main drivers of Yucatán's economy. In Table 3, it is observed that the construction sector has the lowest FCI. This may be due to several factors, such as the nature of these companies, which involve a high degree of operations and specialized knowledge, often placing less emphasis on management and financial matters.

On the other hand, service companies make up 42.72% of all SMEs in the state of Yucatán. In addition to experiencing strong growth in recent years within the Yucatán economy, service companies had the highest FCI, with an average of 70.52. This indicates that companies in the service segment currently show the highest level of maturity among SMEs and, therefore, the highest FCI.

To conclude the analysis, it can be noted that commerce companies, which make up 34.39% of all SME units in the state of Yucatán, have a Financial Culture Index (FCI) of 66.97. This is quite low considering the importance of this sector in the Yucatán economy. Additionally, it has the highest standard deviation (20.08) compared to other sectors, which may be due to its widespread presence across the entire state, including rural areas, and the high informality among businesses in this segment.

Table 3. Financial Culture Index (FCI) by Economic Activity Sector

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Sector		Financial Knowledge Index	Attitude towards Financing Index		Financial Experience Index	Financial Culture Index (FCI)
	N	18	18	18	18	18
Construction or	Mean	68.056	44.689	72.500	65.833	62.778
Manufacturing	Median	66.700	41.700	75.000	72.500	64.800
	Std. Dev	14.9230	19.4880	20.5262	19.4974	15.1520
	N	20	20	20	20	20
Cammaraa	Mean	70.000	54.165	74.500	69.250	66.975
Commerce	Median	75.000	60.400	80.000	75.000	72.900
	Std. Dev	26.5430	25.9639	22.8208	27.2066	20.0835
	N	27	27	27	27	27
Services	Mean	75.922	57.252	77.963	70.926	70.526
Services	Median	75.000	54.200	85.000	75.000	73.800
	Std. Dev	23.9429	22.4570	23.7073	23.4536	18.3421
Others	N	19	19	19	19	19
	Mean	68.863	43.637	74.474	66.579	63.389
	Median	66.700	45.800	75.000	70.000	58.300
	Std. Dev	18.6016	14.4551	18.0196	22.3018	14.3896
Total	N	84	84	84	84	84
	Mean	71.230	50.745	75.179	68.452	66.406
	Median	75.000	50.000	80.000	75.000	67.600
	Std. Dev	21.7371	21.7142	21.3610	23.0632	17.3259

Source: Own elaboration.

Hypothesis Testing

This section presents the hypothesis testing. The hypothesis states that:

H: There are differences in the Financial Culture Index (ICF) among SMEs based on the sector of activity to which they belong.

To compare Financial Culture with the Economic Activity Sector, a one-way Analysis of Variance (ANOVA) was conducted, applied to the average Financial Culture Index (ICF), after confirming the normality assumption of the index. The hypothesis test for the ANOVA is as follows:

Ho: $\mu_1 = \mu_2 = \mu_3 = \mu_4$

Ha: $\mu_i \neq \mu_i$ for some $i \neq j$

Considering a significance level of $\alpha = 0.05$

The statistical hypotheses expressed in the terminology of this study are:

H0: There are no significant differences in the averages of the groups.

Ha: At least between two groups, there are significant differences in the averages.

The results are shown in Table 4. Since the test value (p-value = 0.411, denoted in the table as "Sig.") is greater than the significance level, H0 is not rejected. This means that there are no significant differences in the average ICF values by activity sector. Therefore, it is concluded that there are no significant or relevant differences in financial culture across the considered economic activity sectors.

According to the p-value (0.411) obtained, H0 is not rejected. Therefore, it is concluded that there are no significant differences based on the company's sector of activity within the population.

Table 4. One-Way ANOVA Test Financial Culture Index (ICF)

	Sum of Squares	df	Mean Square	F	Sig.	
Inter-groups	874.609	3	291.536	.970	.411	
Intra-groups	24040.898	80	300.511			
Total	24915.507	83				

Source: Own elaboration.

It is important to remember that the ANOVA test is used when there are more than two groups, and the goal is to determine if at least one group is different from the others. The main idea is to compare the variations between the groups with the variations within the groups. A significant result in the ANOVA test indicates that at least one group is different from the others, but it does not specify which groups are different.

CONCLUSIONS

It is concluded that the FCI is very similar between Micro and Small companies (66.46 vs 65.21); however, this average increases in Medium companies, where the highest FCI is observed (74.92). Therefore, it can be inferred that the FCI is higher in Medium companies. Additionally, Medium companies showed better performance in all indices (financial knowledge, attitude towards financing, financial behavior, and financial experience) compared to Micro and Small companies.

Now, based on the analysis of Table 3, it can be concluded that the average FCI shows a low performance in construction companies (62.77) and commerce (66.97), even though these sectors play a key role in the Yucatán economy. The commerce segment has the highest number of SMEs in Yucatán, while the construction and manufacturing segment makes a significant contribution to the state's GDP.

Regarding the ANOVA test, with a p-value of 0.411, H0 was not rejected, and therefore, it is concluded that there are no significant differences based on the company's sector of activity within the population. However, it is important to note that the ANOVA test has several limitations, such as its exclusive dependence on means. Another disadvantage of the ANOVA test is that, with small samples, it tends to be less powerful. It should be remembered that, due to the resources available for this study, the sample was composed of 84 SMEs out of a total population of 129,792 SMEs, according to the 2022 census by SEFOET and INEGI. Therefore, it was crucial to compare the results with conclusions from other articles and studies, which show similar findings. These studies indicate that Medium-sized companies tend to have a higher FCI and better performance across all indicators compared to Micro and Small companies.

It is concluded that the financial culture level of SMEs in Yucatán is slightly satisfactory (mean of 66.4) and that, regarding the economic sector to which the SMEs belong, there is no significant difference

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