Internationalization Challenges for MSMEs in the South of the Aburrá Valley, Colombia: A Detailed Analysis

Diego Fernando Galviz Cataño[1], Sandra Liliana Torres Taborda[2], Jesús Daniel Rico Buitrago[3], Catalina Cárcamo Hernández[4], Leonardo Ramos López[5].

[1,2,3]*Facultad Ciencias Administrativas y Económicas, Tecnológico de Antioquia Institución Universitaria Medellín, Colombia Dirección: Calle 78B ·72 A-220 Email: diego.galvis@tdea.edu.co, nego.internacionales@tdea.edu.co, jesus.rico@dea.edu.co.*

[4]*Corporación Universitaria Minuto de Dios – UNIMINUTO – Colombia. Miembro del Grupo de Investigación INGES – UNIMINUTO. Email: catalina.carcamo@uniminuto.edu.*

[5]*Universidad Autónoma de Baja California, Docente/ Universidad Autónoma de Baja California, México, Ramosl@uabc.edu.mx.*

Abstracts: This research work focused on analyzing the current situation of the business fabric in the area of influence with respect to internationalization processes in the subregion of Sur del Valle de Aburra, Colombia. To achieve this objective, a methodology was used that included the selection of a representative sample of 369 MSMEs from a total population of 9035 business records. In addition, an instrument designed to diagnose the intervention needs of the companies in relation to internationalization processes was applied.The results of the study indicate that a very high percentage of these microenterprises are relatively new to the market, with a limited organizational structure and owners with limited academic training. In addition, a large number of them have no export experience and face significant challenges in terms of access to financing and government support. The main intervention needs identified in the study include lack of knowledge about internationalization processes, lack of access to financing, and lack of government support.The results suggest that companies in the region face significant challenges in terms of access to financing and government support, as well as a lack of knowledge about internationalization processes. In addition, most of the companies are relatively new microenterprises in the market, with a limited organizational structure and owners with restricted academic backgrounds. These findings indicate the need for policies and programs that address the identified intervention needs and promote business development in the region. Overall, this study advances the understanding of the population and sample of MSMEs in the region and provides useful information for future research and business development projects.

Key words: Internationalization of Companies, Msmes, Aburrá Valley, Business Development, Access to Financing.

1. INTRODUCTION

The research focuses on analyzing the current situation of the business fabric in the area of influence with respect to internationalization processes. To this end, market research was conducted to obtain valuable information on the intervention needs required by companies in the subregion of the South of the Aburrá Valley, Colombia. The selection of a representative sample of MSMEs was essential to ensure the accuracy and relevance of the data collected.

It is important to note that the internationalization of companies is an issue of great importance today, as it allows companies to expand their market and increase their competitiveness. However, many MSMEs face barriers to internationalization, such as lack of knowledge about customs procedures and foreign exchange management. It is therefore necessary to conduct studies to identify the intervention needs of these companies and design strategies to support their internationalization process.

According to Muñoz Ruiz et al. (2018), currently, contemporary societies live in a world in constant evolution, where the advance of Information and Communication Technologies (ICT's) has led to the common life of every citizen to turn in a profound change, staying connected to the networks, wherever they are, either through a computer, a tablet or cell phone. Today there are viable and accessible web platforms, where, more and more, the citizen's transactions are linked in a virtual world. In this sense, e-commerce plays an important role in the lives of citizens, where globalization in the network, has allowed the opening of business around the world 24 hours a day, so it has increased the chances of success in the business world.

In this work, it is hypothesized that MSMEs in the subregion of the southern Aburrá Valley, Colombia, face barriers to internationalization due to a lack of knowledge about customs procedures and foreign exchange management. To test this hypothesis, a research instrument was designed to gather information on the current situation of the business fabric in the area of influence.

The paper is divided into five main sections. The first section presents the introduction and the reasons for conducting the study, as well as the essential background and the hypothesis under consideration. The second section describes the methodology used to select the representative sample of MSMEs and explains how the research instrument was designed. The third section presents the results obtained from the statistical analysis of the data collected. The fourth section discusses the findings and proposes recommendations to support the internationalization process of MSMEs.

2. MATERIAL AND METHODS

Population and Sample

For the development of the research exercise, the database of MSMEs (micro, small and medium-sized enterprises) classified by the Chamber of Commerce of Valle de Aburrá Sur according to the classification criteria expressed in Decree 957 of June 9, 2019 of the Ministry of Commerce, Industry and Tourism (2019) was used; which resulted in a total of 9035 business records.

According to Galviz Cataño and Jiménez Guzmán (2021), population refers to the incorporation of similar situations in a sequence of details and that possess relevant information for the study,

Of the total business population identified, a simple random sample calculation was used, with a confidence level of 95% and a margin of error of 5%, obtaining a representative sample of 369 companies, as follows:

$n = N * (Z^2 * p * (1 - p)) / ((N - 1) * e^2 + Z^2 * p * (1 - p))$.

Where:

n= is the sample size.

N= is the size of the total population (9035).

Z= is the critical value of the standard normal distribution corresponding to the 95% confidence level, which is approximately 1.96.

p= is the estimated proportion of the population that has the characteristic of interest, in this case, the percentage of companies that meet the criteria to participate in the survey. For the exercise of defining the sample, it is assumed that the proportion of the population that has the characteristic of interest is equal to the proportion that does not; for this reason a conservative value of p=0.5 is used.

e= is the allowable margin of error (in this case, 5% expressed as a decimal, i.e. 0.05).

In this case:

$n = 9035 * (1.96^2 * 0.5 * (1 - 0.5)) / ((9035 - 1) * 0.05^2 + 1.96^2 * 0.5 * (1 - 0.5)) = 369$.

2.2. Research instruments

For the research, survey-type instruments were used, specifically designed to collect the necessary data and answer the research questions posed. These instruments were carefully designed and applied to guarantee the

validity and reliability of the results obtained. Response options were offered under a Likert scale through a series of statements or related statements to which the participants had to respond indicating their degree of agreement or disagreement.

The main functionality of the Likert scale is that it allows capturing the opinion or perception of the participants and obtaining quantitative data by assigning a numerical value to each response, which facilitates its subsequent statistical analysis. In addition, by using a graduated scale with multiple response options, the Likert scale makes it possible to capture variability in responses and obtain a more accurate measure of levels of agreement or disagreement.

2.3. Data collection process

To collect data on the needs for intervention in the internationalization activities of companies, a survey was used to inquire about key aspects associated with foreign trade activities. The instrument was subjected to validation by four experts as an essential process to ensure that the information collected is accurate, relevant and useful. For this purpose, people with experience as professionals in the indicated area and with a track record as academics in higher education institutions were selected.

Once the experts were identified, the survey was provided to them for review and comments regarding its validity and relevance in the context of the research. Based on the results obtained, adjustments were made to the first instrument, with the purpose of synthesizing it, condensing into thematic components the most relevant aspects to establish the current state of the companies in the dimension of interest (area of intervention) and subsequently it was subjected to new validation resulting in the acceptance of the instrument applied.

Table 1 shows the questions that made up the instrument applied to the companies according to the recommendations of the experts and the question summary used for subsequent registration in SPSS Analytical Software.

Table 1. Questions of the instrument applied to MSMEs.

Dimension	Summary of the question	Response Options
Internationalization		
Do you have a clear understanding of the customs procedures for import or export processes?	Customs Regime	Totally agree Agreed Indifferent Disagree Strongly disagree
Do you have knowledge of foreign exchange management? Exchange Regime	Exchange Regime	Totally agree Agreed Indifferent Disagree Strongly disagree
Do you have knowledge of Incoterms and International Physical Distribution?	DFI	Totally agree Agreed Indifferent Disagree Strongly disagree
Have you measured your financial capacity to compete in international markets?	Financial Capacity	Totally agree Agreed Indifferent Disagree Strongly disagree
Do you have technical, professional and administrative personnel to face the internationalization of your company?	Qualified personnel Internationalization	Totally agree Agreed

Dimension	Summary of the question	Response Options
		Indifferent
		Disagree
		Strongly disagree
		Agreed
		Indifferent
		Disagree
		Strongly disagree

For the systematization and analysis of the data obtained from the application of the instrument, descriptive statistics were used since they allow us to obtain a detailed description of the responses and to understand the distribution of the opinions of the participants. In applying descriptive statistics, various measures and techniques are used to summarize and visualize the data in a clear and concise manner.

Having the instruments applied, the data obtained from the participants were compiled in an Excel table where the question, the response options and the number of responses obtained for each one of them (frequency) were related, with this we proceeded to generate graphical representation tables with SPSS Analytical Software and performed a descriptive statistical analysis, which aims to obtain measures that summarize and describe the distribution of responses to each question or statement and assess the prevalence of each response option.

With the descriptive analysis of the statistics generated, it is possible to obtain valuable information to understand the trends and patterns in the responses and to obtain an overview of the opinions of the participants in relation to the statements or questions posed, providing valuable information for the conclusions of the study.

3. RESULTS AND DISCUSSIONS

Current situation of the business fabric in the area of influence with respect to internationalization processes.

In order to answer the question about the main intervention needs required by the companies in the subregion of the South of the Aburrá Valley, Colombia, the data obtained from the application of the instrument designed for the diagnosis were analyzed and the following results were obtained.

It is validated that there is an interesting participation of companies that are distributed in the subregion of Aburrá Sur and that due to the geographic characteristics of the city of Medellín and its metropolitan area are easily accessible for possible interventions. Table 2 shows the geographic location by municipality in which each of the surveyed companies operates.

Table 2. Location of surveyed companies.

City	Frequency	Percentage	Valid percentage	Cumulative percentage
CALDAS	15	3,9	3,9	3,9
ENVIGADO	124	32,3	32,3	36,2
ITAGUI	119	31,0	31,0	67,2
THE STAR	22	5,7	5,7	72,9
MEDELLIN	22	5,7	5,7	78,6
SABANETA	82	21,4	21,4	100,0
Total	384	100,0	100,0	

Note. Created with SPSS Analytical Software.

With the application of the research instrument to the 384 companies, a baseline was established to outline the current state of the MSME sector in the Aburrá Sur subregion, which is presented below for each of the components considered.

Figure 1 graphically represents the number of companies belonging to each of the neighboring municipalities that were taken into consideration.
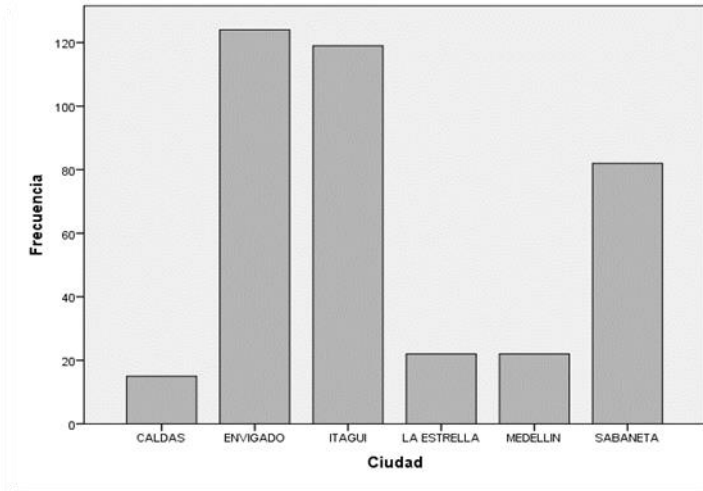

Figure 1. Frequency graph of surveyed companies

Note. Created with SPSS Analytical Software.

The questions formulated were synthesized into a concept in order to make the generation of statistics easier to read. Table 3 shows the questions formulated for the internationalization dimension and Table 4 presents the response options given to the participants on a Likert scale.

Table 3. Questions asked on the internationalization dimension.

Internationalization Dimension	
Question applied in the research instrument (survey)	Concept for statistical analysis
Do you have a clear understanding of the customs procedures for import or export processes?	Customs Regime
Do you have knowledge of currency management?	Exchange Regime
Do you have knowledge of Incoterms and International Physical Distribution?	DFI
Have you measured your financial capacity to compete in international markets?	Financial Capacity
Do you have technical, professional and administrative personnel to face the internationalization of your company?	Qualified personnel Internationalization

Response options under Likert scale.

Response options under Likert scale	
Response option	Numerical evaluation
Totally agree	5
Agreed	4
Neither agree nor disagree	3
Disagree	2

Strongly disagree	1

For this dimension, the average of the arithmetic means of the 5 variables is 2.21 and the mode for each of them was 1; that is to say that the great majority of companies present important deficiencies in the internationalization component, since the greatest weight of responses is concentrated in the scores with the lowest value on the rating scale. This is reflected in the percentage evaluation of the component, where 62.4% of the companies tended to answer "Strongly disagree", while only 23.6% answered "Strongly agree" to each of the questions asked. See Table 5.

Cronbach's alpha is a reliability measure used to evaluate the internal consistency of a set of items in a measurement scale and a value greater than 0.7 is considered to indicate acceptable reliability. Higher values indicate greater internal consistency among the items of the scale (Rodríguez-Rodríguez & Reguant-Álvarez, 2020).

The reliability analysis of the variables is 0.930 according to Cronbach's alpha, which, for the scale, is an excellent result (Table 7). A reliability of 0.930 indicates high internal consistency among the items of the scale, which means that the items accurately measure the dimension and that the results obtained are highly reliable (Toro et al., 2022). In other words, if the test were repeated several times, similar results would be obtained.

The variables are directly related as can be seen in the correlation coefficients, which range from 0.645 to 0.905, showing that the relationship between the dimension criteria is strong (Table 8).

The KMO measure is 0.843, which indicates that the variables are significantly related to each other, since a KMO measure greater than 0.6 is considered acceptable and greater than 0.8 is considered remarkable (Ruff Escobar et al., 2021).

Bartlett's test of sphericity used to evaluate whether the variables in a correlation matrix are significantly intercorrelated (Arias Gonzáles & Muñoz Durán, 2021) is less than 0.05, which means that they are. Both measures, KMO and Bartlett's sphericity indicate that the factor analysis is useful with the data taken because there is a relationship between the variables (Table 9).

The values of the communalities of the variables, which serves to indicate the amount of information that a variable shares with the others (Castro et al., 2022), range between 0.665 and 0.897, indicating that the extracted components represent the variables well (Table 10).

Table 5. Internationalization dimension statistics.

Statistics		Customs Regime	Exchange Regime	DFI	Financial Capacity	Qualified personnel Internationalization
N	Valid	384	384	384	384	384
	Lost	0	0	0	0	0
Media		2,06	2,15	1,85	2,68	2,32
Fashion		1	1	1	1	1

Note. Created with SPSS Analytical Software

Table 6. Descriptive statistics of the internationalization dimension.

Descriptive statistics	N	Media	Standard deviation	Variance
Customs Regime	384	2,06	1,631	2,659
Exchange Regime	384	2,15	1,680	2,823

Descriptive statistics				
DFI	384	1,85	1,492	2,226
Financial Capacity	384	2,68	1,855	3,440
Qualified Personnel Internationalization	384	2,32	1,755	3,079
N valid (per list)	384			

Note. Created with SPSS Analytical Software.

Table 7. Reliability statistics of the internationalization dimension.

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	N of elements
0,930	0,931	5

Note. Created with SPSS Analytical Software.

Table 8. Correlation matrix of the internationalization dimension.

Matrix of correlations between elements					
	Customs Regime	Exchange Regime	DFI	Financial Capacity	Qualified Personnel Internationalization
Customs Regime	1,000	0,905	0,769	0,645	0,799
Exchange Regime	0,905	1,000	0,719	0,690	0,863
DFI	0,769	0,719	1,000	0,505	0,639
Financial Capacity	0,645	0,690	0,505	1,000	0,778
Qualified Personnel Internationalization	0,799	0,863	0,639	0,778	1,000

Note. Created with SPSS Analytical Software.

Table 9. KMO and Bartlett test of the internationalization dimension.

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0,843
Bartlett's test for sphericity	Approx. chi-square	1871,111
	gl	10
	Sig.	0,000

Note. Created with SPSS Analytical Software.

Table 10. Communalities in the internationalization dimension.

Communalities		
	Initial	Extraction
Customs Regime	1,000	0,870
Exchange Regime	1,000	0,897
DFI	1,000	0,665

Financial Capacity	1,000	0,657
Qualified Personnel Internationalization	1,000	0,852
Extraction method: principal component analysis.		

Note. Created with SPSS Analytical Software.

Although there is great heterogeneity in the SME segment (Torres Taborda, 2015), there are elements that attract attention and become an input for further analysis associated with Colombia's productive sector.

For the 6 municipalities under study, the average of favorable responses (ratings 4 and 5 on a Likert scale) regarding knowledge of customs procedures for import and export processes is only 21.7%, which confirms that internationalization is not a simple process and that it is therefore advisable to go through in depth a roadmap to move towards the import and/or export strategic plan, as well as the identification of potentials and risks.

Table 11. Frequency of responses under the Likert scale customs regime

Customs Regime					
		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	1	253	65,9	65,9	65,9
	2	22	5,7	5,7	71,6
	3	18	4,7	4,7	76,3
	4	14	3,6	3,6	79,9
	5	77	20,1	20,1	100,0
	Total	384	100,0	100,0	

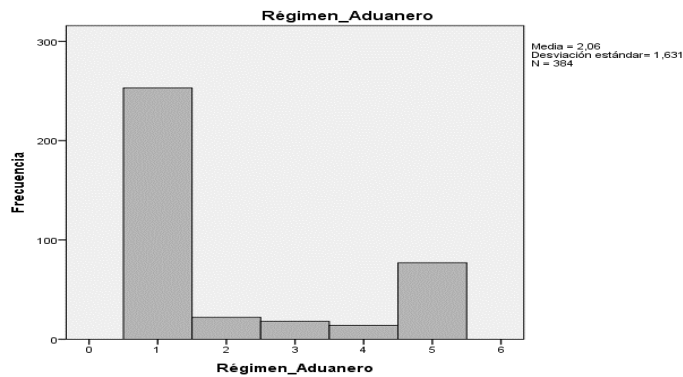Note. Created with SPSS Analytical Software.

Figure 2. Frequency of customs regime criteria.

Note. Created with SPSS Analytical Software.

However, with respect to foreign exchange management, there is not a high rate of favorable responses either, 74.2% of the participants in the survey said they had no or very poor knowledge on the subject; This shows an important intervention criterion, since it is important for companies, regardless of their economic activity and whether or not they carry out activities with foreign currency, to understand how the foreign exchange market works and how it affects the company's operations in order to develop management strategies to reduce risks, since in Colombia, for example, many raw materials and supplies are imported and fluctuations in the exchange market have a direct impact on their commercial operations.

Table 12 Frequency of responses under the Likert scale for the exchange regime.

Exchange Regime		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	1	245	63,8	63,8	63,8
	2	21	5,5	5,5	69,3
	3	19	4,9	4,9	74,2
	4	13	3,4	3,4	77,6
	5	86	22,4	22,4	100,0
	Total	384	100,0	100,0	

Note. Created with SPSS Analytical Software.
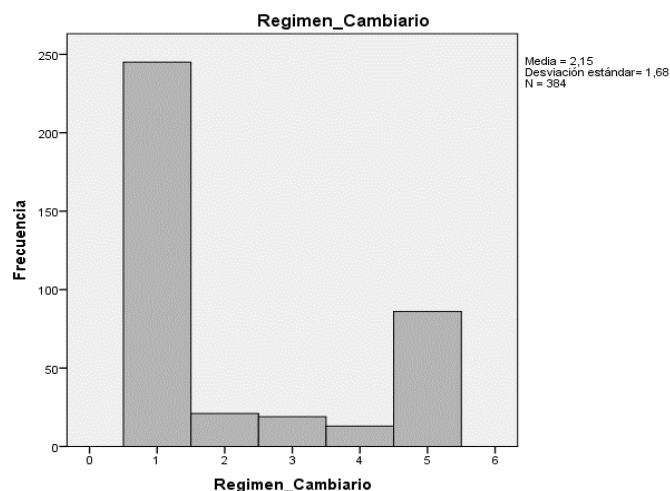
Figure 3. Frequency of exchange regime criteria.

Note. Created with SPSS Analytical Software.

Only 19.3% of respondents claim to have knowledge of Incoterms and International Physical Distribution. This criterion is essential for companies wishing to expand into foreign markets because it is essential to understand the requirements and regulations of each country, know how to evaluate the different means of transport, plan the supply chain and make a correct estimate of prices to ensure a successful coordination in the relationship with customers and suppliers.

Table 13 Frequency of responses under Likert scale DFI.

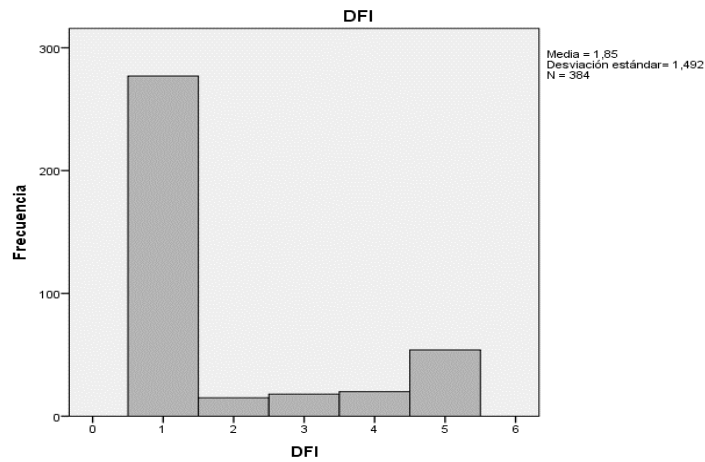| DFI		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	1	277	72,1	72,1	72,1
	2	15	3,9	3,9	76,0
	3	18	4,7	4,7	80,7
	4	20	5,2	5,2	85,9
	5	54	14,1	14,1	100,0
	Total	384	100,0	100,0	

Note. Created with SPSS Analytical Software.

Figure 4. DFI criterion frequencies.

Note. Created with SPSS Analytical Software.

A key factor in a company's decision to internationalize is the evaluation of its financial capacity to take on this challenge, since it requires a correct assessment of the working capital available to finance operations, as well as the identification of both domestic and foreign sources of financing, in order to obtain profitability and operating efficiency; but 60.4% of the companies in the sample showed a lack of knowledge of how to assess these elements.

Table 14. Frequency of responses under Likert scale financial capacity.

Financial Capacity					
		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	1	195	50,8	50,8	50,8
	2	20	5,2	5,2	56,0
	3	17	4,4	4,4	60,4
	4	17	4,4	4,4	64,8
	5	135	35,2	35,2	100,0
	Total	384	100,0	100,0	

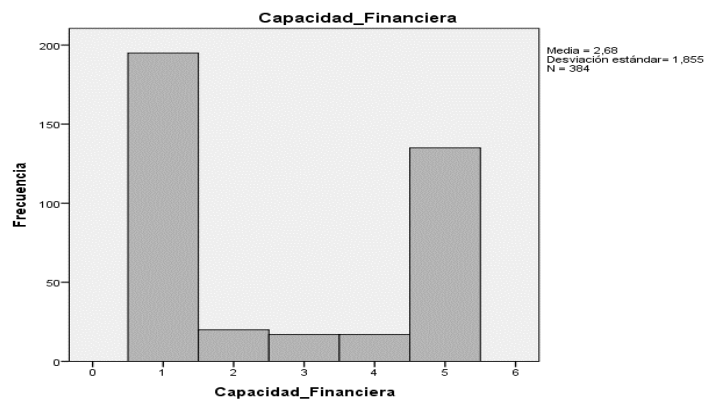Note. Created with SPSS Analytical Software.

Figure 5. Frequencies of financial capacity criteria.

Note. Created with SPSS Analytical Software.

Similarly, having qualified personnel to adjust the company's adaptation to new markets and regulations is fundamental for the commercial purposes of those companies that wish to develop effective international strategies, and only 30.2% of MSMEs claim to have the human talent trained for this purpose in their organization.

Frequency of responses under Likert scale for qualified personnel.

Qualified Personnel Internationalization					
		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	1	228	59,4	59,4	59,4
	2	24	6,3	6,3	65,6
	3	16	4,2	4,2	69,8
	4	14	3,6	3,6	73,4
	5	102	26,6	26,6	100,0
	Total	384	100,0	100,0	

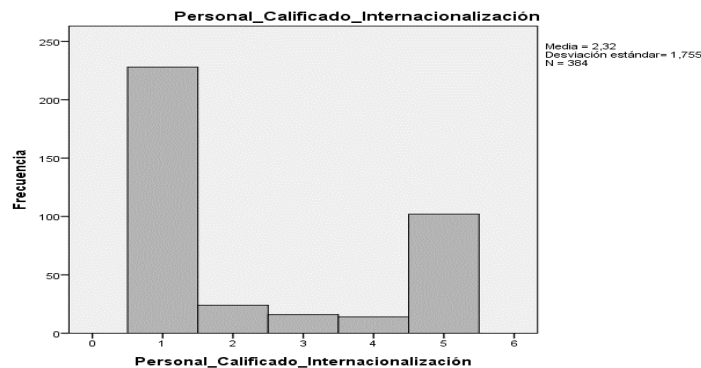Note. Created with SPSS Analytical Software.

Figure 6. Frequencies of qualified personnel criteria internationalization.

Note. Created with SPSS Analytical Software.

CONCLUSIONS

The study concludes that internationalization is a complex and challenging process for MSMEs in the southern Aburrá Valley. The results suggest that companies need support in areas such as identifying potential markets, adapting products and services to the needs of foreign clients, and managing the risks associated with exporting.

Likewise, the results of the study support the hypothesis that MSMEs in the region have a limited organizational structure and owners with a restricted academic background. This suggests that the companies need support in areas such as financial management, strategic planning and human resource management.

Lack of access to financing was identified as one of the main barriers to the internationalization of MSMEs in the region. The results suggest that companies need support in areas such as identifying sources of financing, preparing loan applications, and debt management.

Similarly, the results of the study suggest that MSMEs in the region are relatively new to the market and lack export experience. This suggests that companies need support in areas such as identifying export opportunities, preparing export documents, and managing export logistics.

Last but not least, the validation of the instrument used in the study by experts in the field ensured the accuracy, relevance and usefulness of the information collected, which supports the validity of the results obtained. This

suggests that the instrument used in the study may be useful for future research on the internationalization of MSMEs in other regions or countries.

REFERENCES

[1]. Arias Gonzáles, j. L., & Muñoz Durán, h. (2021). Development and validation of a scale to measure leadership skills in a remote work environment (cletr). Accounting and Business, 16(32), 23-37. Https://doi.org/10.18800/contabilidad.202102.002.

[2]. Castro, a. B., Saavedra García, m. L., & Vargas vega, t. De j. (2022). The entrepreneurial profile of microentrepreneurs in the states of Mexico and Chiapas. Apuntes del cenes, 41(73). Https://doi.org/10.19053/01203053.v41.n73.2022.13019.

[3]. Galviz Cataño, DF, and Jiménez Guzmán, A. (2021). Sustainable Development Goals: Level of progress in the Malouyen Wayúu community of La Guajira Colombia. Revista Venezolana de Gerencia, 26(Especial 6), 205-222. https://doi.org/10.52080/rvgluz.26.e6.13.

[4]. Ministry of commerce, industry and tourism (2019, June 5). Decree 957 of 2019. Whereby chapter 13 is added to title 1 of part 2 of part 2 of book 2 of decree 1074 of 2015, single decree of the trade, industry and tourism sector and article 2o of law 590 of 2000, modified by article 43 of law 1450 of 2011, is regulated. Https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?I=94550.

[5]. Muñoz Ruiz, JA, Cardona Acosta, JC, Galviz Cataño, DF, & Rico Valencia, JJ (2018). Strategic thinking: A tool for organizational competitiveness. In Y. Chirinos Araque, AG Ramírez García, R. Godínez López, N. Barbera Alvarado, & DC Rojas Nieves (Coords.), Trends in University Research. A view from Latin America (pp. 175-187). ISBN

[6]. Rodríguez-rodríguez, j., & reguant-álvarez, m. (2020). Calculating the reliability of a questionnaire or scale using spss: cronbach's alpha coefficient. Reire revista d innovació i recerca en educació 13(2). Https://doi.org/10.1344/reire2020.13.230048.

[7]. Ruff escobar, c., Ruiz Toledo, m., Matheu Pérez, a., Juica Martínez, p., & Anabalón arenas, g. (2021). Management effectiveness in universities from student quality perception models: the Bernardo O'higgins university model. Journal of quantitative methods for economics and business, 31, 259-279. Https://doi.org/10.46661/revmetodoscuanteconempresa.4336.

[8]. Toro, r., peña-sarmiento, m., Avendaño-Prieto, b. L., Mejía-Vélez, s., & Bernal-Torres, a. (2022). Empirical analysis of cronbach's alpha coefficient according to response options, sample and outlier observations. Revista iberoamericana de diagnóstico y evaluación - e avaliação psicológica, 63(2), 17. https://doi.org/10.21865/ridep63.2.02.

[9]. Torres Taborda, s. L. (2015). Business competitiveness: a challenge for strengthening the Colombian economy. Innovación empresarial, 1(1), 43-50.