

<https://doi.org/10.48047/AFJBS.6.14.2024.8445-8457>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Contextual and technological factors in the creation of innovative micro and small enterprises in emerging economies Factores contextuales y tecnológicos en la creación de Micro y Pequeñas empresas innovadoras en economías emergentes

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Volume 6, Issue 14, Aug 2024

Received: 15 June 2024

Accepted: 25 July 2024

Published: 15 Aug 2024

doi: 10.48047/AFJBS.6.14.2024.8445-8457

Abstract: Micro and Small Enterprises (MSEs) contribute to the economic development of countries. The aim of the present study was to establish the incidence of contextual and technological factors in the creation of innovative Micro and Small Enterprises in emerging economies. The approach used was quantitative, with a non-experimental design. The population consisted of entrepreneurs of MSEs, totaling 6.1 million MSEs. Using intentional non-probabilistic sampling, 180 MSE entrepreneurs offering commercial services in Lima were selected during the year 2023. The instruments were validated and reliable, with contextual factors scoring 0.955, technological factors scoring 0.922, and the variable of creation of innovative MSEs scoring 0.812 points. It was concluded that contextual and technological factors influence 70.8% in the creation of innovative Micro and Small Enterprises in emerging economies. Additionally, according to Wald=40.498; p=0.000, technological factors better predict the creation of innovative Micro and Small Enterprises in emerging economies.

Keywords: Contextual factors, technological factors, Micro and Small Enterprises, innovation, emerging economy

Introduction

Micro and small enterprises (MSEs) face numerous challenges to their growth and sustainability, such as limited access to finance, capital, markets, digital infrastructure, skills enhancement, government support, among others. Many of the challenges are context-specific, related to the economic sectors in which they operate and to their often informal status. Due to all these factors, small economic units are highly vulnerable to economic crises (as

demonstrated by the COVID-19 pandemic), natural disasters, or others. In a rapidly changing world of work, and in the context of a just transition, supporting small economic units through key policy measures is more critical than ever; their resilience and continued role in generating income and livelihoods for the vast majority of the world's inhabitants must be ensured (International Labour Organization [ILO], 2023).

The formation and progress of small and medium-scale enterprises has been promoted, considering them as an opportunity to enrich and strengthen the country's economy (Ibarra *et al.*, 2017). Economic growth creates new opportunities and energy for faster monetary and social development (business-friendly communities) (Myovella *et al.*, 2020). This requires technology, the effects of digitalization on technological innovations in products and processes with a specific focus on digital interconnection in production and logistics, digital value chains in micro and small enterprises (MSEs). Digitalization is today a critical driver of innovation in companies, research centers and government agencies (Organisation for Economic Co-operation and Development [OECD], 2020).

Micro, small and medium-sized enterprises (MSEs), represent more than 90% of companies in Latin America, who face the challenge of systematically benefiting from technology and innovation, due to asymmetries in capacity and negotiation compared to large organizations (Osorno-Hinojosa *et al.*, 2023). In this sense, the economic development of Latin American countries depends largely on the performance of micro, small and medium-sized enterprises (Dini and Stumpo, 2018).

Most microenterprises are unsustainable in the long-term continuation of the business, because they did not achieve relevant objectives to meet present and potential economic, environmental and social needs (Silberg *et al.*, 2017). Therefore, companies are increasingly aware of the need to be sustainable, not only financially, but also socially and environmentally, to ensure their permanence in the long term. This requires proactive action in society, respecting the sustainability of resources and the environment in which future generations will live (Galvao *et al.*, 2019).

Entrepreneurship is presented as a significant issue in the field of scientific research. In recent years, it has gained recognition from both the academic community and governments globally, highlighting the relevance of entrepreneurship in stimulating business activities and its influence on the economy of most nations (Bakir and Gunduz, 2020). Making the decision to

start a business is crucial and, in particular, can represent a significant option to address the unemployment challenges faced by recent university graduates (Morales and Melchor, 2021).

In the Peruvian context, micro and small businesses occur within the framework of Supreme Decree DS No. 008 (2008) established the promotion, competitiveness of formalization of MYPE and enables access to decent employment. Currently, the Ministry of Labor and Employment Promotion (2022) communicated that companies must register for the registration verification for new companies, requesting that the current requirements be met. However, these companies have not achieved the expected growth and most operate in the informal economy. Since this sector is crucial for generating employment and income, especially for those with fewer resources and opportunities, it is imperative that both the State and society as a whole carefully examine its situation and make significant changes to offer an environment with more options and opportunities for development (Aliaga, 2021).

Given the problem expressed, the research question was raised: What is the impact of contextual and technological factors on the creation of innovative micro and small enterprises in emerging economies? The general objective of the study was: To establish the impact of contextual and technological factors on the creation of innovative micro and small enterprises in emerging economies.

The international background of Raicic and Petrovic (2023) found the impact of digitalization on technological innovations of products and processes in small and medium-sized enterprises. Three forms of digitalization are considered: digitalization in production and logistics, digital value chains and big data analysis. The empirical findings confirm that the impact of digitalization on innovation activities is heterogeneous among MSEs. In addition, the effects of technological innovation are limited and depend on the form of digitalization and the type of innovation. Another study by Fazal *et al.* (2021) found that competencies such as commitment, conceptual skills, the ability to identify opportunities, organization, relationship skills, and the implementation of relevant policies improve the sustainability of microenterprises.

The contextual factors variable refers to the characteristics of the context of micro and small enterprises; such as: cultural, social, economic, political and legal guidelines, environmental; which influence the creation of MSMEs (Cubas *et al.*, 2021).

In the contextual factors of the creation of MSMEs, the importance of promoting the innovative culture is evident, developing it through collaboration with research entities. Companies that

have formal innovation plans and develop both internal and external search strategies are more likely to strengthen their innovation culture through such collaboration (Olmos *et al.*, 2017). The socioeconomic factor of contextual factors is the set of social and economic interactions, as well as lived experiences, that influence the formation of personality, attitudes and perception of reality both at individual and group level. These influences can vary depending on the region or social group to which they belong (Chase, 2017). It is very important, because the lack of financial support does not guarantee the sustainability of MSMEs (Zapata *et al.*, 2019). In this sense, the socioeconomic factors for the initial implementation of a MSME positively influence its adoption process. This includes the ability to take advantage of new market opportunities generated by free trade agreements and the advancement of information and communication technologies (Ruiz and Perilla, 2019).

Political and legal factors are made up of the guidelines established by the different levels of government, regulated by institutions and governmental powers (Cubas *et al.*, 2021). It means acquiring skills and technology, as government and public policies are fundamental contextual elements that can enhance the innovative performance of companies. In this sense, policy makers have a crucial role, since these policies play both direct and supporting roles in promoting and sustaining innovation, which drives economic growth and regional development (Choi & Lim, 2017).

The technological factors variable consists of resources that enable procedures and actions that allow achieving commercial business goals (Cubas *et al.*, 2021). Through computing devices, internet connection, use of networks; interconnections with which electronic procedures are carried out with banks and clients to generate profitability, competitiveness and business growth (Ríos, 2019).

Technology is important in micro and small businesses, because digital transformation represents a new fourth industrial revolution that brings radical changes in business models and their performance (Lorenz *et al.*, 2020). The fourth wave of industrialization called Industry 4.0 is characterized by the digitalization of manufacturing through the interconnection of not only different information and communication technologies (ICTs), but also between ICTs and production facilities such as machines, products, devices, and online content to autonomously trigger actions (Sarbu, 2021).

The drive towards digital transformation presents the belief that new technologies have great potential to drive innovation and competitive advantage (Solberg *et al.*, 2020). A digital

revolution expands the boundaries of companies from supply and value chain systems to value network systems, promotes the development of new technologies, and fosters the integration of new technologies into new technologies.

Method

The research was developed in a quantitative approach of non-experimental design. The population was made up of entrepreneurs from MSMEs that make up a total of 6.1 million MSMEs nationwide (COMEX, 2023). However, for the present study, an intentional non-probabilistic sampling was used, since the population is large and a group of entrepreneurs was selected as a representative sample, obtaining a number of 180 MSME entrepreneurs surveyed. The inclusion criteria were entrepreneurs from micro and small businesses that offer commercial services in a district of Lima and that were emerging during the year 2023, finally, the entrepreneurs who agreed to participate in the survey by giving their informed consent were considered.

The technique was the survey for the three variables and the instruments used were the questionnaires. Regarding the contextual factors variable, a questionnaire with four factors was presented, containing 24 items, distributed in cultural values (6 items); socioeconomic factors (6 items), political, legal (4 items) and environmental factors of entrepreneurship (8 items). The variable of technological factors presented a questionnaire with 3 factors, containing 12 items, distributed in the factor access to technology (3 items), factor level of digitalization (6 items) and the factor capacity for technological innovation (3 items). The variable creation of innovative SMEs, presented a questionnaire with 3 dimensions, containing 16 items; distributed in the dimension profile and characteristics of the entrepreneur (5 items), the dimension innovation in products, services or processes (5 items) and the dimension government measures (2 items) and cooperation with universities, companies, government, clients and suppliers (4 items).

The instruments presented content validity through expert judgment and the reliability was Cronbach's Alpha by the ordinal scale that the instruments have; whose results were: The reliability of the contextual factors obtained a value of 0.955; The results of technological factors with a value of 0.922 and the results of the variable creation of innovative SMEs, obtained 0.812 points; therefore it was interpreted as strong reliability of the instruments.

Results

The descriptive results of the contextual and technological factors in the creation of innovative micro and small businesses in emerging economies were developed, obtaining the following results:

Table 1. *Descriptive levels of the contextual factors*

Variable/dimensions	Low		Regular acceptable		Good adequate		Total	
	f	%	f	%	f	%	f	%
Contextual factors	23	12.8	123	68.3	34	18.9	180	100
Cultural values	21	11.7	130	72.2	29	16.1	180	100
Socioeconomic	21	11.7	135	75.0	24	13.3	180	100
Politicians and legal in entrepreneurship	32	17.8	132	73.3	16	8.9	180	100
Environmental in entrepreneurship	29	16.1	109	60.6	42	23.3	180	100

Table 1 shows that respondents perceived a low level of 12.8%, a regular acceptable level of 68.3%, and a good adequate level of 18.9% of the contextual factors for the creation of innovative SMEs. The cultural values factor presented a low level of 11.7%, a regular acceptable level of 72.2%, and a good adequate level of 16.1%. The socioeconomic factor was perceived as low by 11.7%, a regular acceptable level of 75%, and a good adequate level of 13.3%. The political and legal factor of entrepreneurship, a low level of 17.8%, a regular acceptable level of 73.3%, and a good adequate level of 8.9%. The environmental factors in entrepreneurship, a low level of 16.1%, a regular acceptable level of 60.6%, and a good adequate level of 23.3%.

Table 2. *Descriptive levels of technological factors*

Variable/dimensions	Low		Regular		Implemented		Total	
	implementation		implementation					
	f	%	f	%	f	%	f	%
Technological factors	24	13.3	102	56.7	54	30.0	180	100
Access to Technology	24	13.3	123	68.3	33	18.3	180	100

Digitalization Level	24	13.3	101	56.1	55	30.6	180	100
Technological Innovation Capacity	20	11.1	124	68.9	36	20.0	180	100

In table 2, respondents perceived a 13.3% of low technological implementation, 56.7% a regular level of implementation and 30% an implemented level. In the access to technology factor, 13.3% of low implementation, 68.3% regular implementation and 18.3% implemented. In the level of digitalization factor, 13.3% presented low implementation, 56.1% regular level of implementation and 30.6% implemented. In the technological innovation capacity factor, 11.1% of low implementation, 68.9% regular implementation and 20% implemented.

Table 3. Descriptive levels of the creation of innovative micro and small businesses in emerging economies

Variable/dimensions	Inadequate level of creation		Regular level of creation		Adequate level of creation		Total	
	f	%	f	%	f	%	f	%
Creation of innovative SMEs	28	15.6	108	60.0	44	24.4	180	100
Profile and characteristics of the entrepreneur	20	11.1	100	55.6	60	33.3	180	100
Innovation in products, services or processes	18	10.0	111	61.7	51	28.3	180	100
Government Measures	32	17.8	114	63.3	34	18.9	180	100
Cooperation with universities, companies, government, clients and suppliers	44	24.4	113	62.8	23	12.8	180	100

In Table 3, respondents perceived 15.6% of the level of creation of innovative SMEs as inadequate, 60% of the level of creation as average, and 24.4% of the level as adequate. Regarding the profile and characteristics of the entrepreneur, 11.1% perceived an inadequate

level, 55.6% a regular level, and 33.3% an adequate level. In the innovation of products, services, or processes, 10% perceived an inadequate level, 61.7% a regular level, and 28.3% an adequate level. In government measures, 17.8% perceived an inadequate level, 63.3% a regular level, and 28.3% an adequate level. In cooperation with universities, companies, government, customers, and suppliers, 24.4% perceived an inadequate level, 62.8% a regular level, and 12.8% an adequate level of creation.

Table 4. Model fit and R-square of contextual and technological factors in the creation of innovative micro and small enterprises in emerging economies

Model	Log				Pseudo R squared	
	likelihood-2	Chi squared	gl	Sig.		
Intersection only	199.383				Cox y Snell	0.600
Final	34.289	165.094	4	0.000	Nagelkerke	0.708
					McFadden	0.488

The likelihood ratio of the model adjustment had a significant result ($\chi^2 = 165.094$; $p = .000$ and $p < 0.05$). Establishing that the logistic regression model is adequate. The result of Nagelkerke's Pseudo R^2 was 0.708; therefore it was interpreted that contextual and technological factors influence 70.8% in the creation of innovative Micro and small businesses in emerging economies.

Table 5. Estimation of the parameters of the model that explains the impact of contextual and technological factors on the creation of innovative micro and small businesses in emerging economies

							Intervalo de confianza al 95%	
		Estimación	Desv. Error	Wald	gl	Sig.	Límite inferior	Límite superior
Umbral	[Creation_micro_sm all = 1]	-6,990	,726	92,736	1	,000	-8,413	-5,568
	[Creation_micro_sm all = 2]	-1,351	,424	10,143	1	,001	-2,183	-,520

Ubica	[Contex_Fac=1]	-3,840	,953	16,253	1	,000	-5,707	-1,973
ción	[Contex_Fac=2]	-,942	,623	2,285	1	,131	-2,163	,279
	[Contex_Fac=3]	0 ^a	.	.	0	.	.	.
	[Tech_fac=1]	-5,975	,939	40,498	1	,000	-7,815	-4,135
	[Tech_fac=2]	-3,349	,649	26,601	1	,000	-4,621	-2,076
	[Tech_fac=3]	0 ^a	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Table 5 found that technological factors (Wald=40.498; $p=0.000<0.05$) predict the creation of innovative micro and small businesses in emerging economies.

Discussion

The results of the study found that contextual and technological factors influence the creation of innovative micro and small businesses in emerging economies by 70.8%. Likewise, according to Wald=40.498; $p=0.000$; technological factors better predict the creation of innovative micro and small businesses in emerging economies. Corroborating what was found by the OECD (2020), it indicated that technology is necessary, the effects of digitalization on technological innovations in products and processes with a specific focus on digital interconnection in production and logistics, digital value chains in micro and small businesses (MSEs). Digitalization is today a critical factor of innovation in companies, research centers and government agencies.

Similarly, it is consistent with Raicic and Petrovic (2023) who found the impact of digitalization on technological innovations in products and processes in small and medium-sized businesses. In this sense, technology is important in micro and small businesses, because digital transformation represents a new fourth industrial revolution that brings radical changes in business models and their performance (Lorenz et al., 2020).

Similarly, in the present study, respondents perceived 13.3% of low technological implementation, 56.7% of regular implementation and 30% of implemented level. In the access to technology factor, 13.3% of low implementation, 68.3% of regular implementation and 18.3% implemented. These results are evidenced by Osorno-Hinojosa *et al.* (2023) who stated that 90% of SMEs in Latin America face the challenge of systematically benefiting from technology and innovation, due to asymmetries in capacity and negotiation compared to large organizations. Therefore, SMEs should be encouraged towards digital transformation, due to

the belief that new technologies have great potential to generate innovation and competitive advantage (Solberg *et al.*, 2020).

For the creation of innovative micro and small businesses in emerging economies, it is necessary to develop skills such as commitment, conceptual skills, the ability to identify opportunities, organization, relationship skills and the implementation of relevant policies improves the sustainability of microenterprises (Fazal *et al.*, 2021). Since the creation of micro and small businesses contributes to financial development, it contributes to general progress related to increased investment, access to capital, efficient allocation of resources, risk management, technology and innovation, poverty reduction and social welfare. It is necessary to invest in education and training because it plays a key role in achieving entrepreneurship goals and preparing prospects to become entrepreneurs in the future (Miço & Cungu, 2023).

Conclusions

According to the stated objective, it is concluded that contextual and technological factors influence 70.8% of the creation of innovative micro and small businesses in emerging economies. Likewise, according to Wald=40.498; p=0.000; technological factors better predict the creation of innovative micro and small businesses in emerging economies.

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