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STEERING THROUGH THE LANDSCAPE: A STUDY ON ENTREPRENEURS' PERCEPTIONS OF BUSINESS ENVIRONMENTS

**Gelmar García-Vidal^a, Laritza Guzmán-Vilar^b, Alexander Sánchez-Rodríguez^{c*},
Reyner Pérez-Campdesuñer^a and Rodobaldo Martínez-Vivar^a**

^aUniversidad UTE. Faculty of Law, Administrative and Social Sciences.

Quito, 170527, Ecuador

^bCalle Manuel Valdivieso, Paseos de Pichincha. Quito, 170527, Ecuador

*^cUniversidad UTE. Faculty of Engineering Sciences and Industries.
Quito, 170527, Ecuador*

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Abstract

The purpose of this research is to analyze the perception of the environment by SME owners and managers. The research methodology used in this study involved collecting information from 384 SME owners-managers from different sectors of the economy in Santo Domingo de los Tsáchilas, Ecuador. Proportional stratified sampling was used with 95% confidence and an error of 5%. The data was collected through a self-administered cross-sectional survey questionnaire that aimed to get SME owner-managers to describe how they perceive their environment making a combination of the value of each variable. The study applied categorical principal component analysis (CATPCA) to identify the component structure of social capital by considering the ordinal and nominal nature of the data. The methodology used allowed us to understand the perception of the environment by different SME owner-managers from different sectors of the economy. It also revealed the strategic approach they considered most appropriate to the market situation in which they operate. The practical implications of this research suggest that SME owner-managers can benefit from understanding the perception of the environment by adopting flexible and adaptable solutions to changing environmental conditions, using environmental profiles to uncover opportunities, and anticipating changes to gain valuable insights.

Keywords: perception, environment, SMEs, Ecuador

* Corresponding author: alexander.sanchez@ute.edu.ec

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1. INTRODUCTION

Small and medium-sized businesses (SMEs) play a bigger part in the economy as it continues to rapidly change and become more globalized (Ali & Varoğlu, 2022). These businesses stand out from larger corporations thanks to certain traits, and their significance for boosting employment and income cannot be understated. Their choices could have a big effect on not only their own companies but also the larger national and even international economies. SME owner-managers must deal with a variety of internal and external factors that affect the operation of their businesses, and running an SME is not without its challenges. One of the crucial factors affecting a SME's success is the owner-manager's perception of the business environment. Because of this, it's critical for SMEs to understand how their perceptions of their environment affect how they make decisions.

SMEs must be able to improve their perception of the environment in which they operate and use this information to guide their decision-making if they are to reach their full potential. However, studies have shown that SMEs often struggle with accurately perceiving the environment in which they operate (Demirbas et al., 2011; Fassin et al., 2011; Leaptrott & McDonald, 2015; Theodore et al., 2022; Adeosun & Owolabi, 2023). The authors of this paper, following the literature reviewed, named several limitations in the study of organizational environment, which can hinder the effectiveness of its perception.

The first limitation to the study of the environment is its understanding and conceptualization. In terms of its understanding, the environment may suffer from over-abstraction or reductionism. Over-

abstraction occurs when the environment is defined too broadly, resulting in inappropriate aggregation of disparate environmental units (Castrogiovanni, 1991). In the other hand, reductionism occurs when the investigations try to reduce the analysis of the industry. Other factors such as technological change, regulatory changes, and macroeconomic conditions can also have a significant impact on businesses (Jung et al., 2020). From the other reductionistic point of view, some studies have focused on individual dimensions of the environment rather than considering it as a system. This can lead to an incomplete understanding of how different dimensions interact with each other and affect businesses (Shortell, 1977; Castrogiovanni, 1991).

The literature also recognize a lack of clarity in the use of concepts related to environmental dimensions, which creates problems to study them, presenting a challenge in articulating and operationalizing important concepts associated with organizational work contexts (Shortell, 1977; Rasheed & Prescot, 1992). The existing conceptualizations of organizational task environments have become increasingly sophisticated, but there is still a lack of integration among different dimensions and little analysis of the implications of alternative combinations of environmental dimensions (Shortell, 1977; Lichtmannegger, 2019).

In general, it's possible that the underlying environmental mechanisms are not fully understood. This means that studies of the environment may be conducted ineffectively because researchers may not fully comprehend how it functions. Owner-managers may, in practice, base decisions on false or incomplete information, which can result in subpar performance. But even if the

underlying mechanisms are understood, certain critical parameters associated with them may be known only approximately or partially. This means that researchers may have an incomplete understanding of some of the key factors that influence the environment (Ewusi-Mensah, 1981).

The second limitation in the study of the environment stems from its very nature. It is challenging to fully comprehend and predict the environment because it is a complex, multifaceted, and dynamic construct. Because of this, it is challenging for organizations to keep up with long-term environmental changes (Tung, 1979; Stieglitz et al., 2016). SMEs Owner-managers frequently fail to consider the contingencies that result from the environment's dynamic nature, even when they do acknowledge it.

The environment is made up of many different elements, some of which may be challenging to separate and analyze separately. These elements include economic, social, political, technological, and legal elements. These variables change frequently and interact with one another in complex ways. These contingencies can include changes in customer preferences, technological advancements, or shifts in regulatory policies (Sirmon et al., 2007). Because of this, it may be challenging to fully comprehend the true nature of the environment at any given time. It takes careful analysis and interpretation to comprehend these intricate interactions (Tung, 1979; Miller & Friesen, 1983; Dollinger, 1984).

The third limitation in the study of the environment is associated with its measurement. The absence of consensus about the measurement of the dimensions of environment in the literature on the theory of

organizations worsens the situation. First of all is a challenge define the different dimensions or aspects of an organizational environment; it can be difficult to determine which dimensions are most relevant to a particular study or how they should be operationalized (Tung, 1979; Dess & Rasheed, 1991).

Even if owner - managers are able to identify the relevant dimensions of an organizational environment, there may be challenges in accurately measuring these variables (Miles et al., 1974; Dess & Rasheed, 1991; Bataglia et al., 2013). Additionally, different owner - managers may use different methods or instruments to measure the same construct. This can be challenging because different measures may produce different results, making it difficult to compare findings across studies (Dess & Rasheed, 1991; Rasheed & Prescott, 1992). As mentioned before, may be inherently unpredictable and unsettled, so it may not be possible to prevent events or restructure the firm in anticipation of their occurrence, for that reason measuring this construct can be challenging, as it involves assessing a wide range of factors (Miles et al., 2000; Lengnick-Hall & Beck, 2005; Stieglitz et al., 2016).

Managers must be able to identify and respond to environmental contingencies while also effectively managing their organization's resources and capabilities, but with all the mentioned limitations collecting data on perceptions of the environment is a challenging and complex task (Yasai-Ardekani, 1989; Miles et al., 2000; Sirmon et al., 2007; Jundt & Shoss, 2023). The literature suggests that there are some limitations in the study of the perceptions of the organizational environment mainly because it is difficult to measure managers'

perceptions accurately. More research is required to develop more accurate methods for measuring and analyzing this crucial factor because the understanding and measurement of how people perceive their organizational environments currently has limitations (Yasai-Ardekani, 1989; Bradley et al., 2011).

Managers' perceptions are arbitrary and subject to a range of influences, including personal experiences, biases, and cognitive processes. Therefore, it can be challenging to develop reliable measures of managers' perceptions that capture their true beliefs about the environment (Yasai-Ardekani, 1989). Another limitation is that managers may not always have access to complete or accurate information about their environment. This can lead to inaccurate perceptions and decisions based on incomplete or incorrect information (Yasai-Ardekani, 1989; Miles et al., 2000).

Finally, owner - managers may have different perceptions of the same environmental conditions depending on their experiences and perspectives and the cultural and contextual factors that influence how they perceive their environment. These differences can affect the accuracy of its assessment and make challenging to develop a shared understanding of the environment (Tung, 1979; Miller & Friesen, 1983; Dollinger, 1984; Yasai-Ardekani, 1989). These different perceptions may be related to a lack of attention to understanding how observed variables interact with each other and contribute to abstract concepts being studied (Keats & Hitt, 1988) and can finally lead to different strategic decisions and outcomes. These limitations make it difficult to fully understand how owner – managers perceive their environment and how they can adapt to changing conditions (Miles et al.,

1974; Theodore et al., 2022; Adeosun & Owolabi, 2023).

If all of the above is confined to the context of SMEs, then it is necessary to say that this type of organizations often have less formalized organizational structures and limited resources to implement systems to support scanning activities which means that some organizations have no access to tools or technologies that can help them collect and analyze information about their external environment (Miles et al., 2000; Zhang et al., 2013). Lack of time to devote to environmental scanning activities due to other pressing demands is also an obstacle (Zhang et al., 2013). Finally, lack of human resources is another limitation, suggesting that these organizations do not have enough staff or expertise to carry out environmental scanning activities effectively (Zhang et al., 2013).

Despite these limitations, this paper considers environment to be an important construct to study. A better understanding of the environment can help SME owner-managers make more informed decisions (Rasheed & Prescott, 1992). The lack of theoretically compelling and empirically sound scheme for operationalizing the study of environment perception has been a challenge for authors aiming to understand the way SME owner -managers perceive its environment (Miles et al., 2000; Demirbas et al., 2011; Fassin et al., 2011; Adeosun & Owolabi, 2023).

The authors suggest that SME owner - managers should pay attention to their perceptions of the external environment and use this information to develop more accurate cognitive maps that can guide their strategic decision-making and improve overall organizational performance. Additionally, by understanding the external

environment, SME leaders can identify opportunities and threats, and adjust their strategies accordingly (Payne et al., 2005). This paper aims to explore the SME owner-manager perception environment in which they perform and how it affects their strategic decision-making.

2. LITERATURE REVIEW

The importance of studying the environment cannot be overlooked (Lichtmannegger, 2019; Godoy-Bejarano et al., 2020; Adeosun & Owolabi, 2023; Skandera et al., 2023).

A broad classification of the environment includes two categories that influence organizational performance (Shafman & Dean, 1991; Lengnick-Hall & Beck, 2005; Abebe, 2012; Zhang et al., 2013).

1. Task environment: refers to the immediate external influences that owner-managers need to manage and respond to effectively because directly affect an organization's operations and performance. Understanding the task environment helps organizations adapt to specific market conditions and respond effectively to immediate challenges.

2. Macro environment: comprises the broad external factors that affect all organizations, irrespective of their specific industry or sector, but are beyond their immediate control. Understanding the macro-environment helps organizations anticipate and proactively adapt to long-term trends and systemic changes that may impact the organization's strategic direction and long-term sustainability.

Both of these environmental categories are critical for owner – managers to effectively respond to changes their business

face in their environment and achieve adaptive fit. In accordance with the foregoing, by environment we refer to the external factors and conditions in which an organization operates, and which interacts directly. It includes all of the factors and conditions that affect an organization's ability to set and achieve its objectives (Ben-Ner et al., 2012; Uotila, 2018; Davis et al., 2019), and the capacity to make decisions shaping, in this ways, organizational operations and performance (Huang et al., 2012; Rosenbusch et al., 2013; Zhang et al., 2013; Goyal & Mishra, 2019; Skandera et al., 2023).

These factors and conditions include customers, suppliers, competitors, creditors, regulators, and other stakeholders who are involved and have a direct impact on the organization's operations (Payne et al., 2005; Ben-Ner et al., 2012; Zhang et al., 2013; Davis et al., 2019) and interact with the organization on a regular basis (Lengnick-Hall & Beck, 2005; Volberda et al., 2012). These entities collectively play an important role in shaping the constraints for managerial actions (Abebe, 2012; Theodore et al., 2022; Adeosun & Owolabi, 2023). Also includes factors such as economic conditions, technological developments, political and legal factors, social and cultural factors and other variables that are outside of the company's direct control (Andrews, 2009; Goyal & Mishra, 2019). All those mentioned factors may vary depending on the industry, size, and location of the organization (Abebe, 2012). As living purposeful systems (Ewusi-Mensah, 1981), organization's survival depends on the ability of the owner – managers to interact successfully with the environment that shape strategies, technologies, structures, processes and outcomes (Dess & Rasheed, 1991;

Rosenbusch et al., 2013).

The environment can be classified into two main categories: stable and dynamic (Zhang et al., 2013; Yitzhack Halevi et al., 2015; Godoy-Bejarano et al., 2020; Ali & Varoğlu, 2022; Theodore et al., 2022). Within these two extremes there are several typologies, but most have been inspired by Emery and Trist (1965). Table 1 summarizes the above idea (Emery & Trist, 1965; Miles et al., 1974; Tung, 1979; Ewusi-Mensah, 1981; Davis et al., 2009; Ali & Varoğlu, 2022).

Most of the researchers assume four-dimensional classification to describe the content and nature of the environment in which an organization operates: complexity, dynamism, munificence, and hostility (Shortell, 1977; Miller & Friesen, 1983; Dess & Beard, 1984; Yasai-Ardekani, 1989; Rasheed & Prescot, 1992; Anderson & Tushman, 2001; Andrews, 2009; Ben-Ner et al., 2012; Volberda et al., 2012; Rosenbusch et al., 2013; Uotila, 2018; Davis et al., 2019; Jung et al., 2020). These variables can be explained as follows:

1. The Degree of interconnectedness, also known as Complexity, measures the extent of an organization's connections to other entities in its environment. It encompasses the number and diversity of external factors that impact the organization, reflecting the intricate and interdependent nature of its task environment. As inter-organization connections increase, complexity rises, necessitating the navigation of higher interdependencies. A complex environment

comprises diverse and interconnected elements, presenting challenges for organizations to adapt and respond effectively. Understanding and managing the intricate relationships among stakeholders, regulations, technologies, markets, and other variables become crucial in such environments. The level of uncertainty and interdependence in complex environments requires organizations to comprehend the interconnectedness of various factors to navigate successfully through changes and achieve optimal performance.

2. The Extent of change, known as Dynamism, refers to the level of stability or instability in the external environment and encompasses the rate and unpredictability of changes and innovations in the industry. It signifies the uncertainty and challenges in obtaining relevant information for informed decision-making. A dynamic environment experiences frequent and significant changes, making it unpredictable and requiring organizations to adapt and respond quickly. Turbulent and unstable environments demand agility, flexibility, and proactive approaches to navigate disruptions and capitalize on emerging opportunities. Small businesses operating in dynamic markets must be adaptable, responsive, and capable of making decisions amidst uncertainties and incomplete information. Understanding the level of dynamism helps organizations anticipate and adjust to environmental changes, developing strategies aligned with the pace and nature of those changes.

Table 1. Synthesis of the typology of the environment

General Typology	Specific Typology
Stable	Placid Disturbed
Dynamic	Turbulent Catastrophic

3. Munificence refers to the availability and abundance of resources in the external environment, including capital, raw materials, skilled labor, and technological advancements, that organizations can access and utilize. A higher level of munificence indicates a favorable environment with ample resources, opportunities, and lower competition. Understanding the level of environmental munificence helps organizations assess their resource availability and make strategic decisions regarding resource allocation, utilization, and acquisition, enabling them to pursue growth, innovation, and expansion strategies to capitalize on the available resources.

4. Hostility: Refers to the level of hostility or competition in the external environment. Indicates the degree of opposition or threat that external factors pose for an organization's survival or well-being. Represents the competitive and aggressive nature of other organizations in an organization's external context.

Understanding the level of hostility in the external environment is crucial for organizations to develop effective strategies and responses. It helps them anticipate and prepare for competitive challenges, identify potential threats, and seek opportunities for growth. Organizations operating in a hostile environment may need to invest in competitive intelligence, innovation, strategic partnerships, or other tactics to survive and thrive amidst intense competition and opposition.

It's important to note again that these characteristics may vary in their specific manifestations depending on the context and industry. Table 2 offers a general understanding of how the variables behave in each typology of environment.

The literature about the study of environment also offers a set of control variables that could be seen as key environmental variables are (Table 3).

The author of this investigation believe that is possible a combination between the

Table 2. The environment and its variables

Typology of Environment	Complexity	Dynamism	Munificence	Hostility
Placid	Low	Low	High	Low
Disturbed	Moderate	Moderate	Variable	Variable
Turbulent	High	High	Variable	High
Catastrophic	Very High	Very High	Low	Very High

Table 3. Key environmental variables

Author	Customer demand	Technological change	Level of competition	Regulatory framework	Economic volatility
Josefy et al., (2015)	•	•		•	•
Volberda et al. (2012)	•	•	•	•	•
Zahra (1993)	•	•	•		•
Yasai-Ardekani (1989)	•	•	•	•	
Ben-Ner et al. (2012).		•	•		•
Godoy-Bejarano et al. (2020)	•		•		•
Bradley et al. (2011)	•	•			
Lengnick-Hall and Beck (2005)				•	
Goyal and Mishra (2019)	•	•		•	
Zhang et al. (2013)	•			•	•
Abebe (2012)	•	•			

dimension and key environmental variables in a way Table 4 shows.

With all this knowledge is possible to present a final combination of key environmental and the typology of environment (Table 5).

It represents a synthesis of the literature analyzed in terms of the typology of the environment, its dimensions and key variables for its study. However, the analyzed literature also reports on essential elements that are directly affected by the knowledge of the environment. Firstly, the study of the external organizational environment, can help owner - managers to anticipate changes, adapt and respond to them more quickly, which is particularly important in dynamic markets where opportunities can quickly disappear (Castrogiovanni, 2002; Stieglitz et al., 2016; Jung et al., 2020). By scanning and monitoring their external environment,

owner – managers can gain valuable insights identifying potential changes, opportunities and threats, that could affect their firm's ability to create value showing the way into how organizations need to operate and adapt to those changes in their environment to effectively manage uncertainty (Dess & Beard, 1984; Sirmon et al., 2007; Ben-Ner et al., 2012; Stieglitz et al., 2016; Uotila, 2018).

Secondly, with this knowledge owner – managers can inform decisions about their resource allocation and competitive strategy (Stieglitz et al., 2016; Godoy-Bejarano et al., 2020; Jung et al., 2020). Environmental dynamism act as a boundary condition on the effectiveness of owner – managers in designing the strategies, their coordination and deployment to attend degree of uncertainty (Castrogiovanni, 2002; Sirmon et al., 2007), capitalize opportunities for growth (Lengnick-Hall & Beck, 2005; Sirmon et al., 2007), which can improve their

Table 4. Dimension and key environmental variables

Environmental Dimension	Key environmental variables				
	Customer Demand	Technological Change	Level of Competition	Regulatory Framework	Economic Volatility
Complexity	Increasing complexity in customer demands adds complexity to the business environment	Rapid technological advancements introduce new complexities	High level of competition contributes to complexity	Complex regulatory frameworks increase complexity	Economic volatility leads to uncertainty and complexity
Dynamism	Fluctuations and changing preferences in customer demand create a dynamic environment	Rapid technological change drives industry dynamics	High level of competition indicates a dynamic environment	Frequent changes in regulatory policies introduce dynamism	Economic volatility leads to a dynamic environment
Munificence	High customer demand and purchasing power indicate a munificent environment	Abundant technological change contributes to a munificent environment	Moderate level of competition fosters a munificent environment	Supportive regulatory framework creates a munificent environment	Stability and low volatility in the economy contribute to munificence
Hostility	Unpredictable or declining customer demand creates a hostile environment	Disruptive technological change creates a hostile environment	Intense competition and market saturation contribute to a hostile environment	Hostile regulatory policies create a hostile environment	High economic volatility creates a hostile environment

organization's strategic effectiveness (Yitzhak Halevi et al., 2015; Uotila, 2018).

Thirdly, an informed strategic decision allows to reconfigure their bundle of resources to stay in a particular environment (Josefy et al., 2015; Stieglitz et al., 2016; Godoy-Bejarano et al., 2020; Jung et al., 2020), directing the owner – manager's attention to specific areas for a positive outcome (Andrews, 2009; Abebe, 2012). This managerial behavior can have a significant impact on a business performance and competitiveness in the long run (Huang et al., 2012; Volberda et al., 2012; Josefy et al., 2015; Godoy-Bejarano et al., 2020; Jung et al., 2020). Finally, some researchers assume two basic assumptions regarding the nature of the environment. The first assumption is that there exists an objective, realist environment, constituted by visible and explicit elements of concrete nature. The second assumption is a relational-cognitive standpoint, envisioning the environment as a social construct, emphasizing the importance of social and cognitive processes in

understanding the environment (Bataglia et al., 2013; Waithereroa et al., 2019; Theodore et al., 2022; Adeosun & Owolabi, 2023).

Taking into account the above, it is important for SMEs owner – manager to have a good perception of the environment in which they are operating because this perception influences (1) the identification of areas where they may need to invest in new resources or capabilities (Bradley et al., 2011; Godoy-Bejarano et al., 2020; Jung et al., 2020); (2) the identification of potential threats and opportunities (Ali & Varoğlu, 2022; Davis et al., 2009); (3) the way in which the organizations build relationships with stakeholders such as customers, suppliers, and investors (Stieglitz et al., 2016; Uotila, 2018; Goyal & Mishra, 2019). They way are understood the contingencies they face affect the way they adapt their strategic posture in order to remain competitive and achieve better performance over time (Ewusi-Mensah, 1981; Volberda et al., 2012; Godoy-Bejarano et al., 2020;). Therefore, SMEs owner – managers'

Table 5. Typology of environment and key environmental

Environmental Typology	Customer Demand	Technological Change	Level of Competition	Regulatory Framework	Economic Volatility
Placid	Stable and predictable customer demand	Slow-paced and incremental technological change	Moderate level of competition	Stable and consistent regulatory framework	Low economic volatility
Disturbed	Fluctuating customer demand due to various factors	Moderate technological change with occasional disruptive innovations	High level of competition due to unpredictable market conditions	Occasional changes or updates in the regulatory framework	Moderate economic volatility
Turbulent	Highly volatile and rapidly changing customer demand	Rapid and frequent technological change with disruptive innovations	Intense competition from existing and new players	Frequent changes and updates in the regulatory framework	High economic volatility
Catastrophic	Severe disruptions leading to a sharp decline in customer demand	Technological change disrupted or temporarily halted	Temporary reduction in competition as businesses focus on survival and recovery	Emergency measures and temporary changes in the regulatory framework	Extremely high economic volatility

perception of the environment can influence their decision-making processes by shaping their cognitive maps or frameworks for understanding organizational behavior which is crucial for SMEs to succeed in dynamic and unpredictable environments.

The literature reviewed argues that managers' perceptions of environmental conditions play a key role in the process of business structural adaptation. Organizations come to know their environments only via owner – managers' perceptions. Consequently, owner – managers' perceptions of environmental conditions lie at the heart of structural adaptations to environments (Yasai-Ardekani, 1989; Demirbas et al., 2011; Fassin et al., 2011; Adeosun & Owolabi, 2023). Hence, neglecting the role of owner – managers' perception can have negative implications for strategic management process and ultimately their performance.

Perceptions guide the strategic choices managers make to achieve a better fit between their organizations and the environment. Figure 1 shows a general overview of the behaviors that could be

assumed by owner-managers according to their perception of the environment.

Other behaviors can also be exemplified depending on whether owner-managers perceive opportunities or threats in their environment. If owner – managers perceives a new market opportunity that there is increasing demand for a particular product or service they may choose to restructure its operations, to invest in new production facilities, to invest in more resources in developing that product or service or hire additional staff to meet this demand and to capitalize on this opportunity (Lengnick-Hall & Beck, 2005; Josefy et al., 2015; Godoy-Bejarano et al., 2020). On the other hand, if owner – managers perceives that there is a threat from new competitors entering the market increasing competition it can adjust its strategies to defend against that threat (Dollinger, 1984; Theodore et al., 2022) or they may choose to restructure their organization in order to become more efficient or develop new strategies for competing with other firms (Lengnick-Hall & Beck, 2005; Josefy et al., 2015; Ali & Varoğlu, 2022).

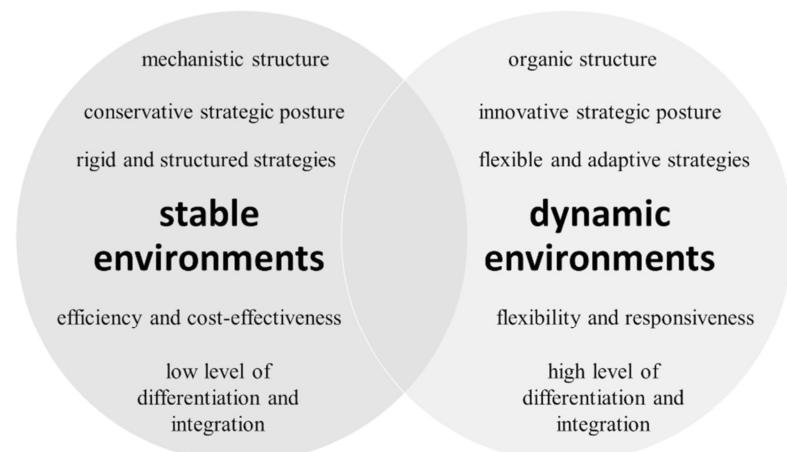


Figure 1. Administrative behavior according to perception of the environment (Source: Payne et al. (2005); Demirbas et al. (2011); Fassin et al. (2011); Uotila (2018); Goyal and Mishra (2019); Ali and Varoğlu (2022); Adeosun and Owolabi (2023)).

An owner – managers may be more inclined to invest in growth-oriented tactics, such as increasing their product range or opening new sites, if they perceive that the local economy is booming. On the other hand, if they perceive that the local economy is experiencing difficulties, they can be more motivated to concentrate on cost-cutting strategies or diversifying their revenue sources (Andrews, 2009). It is possible to see how important aspects of the environment are inextricably linked to owner – managers' perception. Because of this, the authors of this study recognize the significance of individual differences in how people perceive and interpret their surroundings (Dollinger, 1984; Leaptrott & Michael McDonald, 2015; Jundt & Shoss, 2023).

Table 6 presents the explanations that accompany the strategies that SME owner – managers could follow considering the perception of their environments.

A general hypothesis based on the presented review can be formulated as follows: "The perception of the external environment by SME owners and managers

significantly influences their choice of organizational strategies, shaping their capacity for adaptation, innovation, and growth in dynamic and hostile contexts." This hypothesis is supported by several key aspects. First, the literature review highlights how individual perceptions of the environment impact strategic decision-making and organizations' ability to address uncertainty and complexity (Yasai-Ardekani, 1989; Demirbas et al., 2011; Godoy-Bejarano et al., 2020;). Furthermore, the results of the analysis suggest that perceptions of factors such as customer demand, technological change, and competition levels directly influence the adoption of specific strategies, including innovation and adaptation. Finally, this hypothesis contributes to scientific advancement by addressing gaps in the literature regarding variations in environmental perceptions across geographical, sectoral, and cultural contexts, particularly in under-researched regions such as Ecuador.

Table 6. Theoretical explanation of the variables

Strategic Posture	Explanation
Growth	In a thriving environment, the strategic posture should be focused on growth. The company can capitalize on customer demand, leverage technological advancements, compete aggressively, and comply with a stable regulatory framework to expand its market share, increase profitability, and achieve long-term success.
Adaptation	In a disruptive environment, the strategic posture should emphasize adaptation. The company needs to quickly respond to changing customer demands, embrace technological changes, navigate intense competition, and proactively adjust its strategies and operations to stay relevant and resilient in the face of turbulent conditions.
Innovation	In a dynamic environment, the strategic posture should prioritize innovation. The company should continuously invest in research and development, embrace technological advancements, foster a culture of creativity, and be proactive in exploring new opportunities. By being at the forefront of innovation, the company can gain a competitive edge and thrive in a rapidly changing landscape.
Stability	In a flourishing environment, the strategic posture should focus on stability. The company should maintain a strong customer base, carefully monitor technological developments to stay up to date, manage competition by leveraging its strengths, and ensure compliance with a stable regulatory framework. The objective is to sustain the existing success and create a secure foundation for future growth.

3. METHOD

The research is conducted in the context of SMEs. To analyze the perception of the environment, information was collected from 384 SMEs owners - managers from different sectors of the economy. To calculate the sample, a population of 15919 companies was assumed, representing 80% of the most descriptive economic sectors in the province of Santo Domingo de los Tsáchilas, Ecuador. Proportional stratified sampling was used with 95% confidence and an error of 5%. Table 7 shows the characterization of the sample.

The research design used to collect the data was a self-administered cross-sectional survey. The questionnaire aimed to get SME owner-managers to describe how they

perceive their environment making a combination of the value of each variable. Finally, they were asked to indicate which strategy would be the most appropriate to operate successfully in the environmental situation they faced. Table 8 describes the variables analyzed.

This study applied categorical principal component analysis (CATPCA) to identify the component structure of social capital by considering the ordinal and nominal nature of the data. This method is selected because offers several benefits in data analysis. Unlike traditional principal component analysis (PCA), CATPCA is able to handle categorical variables and does not assume linear relationships between variables and allows for more flexibility in data reduction. Overall, CATPCA is a powerful tool for

Table 7. Characterization of sample

International Standard Industrial Classification (ISIC)	Economic sectors	Strata population*	Sample
G47	Retail trade	6901	154
	Agriculture, livestock, hunting and related service activities	2615	58
A01			
S96	Personal services	2024	45
H49	Transportation	1865	42
I56	Food and beverage service	1163	26
G46	Wholesale trade	988	22
	Trade and repair of motor vehicles and motorcycles	734	16
G45			
P85	Education	501	11
Q86	Human health care activities	451	10
	Total	17242	384

*Source: <https://www.ecuadorencifras.gob.ec/encuesta-a-empresas/>

Table 8. Variables in dataset

Variable name	Variable label	Value label*
Cd	Customer Demand	stable, fluctuating, volatile, decline
Tc	Technological Change	slow-paced, moderate, rapid, disruptive
Lc	Level of Competition	moderate, high, intense, variable
Rf	Regulatory Framework	favorable, hindering
Ev	Economic Volatility	low, moderate, high, extremely high
cluster 1	Economic sector	G47, A01, S96, H49, I56, G46, G45, P85, Q86
cluster 2	Strategy	Growth, Adaptation, Innovation, Stability

* For better understanding see Table 5

researchers looking to gain insights into large datasets and identify key factors that influence outcomes in their field of study (Tanake, 2005; Saukani & Ismail, 2019).

This technique is particularly useful when working with complex datasets that contain many interrelated variables, as it can help to simplify the data and make it more manageable. CATPCA allows for dimensionality reduction, identifying underlying patterns, and capturing the essential information from categorical data. It provides a comprehensive understanding of complex relationships and helps in identifying the most influential variables (Tanake, 2005; Saukani & Ismail, 2019;). CATPCA facilitates data visualization through graphical representations, enabling clear interpretations and effective communication of results. When specifying a categorical principal components analysis, you need to specify the optimal scaling level for each analysis variable. In this research, an ordinal level is specified for all analysis variables.

The methodological foundation of CATPCA lies in its capacity to simultaneously quantify categorical variables through optimal scaling while reducing the dimensionality of the variable space. The procedure begins with transforming the original categorical variables into optimized numerical scores through an Alternating Least Squares (ALS) iterative process. The loss function to be minimized is formally defined in Equation 1.

$$L(X, Y, W) = \sum_i \sum_j w_j (x_{ij} - y_{ij})^2 \quad (1)$$

Where:

- x_{ij} denotes the observed category for the i -th observation in the j -th variable

- y_{ij} represents the optimal transformed score
- w_j are weighting coefficients determined through an optimization process

For ordinal variables, the algorithm imposes monotonic constraints on transformations, preserving the inherent order of categories through:

$$y_{ij} \leq y'_{ij} \text{ if } x_{ij} \leq x'_{ij} \quad (2)$$

The covariance matrix of transformed data is expressed as:

$$S = (1/n) Y' Y \quad (3)$$

Where Y represents the $n \times p$ matrix of centered transformed data.

The spectral decomposition of S generates eigenvalues (λ_k) and eigenvectors (w_k) that satisfy:

$$S w_k = \lambda_k w_k \quad (4)$$

Principal components are obtained as linear combinations of transformed variables:

$$Z_k = Y w_k \quad (5)$$

Model quality is evaluated through multiple criteria:

1. Proportion of variance explained by each component: $\theta_i = (\lambda_i / \sum_i \lambda_i) 100\%$
2. Cumulative variance up to the k -th component: $\theta_k = \sum_{i=1}^k \theta_i$
3. Internal consistency through the

generalized Cronbach's Alpha coefficient:

$$\alpha = (k/k - 1) \left[1 - \left(\sum_j \sigma_j^2 / \sigma_{total}^2 \right) \right]$$

Where k denotes the number of variables, σ_j^2 the variance of each transformed variable, and σ_{total}^2 the total variance. The convergence criterion is established at $\varepsilon = 10^{-4}$, ensuring solution stability.

The analyzed variables include multidimensional constructs such as market dynamism, technological turbulence, competitive intensity, regulatory complexity, and macroeconomic volatility. The differential treatment of ordinal and nominal variables through specific non-linear transformations optimizes the representation of underlying relationships in the reduced space. This approach provides a rigorous statistical foundation for analyzing complex business perceptions, overcoming the limitations of traditional linear methods and ensuring constructive validity and reliability of derived conclusions. The application of CATPCA in this research context offers a sophisticated analytical framework that aligns with contemporary methodological standards in social science research.

The methodological rigor and comprehensive analytical approach of CATPCA make it particularly suitable for examining the multifaceted nature of social capital and organizational dynamics in contemporary business environments. This advanced statistical technique provides researchers with a robust tool for uncovering latent patterns and relationships within

complex categorical data structures, ultimately contributing to a more nuanced understanding of organizational phenomena.

4. RESULTS

The first analysis allowed us to understand the way in which the owner-managers of the companies studied perceived their environment. The iteration process stopped in number 12 iteration because the convergence test value was reached (.00001). In Table 9 the model summary is displayed, including the eigenvalues of each dimension, after iterating through the algorithm. These eigenvalues are measures of how much variance is accounted for by each dimension.

The eigenvalues can be used as an indication of how many dimensions are needed. Since the two-dimensional solution accounts for 80,083% of the variance, a third dimension probably would not add much more information. The model summary table also shows Cronbach's alpha (a measure of reliability), which is maximized by the procedure that in this case is 0,938. This value demonstrates the high level of internal consistency of the data used. Table 10 shows the quantifications, vector coordinates, and the centroid coordinates for each variable and dimension are presented.

The quantifications are the values assigned to each category. The centroid coordinates are the average of the object

Table 9. Model Summary

Dimension	Cronbach's Alpha	Variance Accounted For	
		Total (Eigenvalue)	% of Variance
1	,832	2,993	59,852
2	,014	1,012	20,231
Total	,938 ^a	4,004	80,083

a.- Total Cronbach's Alpha is based on the total Eigenvalue.

scores of objects in the same category. The vector coordinates are the coordinates of the categories when they are required to be on a line, representing the variable in the object space. Figure 2 shows the joint plot category points.

Looking at the quantifications in the joint

plot of the category points, it can be seen that some of the categories of some variables were not clearly separated by the categorical principal components analysis as cleanly as would have been expected if the level had been truly ordinal. The variables customer demand and technological change have

Table 10. Variables quantifications

Variable	Category	Frequency	Quantification	Centroid Coordinates		Vector Coordinates	
				Dimension 1	Dimension 2	Dimension 1	Dimension 2
Customer Demand ^a	stable	125	-1,334	-1,249	,203	-1,225	,301
	fluctuating	82	,202	,299	,418	,185	-,046
	volatile	99	,478	,409	-,229	,439	-,108
	decline	78	1,319	1,167	-,475	1,211	-,298
Technological Change ^a	slow-paced	126	-1,375	-1,257	,174	-1,247	,229
	moderate	99	,512	,549	,200	,465	-,085
	rapid	112	,512	,425	-,144	,465	-,085
	disruptive	47	1,386	1,199	-,546	1,257	-,231
Level of Competition ^a	moderate	71	-1,638	-1,342	,694	-1,345	,688
	high	88	-,510	-,383	,284	-,419	,214
	intense	140	,331	,226	-,228	,271	-,139
Regulatory Framework ^a	variable	85	1,352	1,145	-,499	1,110	-,568
	favorable	152	-1,235	-,713	-,756	-,713	-,756
	hindering	232	,809	,467	,495	,467	,495
Economic Volatility ^a	low	92	-1,782	-1,009	-1,102	-1,009	-1,102
	moderate	84	,561	,071	,598	,318	,347
	high	156	,561	,513	,230	,318	,347
Volatility ^a	extremely high	52	,561	,133	,293	,318	,347

Variable Principal Normalization.^a

a. Optimal Scaling Level: Ordinal.

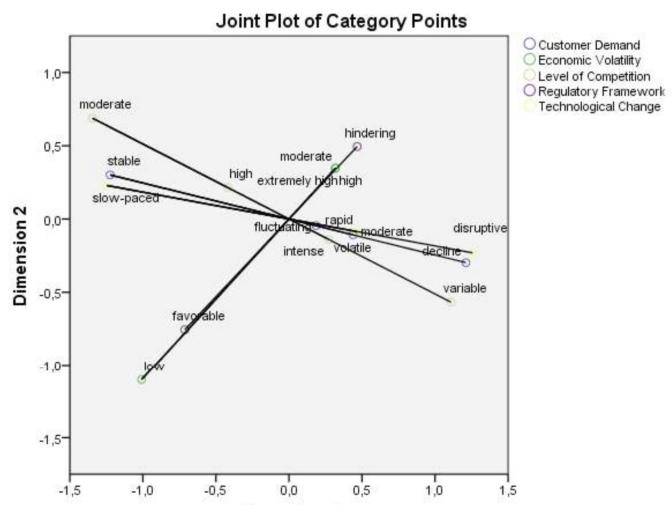


Figure 2. Joint plot category points

almost equal quantifications for their two middle categories.

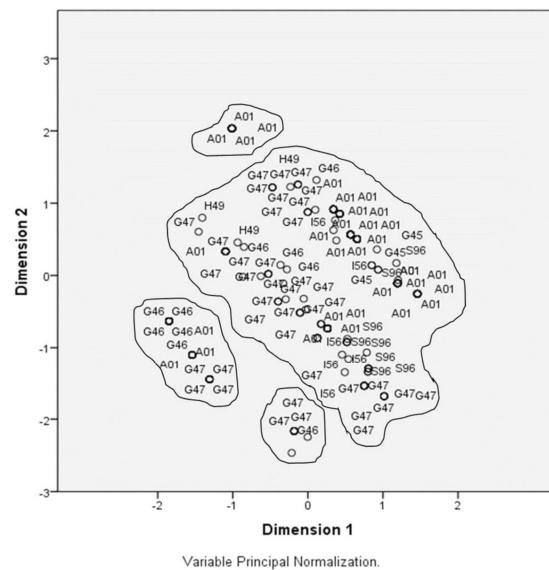
The joint plot of category points shows where the endpoints are located that correspond to the lowest quantifications. By focusing on the category points, you can see the relationships even more clearly. The variables technological change and customer demand are very close to each other, but also the directions of their scales are similar: from an unchanging situation to a situation of high uncertainty. It is also noted that the regulatory framework seems to go hand in hand with economic volatility, being seen as a brake in a situation of high volatility.

By examining Figure 3 it is possible to identify specific objects in the plot. The plot of the object scores can be useful to detect outliers, to identify typical groups of objects or to reveal some particular patterns.

The plot shows four groups of economic activities, with a few owner-managers belonging to A1 at the top and some owner-managers belonging mainly to G46 and G47 at the bottom. Most activities are in the middle. On the other hand, Figure 4 shows

the plot of component loadings. The vectors (lines) are relatively long, an indication that the first two dimensions account for most of the variance of all quantified variables.

The figure shows that owner-managers configure the structure of the perception of the environment in two groups or factors. The first dimension is correlated mainly with the quantified variables Customer Demand, Technological Change and Level of Competition showing component loading of 0,91, 0,907 and 0,821 respectively. Owner-managers perceive a relationship between the quantity, quality and type of products or services that customers demand, the way in which advances and improvements in technology behave, and the degree of rivalry and competition in their specific sector. All of these can affect their organization's ability to make the strategic and operational decisions that will enable them to win customers, maintain market share and make profits. The second dimension, therefore, reveals a perceived relation with two variables Regulatory Framework and Economic Volatility having component



loading of 0,612 and 0,618 each one. In this case, it is possible to identify a relationship between how the established regulatory framework can influence business practices, strategic decision-making and legal compliance, and unexpected changes and fluctuations in economic conditions.

The previous analyses allow us to proceed to examine the relationship between the objects and the variables as shown in Figure 5.

The figure shows the biplot of objects and centroids and objects and component loads.

The vector of one variable points in the direction of the highest category of the variable representing owner-managers' perceptions of their environment. Economic sectors A01, G47 and H49 are associated with environments characterized by dynamic customer demand, rapid technological change, shifting competition, evolving regulatory frameworks, and moderate economic volatility. We call this environment a disruption quake (DQ). Sectors of the economy classified as G45, S96 and a good part of G47, perceive their

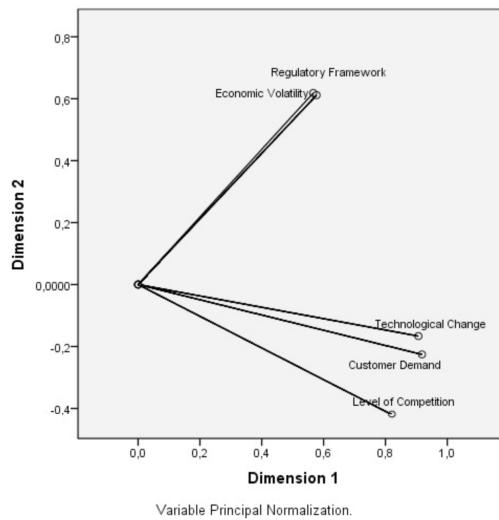
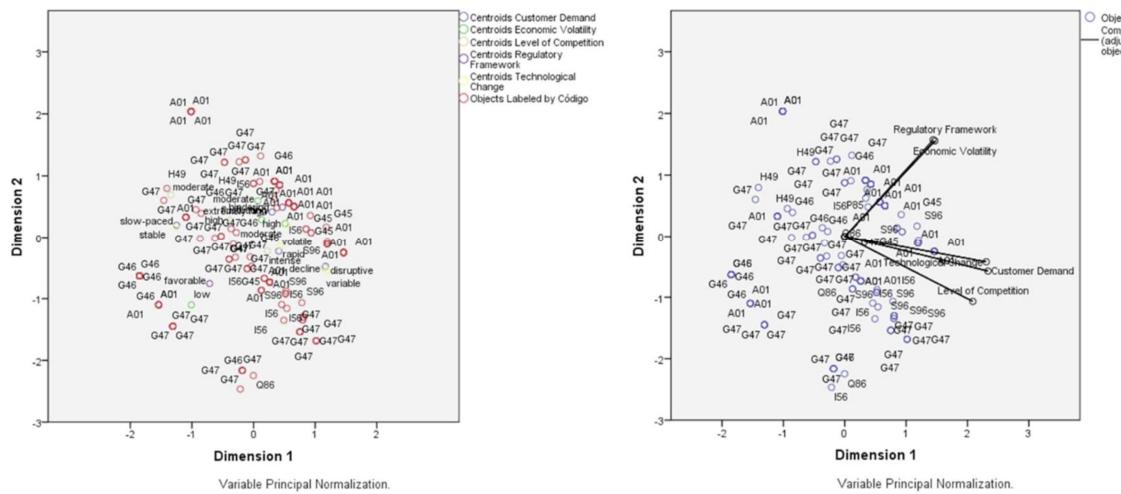


Figure 4. Component Loadings



Biplot Centroids and Objects
Figure 5. Centroid, loadings and objects

Biplot Component Loadings and Objects

environment marked by severe disruptions but also the potential for renewal and innovation. Everything suggests a landscape of challenging customer demand, transformative technological change, redefined competition, adaptive regulatory frameworks, and extreme economic volatility. We are going to call this environment a flourish haven (FH). Finally, sectors classified as G46, I56 and P85 perceive their environment as a space filled with fast and disruptive customer demands, rapid technological advances, fierce competition, dynamic regulatory frameworks and high economic volatility. It is like a dynamic avalanche (DA).

As can be seen, although there are differences in the perception of their environment by the different SME owners in the different sectors analyzed, there is a tendency to perceive the environment as a dynamic, turbulent and sometimes very hostile space. In order to compare the perception of the environment with the actual behavior of the sectors of the economy analyzed, Figure 6 is shown.

The figure shows the geometric mean of the behavior of sales and the number of enterprises over the last seven years in the economic sectors studied. It can be seen that a significant number of owner-managers in G47 and S96 who perceive their environment as very dynamic and turbulent actually work in sectors where the geometric mean of sales growth is above average. On the other hand, the vast majority of owner-managers in sector Q86, who perceive their environment as dynamic but not as dynamic as their counterparts in other sectors, are in the one that has significant decline in terms of both turnover and number of enterprises.

The second analysis attempts to explore in more detail the way in which perceptions of the environment are related to the strategic approach that SME owner-managers believe they should adopt in order to face the external situation. In this case, it was necessary to increase the number of dimensions in order to increase the amount of variation considered and possibly reveal differences hidden in lower dimensional solutions. Table 11 shows the model

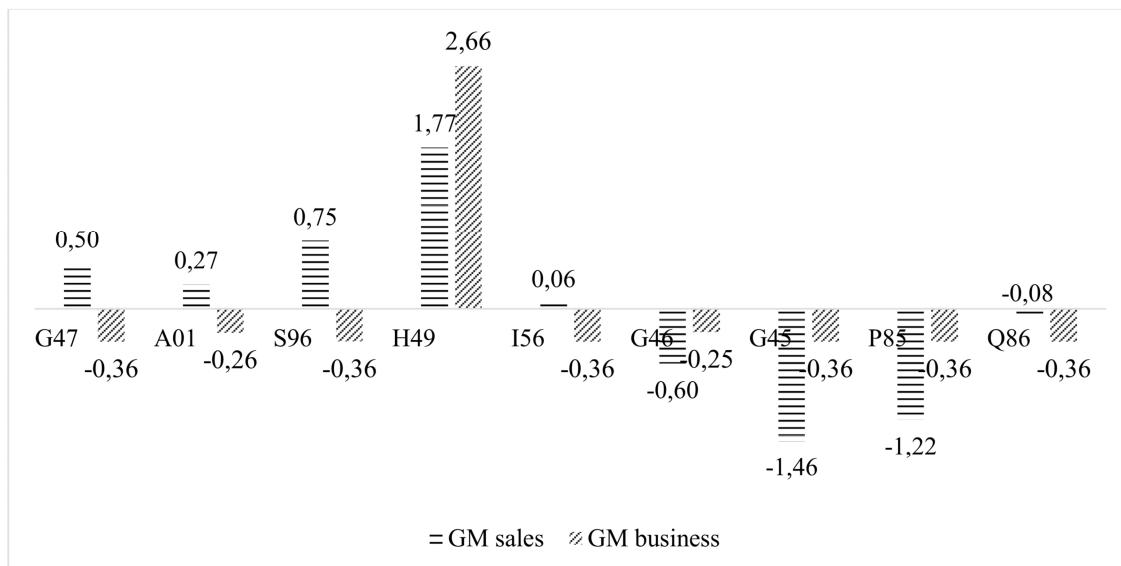


Figure 6. Sales and number of businesses in seven years

summary.

A three-dimensional solution has eigenvalues of 3,010, 1,246, and 1.020, accounting for 75,37% of variance. Table 12 shows the quantifications, vector coordinates, and the centroid coordinates for each variable and dimension are presented.

A scatterplot matrix displaying the object scores for the three-dimensional solution can

be seen in Figure 7.

The top row of graphs shows that first dimension associates innovation and adaptation strategy with DA and DQ. The middle row of graphs allows the interpretation of dimension 2. The second dimension has slightly changed from the first, ratifying the strategy of adaptation to DQ and they associate FH and DA with the

Table 11. Model summary

Dimension	Cronbach's Alpha	Variance Accounted For	
		Total (Eigenvalue)	% of Variance
1	,779	3,010	43,003
2	,230	1,246	17,800
3	,023	1,020	14,569
Total	,946 ^a	5,276	75,372

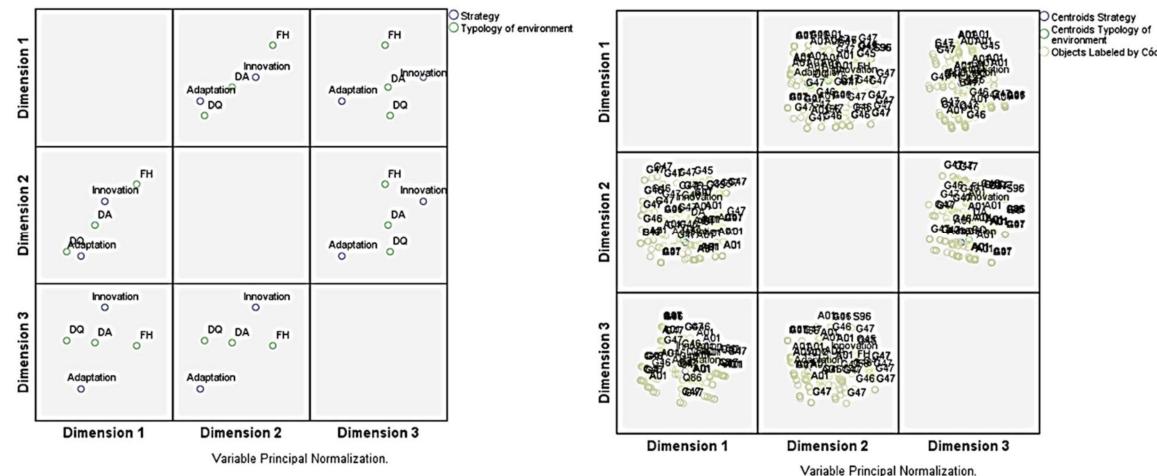
a. Total Cronbach's Alpha is based on the total Eigenvalue.

Table 12. Quantifications, vector and centroids

Variables	Category	Frequency	Quantification	Centroid Coordinates			Vector Coordinates		
				Dimension	1	2	3	1	2
Strategy ^a	Adaptation	166	-1,146	-,070	-,820	-,482	-,070	-,820	-,482
	Innovation	218	,873	,054	,624	,367	,054	,624	,367
Typology of environment ^a	DQ	184	-,913	-,151	-,707	,003	-,145	-,707	,021
	DA	79	,013	,025	,007	,070	,002	,010	,000
	FH	121	1,380	,213	1,070	-,050	,219	1,069	-,032

Variable Principal Normalization.^a

a. Optimal Scaling Level: Ordinal.



Joint Plot of Category Points
Figure 7. Three-dimensional object scores scatterplot matrix

Biplot

strategy of innovation. The third dimension seems to associate the strategies analyzed with the three environments. It appears that, according to the environmental perceptions of the SME owner-managers surveyed, the strategic approach they believe will help them gain a competitive edge and thrive in a rapidly changing landscape, and remain relevant and resilient in the face of turbulent conditions, is adaptation and innovation.

The results of the study indicate that SME owner-managers adapt their strategies based on their perception of the external environment, emphasizing the dynamic interplay between environmental characteristics and strategic choices. Adaptation emerges as a critical response to turbulent and disruptive conditions, enabling firms to adjust operations and resource allocation to navigate uncertainty. Innovation is prominently associated with highly competitive and dynamic settings, where firms proactively invest in technological advancements and explore emerging opportunities to maintain a competitive edge. Although less emphasized, growth is linked to stable and resource-rich environments, allowing firms to expand operations and strengthen market presence. These findings underscore the importance of aligning strategic approaches with environmental perceptions to enhance organizational resilience and performance in varied contexts.

A clear relationship emerges between the perceived dimensions of the environment and the strategies proposed by SME managers to address these conditions. The first dimension, primarily comprising Customer Demand, Technological Change, and Level of Competition, emerges as a critical factor influencing strategic decisions toward adaptation and innovation. In

contexts characterized by high demand volatility, rapid or disruptive technological advancements, and intense competition, managers tend to prioritize dynamic strategies that enable effective responses to these changes. This finding suggests that SMEs operate within a strategic framework directly shaped by the perception of these variables as central elements of the environment.

The second dimension, linked to the Regulatory Framework and Economic Volatility, underscores the relevance of macroeconomic and regulatory factors in shaping business strategies. Conditions of extreme economic volatility and a regulatory framework perceived as restrictive are associated with the adoption of more cautious or adaptive strategies, reflecting a risk mitigation posture in the face of a hostile environment. This strategic behavior reinforces the importance of regulatory and economic contexts as determinants of performance and business sustainability.

Lastly, the biplot analysis and the distribution of the analyzed economic sectors reveal that managers' perceptions not only vary across sectors but also align with observed sectoral performance. Sectors such as G47 and S96, perceived as highly dynamic and turbulent, exhibit above-average sales growth, supporting the connection between environmental perceptions and successful strategies. In contrast, sectors with lower perceived dynamism, such as Q86, show declines in sales and the number of businesses, suggesting that less adaptive strategies may limit SMEs' capacity to address challenges in changing environments.

Together, these results underscore how the interaction between the analyzed variables determines the strategies deemed

appropriate by managers, highlighting the importance of understanding these relationships to guide informed business decisions. This approach advances an integrated perspective of environmental dynamics and their impact on the strategic management of SMEs.

5. DISCUSSION AND CONCLUSION

The purpose of this study was to empirically examine the perceptions of SME owner-managers in relation to the environment. Our findings have several implications for both theory and managerial practice. Our study complements and extends the literature about the perception of environment and its importance to strategic and operational decision making (Volberda et al., 2012; Lichtmannegger, 2019; Godoy-Bejarano et al., 2020; Jundt & Shoss, 2023; Skandera et al., 2023). This study improves the understanding of how SMEs owner – managers perceive its environment in a geographic context that has been little researched in similar topics, such as the Ecuadorian.

In a general way, our research focuses the attention in many approaches that explore the different approaches to study the environment perception in the SMEs contexts. This approximation can contribute to stimulate the development of theories and taxonomies to study the environment perception that have descriptive power and managerial relevance in the SMEs context. In this sense, the research joins the claims of other researchers such as Dess and Beard (1984), Miles et al. (2000), Castrogiovanni (2002), and Volberda et al. (2012).

Like other researchers, was possible to identify the perceptions of the environment

for an economic sector and note their differences (Zhang et al., 2013; Leaptrott & McDonald, 2015). Although the statistical results show the variations discussed above, the perception of greater complexity by SMEs owner-managers is not always associated with worse performance in the sector. For this reason it is suggested that administrators should be aware of the potential biases and limitations of their own perceptions when scanning and interpreting their environment and they should be cautious when using their perception in order to decide adapt their structure and strategies to better fit the demands of their environment (Cannon & John, 2007; Davis et al., 2009; Demirbas et al., 2011).

In the same way that other studies (Andrews, 2009; Ben-Ner et al., 2012; Uotila, 2018), we also find the perception of the environment influences the strategic approach the SMEs owner – managers chose to their businesses. The emergent results confirm that the probability of Ecuadorian SME owner-managers engaging in innovation processes because is one of the main strategic approaches derive from the perception of their environment other researches find similar resulted in other context, but with the same perception of the environment (Demirbas et al., 2011).

The findings from this study show a strong link between the results obtained through CATPCA and the strategic decisions made by SME owner-managers. For instance, the grouping of customer demand, technological change, and level of competition as a single dimension underscores the interconnected challenges these managers perceive. This was further evidenced by sectors such as G47 and S96, where dynamic and turbulent perceptions align with above-average sales growth.

These insights highlight the local specificity of environmental challenges faced in Santo Domingo de los Tsáchilas.

In contrast, the perception of regulatory frameworks and economic volatility as a secondary dimension reveals a nuanced influence on strategy. Sectors like Q86, with lower performance metrics, demonstrate how restrictive frameworks and high volatility lead to more cautious strategic choices. These sector-specific observations provide actionable insights into how perceptions influence business behavior in emerging economies.

Three implications are suggested by the study for SME owner-managers. First, SME owner-managers must be aware of the potential impact of environmental issues on their businesses and adopt flexible and adaptable solutions to changing environmental conditions. Second, managers may better adjust their tactics and structures to their specific external context and improve their overall performance over time by knowing the various characteristics of the environment. Managers who can accomplish this well may be in a better position to create long-term success for their companies. Third, SME owner-managers can use environmental profiles of various economic sectors to uncover opportunities, enhance their analytical decision-making capabilities, and improve overall performance.

Additionally, this research makes a unique contribution by contextualizing its findings within the relatively understudied Ecuadorian SME environment. Unlike studies in developed economies, this work captures the nuances of dynamic and turbulent markets within an emerging economy, offering insights that bridge the gap between global theories and local realities.

In summary, we agree with Lengnick-Hall and Beck (2005) when they recognize that results such as those obtained allow owner-managers to be prepared to adjust their strategies and structures in response to these changes. Considering the perception of the own external situation can derive strategies that are flexible and adaptable to changing environmental conditions, as well as investing in training and development programs to help employees learn new skills and adapt to changing roles. The knowledge provided enables a proactive approach to environmental change is critical for organizational success in today's dynamic business environment.

The researchers of this paper acknowledge several limitations of their study. First, they note that their sample is limited to SMEs in Santo Domingo de los Tsáchilas, Ecuador, which may limit the generalizability of their findings to other types of organizations or industries. This limitation represents a potential source of bias in their results and therefore needs validation in other contexts and suggest that further research is needed to fully understand the perception of environment in other locations. Second, the categorical principal components analysis did not clearly differentiate some of the categories of some studied variables as it should have if the level had genuinely been ordinal. With this result, is suggested to try in the future doing various categorical principal component analyses—possibly with some categories collapsed - or analyses at different levels, such (multiple) nominal. Third, the study focuses on a limited set of environmental dimensions and other dimensions and variables may be relevant for understanding the environment perception. Finally, the studies have focused on static snapshots of environment at a single

point in time, there is a need for more research that examines how this perception can change over time.

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СНАЛАЖЕЊЕ У ПОСЛОВНОМ ПЕЈЗАЖУ: ИСТРАЖИВАЊЕ ПЕРЦЕПЦИЈЕ ПРЕДУЗЕТНИКА О ПОСЛОВНОМ ОКРУЖЕЊУ

**Gelmar García-Vidal, Laritza Guzmán-Vilar, Alexander Sánchez-Rodríguez,
Reyner Pérez-Campdesuñer, Rodobaldo Martínez-Vivar**

Извод

Циљ овог истраживања је анализа перцепције окружења од стране власника и менаџера МСП. Методологија истраживања која је коришћена у овој студији обухватала је прикупљање информација од 384 власника-менаџера МСП из различитих сектора привреде у Санто Домингу де лос Тсачилас, Еквадор. Коришћено је пропорционално стратификовано узорковање са 95% поузданости и грешком од 5%. Подаци су прикупљени путем самостално попуњеног упитника пресечног истраживања, чији је циљ био да власници-менаџери МСП опишу како доживљавају своје окружење, правећи комбинацију вредности сваке променљиве. Студија је применила категоричку анализу главних компоненти да би идентификовала структуру компоненти друштвеног капитала узимајући у обзир ординалну и номиналну природу података. Коришћена методологија нам је омогућила да разумемо перцепцију окружења од стране различитих власника-менаџера МСП из различитих сектора привреде. Такође је открила стратешки приступ који су сматрали најприкладнијим за тржишну ситуацију у којој послују. Практичне импликације овог истраживања указују на то да власници-менаџери малих и средњих предузећа могу имати користи од разумевања перцепције окружења усвајањем флексибилних и прилагодљивих решења променљивим условима окружења, коришћењем профила окружења за откривање могућности и предвиђањем промена како би стекли вредне увиде.

Кључне речи: перцепција, животна средина, мала и средња предузећа, Еквадор

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