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Factor analysis of decision-making style in the effectiveness of the organizational strategy

Análisis factorial del estilo de toma de decisiones en la efectividad de la estrategia organizacional

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Abstract

The aim of this article is to empirically examine decision-making style and its relationship with effectiveness in organizational strategy within the context of Latin American companies. An exploratory and confirmatory factor analysis was conducted. We gathered information from 230 decision-makers in companies from various economic sectors and different sizes. The research has shown that decisionmaking style, determined by types of thinking and emotional management of individuals, has a direct relationship with organizational strategy effectiveness. The study identifies skills that constitute the determining factors of decision-making style. Additionally, a framework is provided regarding the extent to which organizations can develop effective strategies based on the dynamic capabilities of their staff

JEL Code: D81, M16, L25
Keywords: organizational strategy effectiveness; decision-making style; emotional management; types of thought

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Resumen

El objetivo de este artículo es examinar empíricamente el estilo de toma de decisiones y su relación con la efectividad en la estrategia organizacional en el contexto de las empresas latinoamericanas. Se aplicó un análisis factorial exploratorio y confirmatorio. Recolectamos información de 230 tomadores de decisiones en empresas de diferente sector económico y de diferente tamaño. La investigación ha demostrado que el estilo de toma de decisiones, determinado por los tipos de pensamiento y la gestión emocional de las personas, tiene una relación directa con la efectividad de la estrategia organizacional. El estudio identifica competencias que conforman los factores determinantes del estilo de toma de decisiones. Además, se proporciona un marco respecto al alcance que las organizaciones tienen de desarrollar estrategias efectivas basadas en las capacidades dinámicas del personal.

Código JEL: D81, M16, L25
Palabras clave: efectividad de la estrategia organizacional; estilo de toma de decisiones; gestión emocional; tipos de pensamiento

Introduction

The success of organizations has been motivated by the decisions implemented through management processes that lead to the effectiveness of the strategies implemented. According to Kahneman (1991), these are taken in a social and emotional context. It has implicit competencies related to personal development that define the decision-making style of managers. From the bounded rationality perspective (Simon, 1987, 1991), partially irrational decisions are made because of one's own cognitive, information, and time constraints. How decision-makers execute their mental processes and deal with situations will show their style and developing thinking skills.

In the last fifty years up to 2023, the study of decision-making has focused on two major currents of organizational strategy: prescriptive and descriptive. Prescriptive theories focus on theoretical-quantitative assumptions and posit the regulation of how the decision-making process should unfold to maximize expected profit (Bernoulli, 1954; Friedman & Savage, 1952; Klimack et al., 2015; Sandvik & Thorlund-Petersen, 2010; Von Neumann & Morgenstern, 1944). Descriptive theories are concerned with identifying how decisions are made when performing activities in reality (Baron, 2023; Parker et al., 2018; Samson & Bhanugopan, 2022; Svenson et al., 2018). Other aspects that have raised great interest in the study of strategic decisions are their relation with leadership (Freiling, 2017; Pedraja-Rejas et al., 2006; Rodríguez-ponce & Araneda-guirriman, 2013) and ethics (Argandoña, 2011; Barney & Hesterly, 2006; Díaz Bermúdez, 2011; García-Retamero & Hoffrage, 2009).

Within the framework of descriptive theories, studies have focused on naturopathic decision-making. Primarily, these studies have been theoretical approaches where factors such as uncertainty and time pressures are discussed to compare alternatives and make mental simulations of decision-making

situations (De Winnaar & Scholtz, 2019; Lipshitz & Strauss, 1997). Additionally, they study the relation between experience and the development of intuition to guide the decision-making process (Haniya & Said, 2022; Matzler et al., 2014a)

As for empirical studies, they have been focused on identifying correlations of explicit variables in decision-making. Aarum Andersen (2000) empirically verifies the relation between decision-making behavior based on intuition and organizational effectiveness. The study analyzes the decision-making style based on intuitive thinking and points to intuition as a source of creativity and innovation. On the other hand, Matzler et al. (2014b) investigate the relations of power and company size with the development and application of intuitive and deliberate thinking in decision-making, as well as the correlation of intuitive and deliberate thinking in organizational innovation.

Faced with the constant demands of the dynamic environment in which companies find themselves, managers must respond to maintain stability and achieve the success of organizational strategies. To this end, they require the development of skills related to emotional and thought management and specific knowledge of the sector and the organization. Previous evidence reveals that decision-making involves emotions, analytical thinking, and intuitive thinking. Nevertheless, there is still a lack of evidence regarding the decision-making style approached from the coping perspective, which would help to understand its influence on the effectiveness of organizational strategy. Coping is understood as cognitive, emotional, and behavioral efforts to manage stressful situations and decrease or eliminate perceived threatening circumstances (Morán Astorga et al., 2019).

The objective of this paper is to empirically examine the decision-making style and its relation to organizational strategy effectiveness in the context of Latin American companies. The operational, and middle and top management decision-making styles will be studied to understand better how an organization can manage its processes and carry out effective strategies. The central problem addressed in a highly competitive environment is understanding how decision-making style influences the effectiveness of organizational strategies.

Review of the literature

The present study takes as a basis the theory of dynamic resources and capabilities, whose central premises expose the importance of tangible and intangible faculties such as managerial skills, process execution, organizational routines, information, and the knowledge they control (Teece, 2014). This theory is a source for analyzing individual performance, high-performance teams, and organizational competitiveness.

From the decision-maker's perspective, it is believed that leadership and its intellectual and relational skills are indispensable requirements to achieve success in the effectiveness of organizational strategies. Nevertheless, some empirical research, such as that of Weber et al. (2022), has found contrary results; among their findings is that the combination of complementary leadership behaviors did not lead to the highest level of desirable change responses in employees. Faced with this situation, the present research seeks to contribute to the discussion, but also to analyze the factors of decision-making style that determine the effectiveness of organizational strategies. The vital role of decision-making style to achieve organizational strategy effectiveness will be discussed and specific hypotheses will be proposed.

Decision-making style

The decision-making style can be understood as how decision-makers carry out their psychological functions and coping strategies. Jung (1976) points out that the relations between attitudes and psychological functions are ways of solving problems and classifies attitudes into introverted and extroverted. Regarding psychological functions, the author describes the functions of perception—detection and intuition—and the functions of judgment—thinking and feeling—. The strength and degree of development of these functions and attitudes differ in each individual, which also determines the coping style in decision-making. Individuals' attitudes are also considered coping strategies or styles (Blajer-Gołębiewska et al., 2018; Buckert et al., 2017; McNair et al., 2016).

For Folkman (2013), the coping style is a group of cognitive-behavioral tools the individual uses to respond to internal and external demands. The cognitive, intangible faculties determine the process that includes the personality concerning needs, values, and self-concept; consequently, tangible faculties such as behavior are evidenced. The combination of these faculties is what Rowe and Mason (1988) called the decision-making style. To speak of an individual's coping strategies when faced with a decision-making process is to speak of their decision-making style.

Coping strategies are also defined as cognitive efforts to find solutions to problems and establish emotional balance (Gol & Cook, 2004); accordingly, decision-making styles determine knowledge acquisition, sharing, and utilization (Al Shra'ah, 2015). From this perspective (Brousseau et al., 2006), four decision-maker styles were identified, analyzing how information is managed and choices are generated. Decision-makers' reactions are stress responses (Endler & Parker, 1990b), which can be focused on emotions, problem-solving, or reframing the question (Carr, 2013). According to Wong and Kwong (2018), decision-making styles that represent behavioral probabilities in situations and domains do not have perfect predictive power, just like personality traits.

On the other hand, Carver et al. (1989) state that coping strategies based on problem-solving are more adaptive than focusing on emotional response. Furthermore, Kwarta et al. (2016) conclude in their research that high levels of neuroticism present in the individual are positively related to task-focused coping styles, while high levels of extraversion were negatively related to adopting emotion-focused coping with stress. Emotions determine the subjective factor and guide how people relate to what they have perceived as a function of their subjective value system. In this regard, research shows that managing emotions is a determining component of the decision-making style. The decision maker can play a role in achieving organizational objectives depending on their capabilities, the characteristics of the decision problem generating the stress, or the ability to interact effectively with the environment in which the person lives.

In addition to all of the above, the thinking skills developed by the individual, linear thinking, non-linear thinking, or systemic thinking, also determine characteristics of the decision-making style (Borges-Torres et al., 2017; Gómez Betancourt, 2016; González et al., 2019; Senge, 2013; Vance et al., 2007). Thought, understood as a rational, logical, and emotion-free process that determines judgment, is characterized by the fragmentation of information. Data interacting in internal thought processes promotes new constructs that can be of the utmost importance to understanding what is happening in the world and to elicit solutions, striking a balance between facts and unconscious information. Intuition, widely studied in decision-making (Matzler et al., 2014a; Okoli & Watt, 2018; Patton, 2003), constitutes the content of the unconscious and is stimulated by external objects with new information. Both conscious and unconscious thinking are complementary, are generated in the decision-maker's mind, and are supported by experience, research, instinct, or all three (Garvin & Roberto, 2003).

The processing of external information transversal to rational, logical thinking characterizes the linear thinking view. It is an analytical process in an inflexible order. Entrepreneurs with linear thinking focus on facts and evidence with verifiable data. According to Stacey and Parker (1995), linear thinking restricts awareness and understanding of context and relations. Corresponding to people with non-linear or lateral thinking, a creative component with a preference for intuition, sensations, and hunches is identified to include in their reasoning. Some research affirms that the decision maker uses different models, not necessarily nomothetic ones, to solve a difficulty. Desires and beliefs drive actions or selection of preferences, which guide their decisions (Arrendondo Trapero et al., 2013; Caloca Osorio & Briseño Martínez, 2018; De Bono, 1992; Pedroza, 2000; Vanharanta & Easton, 2009).

Systems thinking is related to linear thinking, which focuses on rational analysis, and non-linear thinking centered on the individual's subjectivity. This is defined by Kapsali (2011) as a holistic approach that seeks to understand how the parts of a system interact, focusing on relations and their effects. Among the practices of systemic thinking are categorizing causes instead of identifying the actions and conditions

of each effect and the retrospective account of cause-effect relationships. Systems thinking is approached as an alternative to reduce the risk generated by uncertainty (Geitner & Bloch, 2012; Loosemore & Cheung, 2015).

In general terms, the studies analyzed show some support for the idea that the decision-making style determines coping strategies, and these, in turn, are determined by the interaction between the different thinking functions and the management of emotions. The interaction of these factors generates adaptive behaviors that guide actions and determine how information is used and the courses of action to be followed. Mental constructs are reflected in the ability to process, interpret, and confront decision problems and influence the effectiveness of organizational strategies. This article assumes that the skills developed according to the type of thinking and coping strategies of decision-makers shape their styles as decision-makers and are a factor in the success or failure of organizational strategies.

Effectiveness of the organizational strategy

Companies have long known that to be competitive, a good strategy must be carried out, properly aligning systems, leadership behaviors, policies, human resources, culture, values, and management processes (Beer & Eisenstat, 2000). Studies on organizational strategy (Calderon-Hernandez et al., 2017; Mintzberg et al., 1998) classify ten schools of thought as prescriptive or descriptive. The prescriptive or regulatory ones are more concerned with formulating the strategy. The descriptive ones focus on understanding how the strategy is established and the results are achieved. Additionally, they present the configuration school as a hybrid of the previous ones, where strategy is understood as a process of transformation and changes of successive configuration states.

Decision-making and strategic effectiveness studies seem to belong to the configuration school. Understanding strategic effectiveness as an outcome of implementation, control, and adjustment methods, Li et al. (2010) identified three approaches to strategy implementation. The process perspective is a sequence of consecutive steps of policies, programs, and action plans that enable resources to take advantage of opportunities in the competitive environment. The behavioral perspective assumes implementation as a series of actions that can be parallel and concentrated, which are examined from the point of view of leadership behavior to transform a concrete reality. The redesign perspective combines the previous perspectives, which involves organizational reconfiguration, i.e., a change in structure, system, processes, people, and rewards.

From a process perspective, Samson and Bhanugopan (2022) present empirical evidence of how the quality of executive decision-making positively influences organizational performance and the carrying out of activities related to changes in strategy development. Long and Pereira (2015) have three

key recommendations for carrying out strategic activities: first, everyone involved must understand the changes that will directly and indirectly affect their job duties and responsibilities. They state that this consists of stepping back and understanding the plan, reviewing it carefully, and making note of aspects that might be fundamentally difficult. The second recommendation is to ensure everyone knows what is expected, which requires clarifying the plan's purpose and creating an organizational communication channel. This recommendation is perhaps the most important function during the implementation process. The third recommendation is to appoint leaders to oversee the process, which will help implement and secure the change process in the workplace. Additionally, meetings should be scheduled to discuss progress reports and consult everyone involved when appropriate.

From a behavioral perspective, thinking skills and coping styles appear to be related to the effectiveness of the organizational strategy. Some research shows that individuals' perceptions of their control over decision outcomes, coping style, and emotional response predict achieved organizational effects (Blajer-Gołębiewska et al., 2018; De Winnaar & Scholtz, 2019; Patton, 2003). Regarding psychological functions, Aarum Andersen (2000) suggests that continuous information flow and intuition are interrelated with organizational effectiveness. "Effective strategic implementation seems to be connected with the availability of adequate information at all levels, having decision rules, clear and predefined responsibilities in the face of any changing circumstances" (Vetter, 2012, p. 5). An important contribution of this concept is related to decision rules. Crittenden and Crittenden (2008) present them as one of the fundamental levers in implementation. Depending on the organizational level, decision-makers access different streams of information, face different levels of risk, and develop different decision-making skills that contribute to the effectiveness of the organizational strategy.(Crittenden & Crittenden, 2008)

Implementing the strategy alone does not achieve the stated objectives; good intentions do not guarantee positive results. To increase the organizational strategy's effectiveness, thorough planning, diligent collaboration, and continuous monitoring and evaluation are necessary (Berumen, 2010; Samson & Bhanugopan, 2022). To this end, Kaplan (2009) proposes following up on the strategy execution process by considering four perspectives in the so-called balanced scorecard, which can change depending on the particulars of each organization. These are the financial perspective, the customer perspective, the internal processes perspective, and the learning and growth perspective (Elbanna et al., 2015). For the present study, it was decided to include finance in a broader category, resources, which involves time, personnel, and financial management. The decision was taken so as not to exclude organizations that do not focus on financial criteria due to their particular characteristics.

The theoretical approaches that guide the present study are classified based on decision-making and organizational strategy. Regarding the above, the research hypotheses are presented. An overall view

of the different approaches is sought, both from the psychological and rational economic perspectives, analyzing decision-making style in organizational strategic processes. Figure 1 presents a diagram showing the hypotheses of relations and correlations between emotional management and the archetypes of rational, analytical, systemic, and intuitive thinking, which determine the decision-making style, its coping strategies, and their relation with the effectiveness of organizational strategy. The hypothesis seeks to examine whether there is a positive relation between decision-making style and the effectiveness of organizational strategy and how this relation contributes to strategic effectiveness. This study seeks to deepen the understanding of how different decision-making styles determined by different thinking approaches can influence organizational strategy effectiveness, thus providing a solid foundation for more informed and successful strategic decision-making.

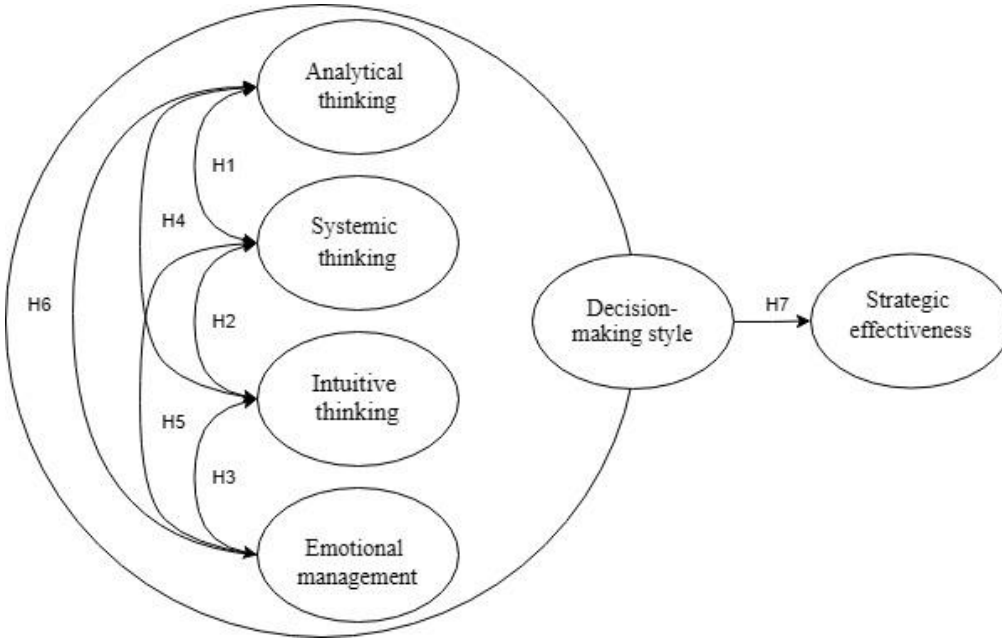


Figure 1. Hypothesis model between decision-making style and organizational strategic effectiveness
Source: created by the authors

Methodology

Sampling and data collection

In the present study, participants contributed with an online survey in which they responded to the cases presented based on their own experiences in decision-making in the company where they work. A scale was designed to measure the decision-making style and its relation with the effectiveness of the organizational strategy. The scale design considered the coping theories and the types of rational, analytical, systemic, and intuitive thinking that determine the decision-making style. Concerning the effectiveness of the organizational strategy, the scale constructed is based on the perspectives determined by Kaplan and Norton (2001) in the balanced scorecard: the customer perspective, which in this study is called the business dimension; the learning and growth perspective, which is called the human dimension; the internal process perspective; and finally, the financial perspective, which was included in the resource dimension.

In order to test the hypotheses, the experience of personnel at different organizational levels was used. Therefore, personnel from the operational level involved in organizational decision-making processes, middle or tactical management level, and top management or strategic level of private sector companies in Latin America participated. The questionnaire was distributed to 1950 people, and 230 complete responses were received. The response rate was 12%; this process was carried out over seven months. According to Kline (2016), the minimum sample sizes for factor analysis models range between 30 and 460 cases if the number of indicators per factor ranges between (3-8) and the magnitude of factor correlations (0.30-0.50), which meets the criteria of the present research. The sampling error for the finite population was 6.07 % for a confidence level of 95 %. The participants are distributed in 17 Latin American countries in companies of different sizes. The organizations studied are micro-enterprises with revenues up to USD 500 000, small enterprises with revenues up to USD 4.3 million, medium enterprises with revenues up to USD 21.7 million, and large enterprises with revenues above USD 21.7 million. Table 1 provides the characteristics of the sample, indicating different types of economic activity, sizes of organization, and levels of positions held within the organization.(Kline, 2016)

Table 1
Descriptive statistics of the sample

Economic activity	%	Company size	%	Position Level	%
Services: intangible supply	66.1	Micro company	29.6	Operative	9.6
Industry: raw material transformation	20.0	Small	19.1	Tactical	41.3
Trade: purchase and sale of products	13.9	Medium	22.2	Strategic	49.1
		Big	29.1		
Country	%		%		%
Argentina	5.2	Ecuador	4.3	Peru	4.8
Bolivia	5.2	El Salvador	7.0	Puerto Rico	4.3
Dominican Republic	4.8	Guatemala	4.8	Brazil	1.3
Chile	6.1	Honduras	5.2	Uruguay	5.2
Colombia	20.9	Mexico	5.7	Venezuela	6.1
Costa Rica	4.3	Panama	4.8		

Source: created by the authors

Measures and procedures

In order to analyze the variables of this study, a four-point Likert scale was applied to determine the frequency with which the decision-makers fulfilled different characteristics: 1 “not at all,” 2 “rarely,” 3 “frequently,” and 4 “always.” The scale was selected according to the criteria of Forero et al. (2009), who described it as an estimator of the unweighted least squares (ULS) model for ordinal data, which requires the same response format for all indicators.

Decision-making style

Based on the theoretical framework, the scale of the latent variable decision-making style DMS was constructed with four factors and 21 items. Emotional management GEM (Folkman, 2013; Lipshitz & Strauss, 1997), systemic thinking PSIS (Gonzalez et al., 2019; Senge, 2012), rational, analytical thinking PANA (Gomez Betancourt, 2016; Stacey & Parker, 1995), and intuitive thinking PINT (Patton, 2003; Vanharanta & Easton, 2009). A Cronbach’s alpha of 0.87 was found, considered by Little et al. (1999) to be in the excellent range. Regarding the reliability of the observed and partial correlations, the KMO coefficient was 0.87. In addition, normality and homoscedasticity tests were performed to determine the indices of the statistical fit model.

Effectiveness of the organizational strategy

An adjusted scale was constructed to measure the latent variable organizational strategy effectiveness EOR, with 22 items in four factors, which the authors called dimensions: human performance dimension HP, commercial performance dimension CP; internal process alignment, here named process dimension DP; and resource and time use dimension RT (Beer & Eisenstat, 2000; Kaplan & Norton, 2001). A four-point Likert scale was applied: 1 "not at all," 2 "rarely, "3 "frequently," and 4 "always." The Cronbach's alpha of the scale was 0.95, and the KMO was 0.94. This variable also underwent normality and homoscedasticity tests.

Control variables

In order to reduce errors due to uncontrollable variables, four control variables or blocking variables were considered (Tabachnick & Fidell, 2020). The first control is economic activity, classifying service, industry, and commerce companies. The second variable is company size because of the perceptions of complexity it represents in decisions. The third control variable is position level, due to the effects on strategy implementation performance. The fourth variable is the country, due to its socioeconomic factors' influence on companies. To measure the effects of these external variables on the DMS and EOS, an analysis of variance is performed, and to compare the size of the effects, Duncan's multiple range test was applied; this test was chosen over Tukey and Bonferroni since it does not require compliance with the homoscedasticity assumption (Snedecor & Cochran Ames, 1994). As for the nonparametric variables, a Kruskal and Wallis (1952) model is applied, and Wilcoxon Ranks analyzes the parity test.

Statistical procedures

A structural model was tested considering the relations between decision making style and strategy effectiveness in organizations. SEM structural equation modeling is chosen over other approaches because it complements many statistical methods (Bagozzi & Yi, 2012). It analyzes the relations by each subset of variables and controls for measurement error in latent variable indicators (Kline, 2016). Additionally, the focal parameters of the hypotheses are freed from biases that can generate inference errors.

Endogeneity. Because this research conducts cross-sectional surveys, endogeneity issues such as omitted variables that covary with measurement error and causality are presumed (Antonakis et al., 2014). Endogeneity was tackled in two different ways. First, four blocking variables—country of origin

DM1, economic activity DM2, position level DM3, and company size DM4—were considered predictors of decision-making style DMS and organizational strategy effectiveness SE. Second, rigorous statistical procedures were welcomed to assess measurement error and bias (Guide & Ketokivi, 2015).

Construct validity. An Exploratory Factor Analysis EFA using SPSS version 25 and a Confirmatory Factor Analysis CFA using AMOS version 25 were applied. Nonparametric tests were applied in the present study to assess the model fit levels of the empirical model. The Unweighted Least Squares Extraction method, Varimax rotation with Kaiser normalization, and loadings greater than 0.34 were chosen (Kline, 2016). Once the measurement model was fitted and validated using a Structural Equation System SEM, the objective was to test whether the empirical data were consistent with understanding the theoretical nature of the latent variables (Hayes, 2022). The estimated parameters were regression weights, variances, covariances of the exogenous variables, squared multiple correlations, correlations between exogenous variables, and regression weights (Antonakis et al., 2014).

Results

Analysis of variance and parity test

In order to test the assumptions for using an ANOVA model, the Shapiro-Wilk test and Bartlett's test on the response variables are applied in Table 2.

Table 2
Normality and homoscedasticity test for the DMS and EOS variables

	Shapiro-Wilk normality test		Bartlett's homoscedasticity of variances test	
	W	p	W	p
Decision-making style DMS	0.99209	0.2521	12.958	0.676
Effectiveness of organizational strategy EOS	0.97948	0.002**	15.297	0.503

Significance: .01**, .05*

Source: created by the authors

Since the DMS response variable is parametric, an ANOVA model was applied, and since EOS is not, the Kruskal and Wallis (1952) model was applied. In both cases, the aim is to determine the effect of different predictor variables DM1, DM2, DM3, and DM4 on the DMS decision-making style and the effectiveness of the EOS organizational strategy, see Table 3. According to the empirical data of the present study, the Chi-square test statistic >2 and the F test >2 indicate an effect, which implies some

relation between the variables. Additionally, P values < 0.05 indicate that the effect size is statistically significant at a 95% confidence level.

Table 3
Model to determine the effect of predictor variables on DMS decision-making style and EOS organizational strategy effectiveness

	DMS			EOS	
	Gl	F	p	Chi^2	p
DM1: country of origin	16	27.3	0.038*	27.61	0.035*
DM2: economic activity	2	2.78	0.249	0.03	0.988
DM3: position level	2	1.36	0.507	3.67	0.159
DM4: company size	3	3.58	0.311	7.48	0.058

Significance: .01**, .05*

Source: created by the authors

The results indicate that the external variables level of positions, type, and size of companies do not affect the DMS decision-making style. Considering that DMS involves integrating different types of thinking and emotion management skills, it is logical that these characteristics are more related to the individual's internal aspects than external factors. The level of positions, type, and size of companies may provide contextual information, but they do not seem to determine how people make decisions. This is understandable because they are external variables that do not influence the decision-maker's personality. Nevertheless, statistical evidence shows that country of origin has a significant effect on decision-making style. This is understandable because culture is a factor that permeates not only decision-makers' worldviews but also their behavioral traits and conduct. This finding supports the study of Folkman (2013), who further states that coping or decision-making styles are cognitive-behavioral tools.

This evidence implies that, when analyzing and understanding DMS, it is critical to consider individual traits, skills, and internal factors that may influence the decision-making process. These results suggest that organizations and decision-makers should focus on the development of the cognitive, behavioral, and emotional skills of individuals. On the other hand, the results show significant differences by country-of-origin DM1 in organizational strategy EOS. Duncan's test identifies differences in three groups of countries. The first, in Central America, Mexico, and Puerto Rico, are those with the greatest contribution to the strategy's effectiveness, followed by Honduras and Costa Rica. A second group of South American countries, together with El Salvador, Guatemala, and Panama, have a moderate contribution to the effectiveness of the organizational strategy. Finally, a third group comprises Uruguay, Bolivia, Ecuador, and Brazil, which made the smallest contribution to the results regarding organizational strategy effectiveness.

Exploratory factor analysis EFA

Table 4 shows the results of the factor structure of the theoretical model related to the DMS decision-making style from the empirical testing. Four factors with factor loadings greater than 0.34 were retained. The first factor is PANA technical solution (active-passive): cognitive-analytical coping strategies. The second factor is PSIS technical solution (active-passive): cognitive-systemic coping strategies. The third factor is GEM emotional management. The fourth factor is PINT intuitive coping strategies.

Table 4
Matrix of rotated factors of the decision-making style variable - DMS

Items	PSIS	PANA	GEM	PINT
Initial eigenvalues	6.9	2.1	1.7	1.4
Explained variance	25.6	7.6	6.1	5.3
Cumulative explained variance	25.6	33.2	39.3	44.6
Rotated extraction sums of squared loadings	3.1	2.3	2.0	1.4

Extraction method: unweighted least squares
Rotation method: Varimax with Kaiser normalization
KMO = 0.87
$p < 0.01$

Source: created by the authors

According to the results, the greatest effect on the DMS decision-making style is explained by systems thinking PSIS, which accounts for 25.6% of its behavior. Together with the other factors, PANA, GEM, and PINT, 44.6% of the behavior of the DMS decision-making style is explained. Therefore, the 55.4% not explained are due to other aspects, which may be of the decision-makers' character or personality that were not considered in this study. Each of these factors comprises a series of competencies or skills of the decision-makers that are considered in this study as observable variables.

Table 5 presents the results of the factor structure of the EOS organizational strategy effectiveness theoretical model. Four factors with loadings above 0.34 were retained. The first factor is the commercial dimension CD with nine items. The second factor is the human dimension HP with six items. The third factor is process dimension PD with five items. The fourth factor is time and resources T&R with two items. It was necessary to eliminate items EOS22, "there is interest in maintaining a good communication process within the company," and EOS1, "actions are taken to reduce costs." These actions may be due to the generality of the items, which are equally relevant for any stage or dimension of the organizational strategy.

Table 5
Factor matrix of the variable EOS

Items (exact formulation)	CD	HP	PD	T&R
Initial eigenvalues	11.1	1.5	1.4	1.1
Explained variance	46.3	6.1	5.7	4.4
Cumulative explained variance	46.3	52.4	58.1	62.5
Rotated extraction sums of squared loadings	4.8	4.3	2.3	1.9

Extraction method: unweighted least squares
Rotation method: Varimax with Kaiser normalization
KMO = 0.94
$p \leq 0.001$
Source: created by the authors

The CD commercial dimension represents the greatest variance explained in the effectiveness of the EOS strategy, well above the human dimension, the process, and the use of resources. Overall, the identified factors of the EOS explain 62.5% of its performance. Accordingly, external factors such as the country of origin where the company is located are determining factors. The proximity of Mexico and Puerto Rico, Honduras, and Costa Rica to the United States gives them a geographic advantage to trade and reduce costs in export or import logistics with this country, which is theoretically supported by the study of Herrero Acosta (2004) and the result of Duncan's test in the analysis of variances.

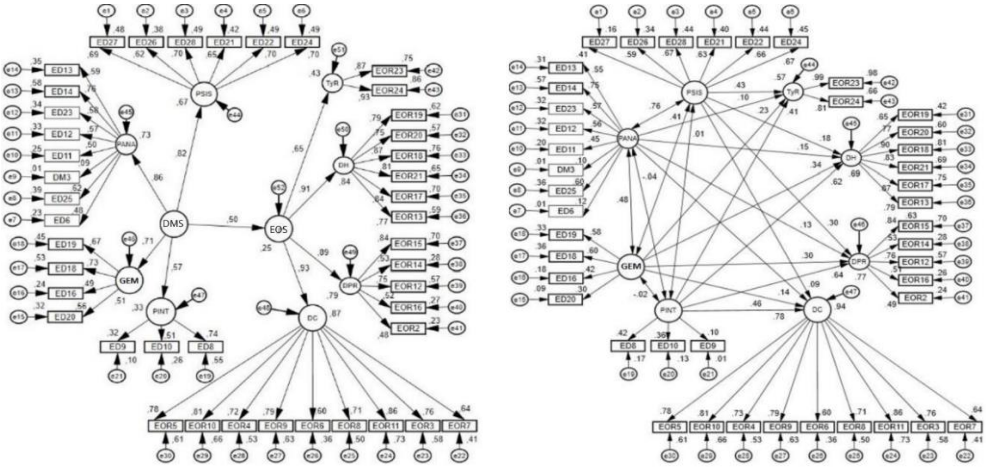
In summary, the results indicate that the predictor variables, country of origin DM1, significantly impact the organizational strategy's effectiveness. Therefore, it can be considered a relevant factor to consider when designing and executing organizational strategies. Finally, according to the AFE results, sampling adequacy indicates that the inter-variable correlations are adequate for factor analysis (Hayton et al., 2004). Based on these results, the influence of the DMS factors on the EOS is analyzed below.

Confirmatory Factor Analysis CFA

The CFA provides additional information and allows for a clear corroboration of the hypotheses. The information is presented in the following flow diagrams, known as the measurement model. The variables drawn with circles represent the latent variables corresponding to the study variables and their corresponding identified factors. The rectangles show the observed variables of each factor.

The flow diagrams in Figure 2 show the standardized parameters; the correlations are above the bidirectional arrows, and the relations are above the unidirectional arrows. The correlation coefficient ranges from -1 to +1 and measures the parallelism between two variables. If its values are close to 1 or -1, there is a strong correlation; if it is close to zero, it is weak. Negative correlation and relation values indicate inverse proportionality, i.e., as one variable increases, the other decreases. Similarly, positive

correlation and relation values indicate direct proportionality, i.e., as one variable increases, so does the other. In addition, the diagram shows the squares of the multiple relations, which are located next to the circles and rectangles. This value represents the percentage by which the predictor variables explain the behavior of the latent or observable variables.



a. Direct relation between DMS and EOS

b. Direct relation between DMS and EOS factors

Figure 2. Measurement model with standardized estimates
* Unweighted least squares method
* Model fit indices: RMR=0.03; GFI=0.97; AGFI=0.97; NFI=0.96; RFI=0.96; PRATIO=0.94
Source: created by the authors

Figure 2a tests hypothesis H7, DMS positively affects organizational strategy effectiveness, with a relation strength of 0.50. That is, if there is greater variability in the predictor variable decision-making style, the variability in the strategy's effectiveness improves by 25%. The contribution of each DMS factor is also evident, the most significant being PANA with a strong relation r^2 of 73%, followed by PSIS with a contribution of 67%, GEM in third place with 51%, and finally PINT with 33%.

Similarly, from Figure 2b, the following results were found concerning the correlations between the determinants of the DMS decision-making style:

- H1, the strong positive relation between PSIS and PANA is accepted.
- H2, the relation between PSIS and PINT is rejected.
- H3, the relation between GEM and PINT is rejected.
- H4, the relation between PANA and PINT is rejected.
- H5, the moderate positive relation between PSIS and GEM is accepted.

- H6, the moderate positive relation between PANA and GEM is accepted.

According to the results of the hypotheses, three significant findings can be identified. First, it is observed that people with systems thinking skills tend to have advanced development of analytical thinking. Second, no evidence was found to indicate a direct influence of the development of systems thinking, analytical thinking, or emotional management skills on intuitive thinking. In this regard, Garvin and Roberto (2003) present intuitive thinking as a complement to conscious thinking; therefore, its importance should not be underestimated. The third finding reveals that people with systems thinking and analytical thinking skills also tend to possess developed emotional management skills. Gol and Cook (2004) point out that cognitive efforts are oriented toward maintaining emotional balance in stressful situations, leading people to adopt a decisional style coping strategy.

When comparing intuitive thinking among entrepreneurs, it was found that 79.3% of microentrepreneurs pay a good deal of attention to intuition in decision-making, especially when they manifest physical sensations when making decisions, which contrasts with 53.4% of managers of large companies with the same skills. These sensations are manifested mainly when information is insufficient, ambiguous, or unreliable. This type of information is mostly kept in the decision-maker's mind and is considered subjective and informal. Nevertheless, it is used at the moment of evaluating conditions and implications of the decisions that are taken. This contradicts the perception of Klein (2007), who states that managers do not think about or use prior knowledge and experience when intuiting. These findings may have important implications for understanding how different thinking styles and emotional management skills influence decision-making.

Figure 2b also shows a direct influence of PSIS systems thinking on using time and T&R resources with a coefficient of 0.43. This suggests that adopting a systems approach to decision-making can impact resource allocation and time management efficiency and effectiveness. Systems thinking involves understanding the interrelations and connections between a system's components, allowing for a more comprehensive and holistic view when addressing challenges (Senge, 2012; Vance et al., 2007). This direct relation highlights the importance of considering the overall impact of decisions and actions on using resources and time, which can lead to greater optimization of both aspects.

In addition to the direct influence, there are indirect influences of systems thinking on using time and resources through other cognitive processes. The influence through emotional management GEM with a coefficient of 0.094 (0.41*0.23) highlights the importance of recognizing and regulating emotions in decision-making. The ability to manage emotions effectively can contribute to a positive work climate and healthy relations, improving efficiency in resource allocation and time management. In Endler and Parker's (1990) study, decision-makers who focus their emotions on reducing stress are task-oriented. Likewise, PANA also influences indirectly, although to a lesser extent, with a coefficient of 0.076

(0.76*0.10). Taken together, these relations highlight the importance of adopting a systemic approach and considering both rational and emotional aspects in making decisions about using time and resources.

The relation between PINT intuitive thinking and HP human development management, with a relation coefficient of 0.62, represents a meaningful contribution to the effectiveness of organizational strategy. Intuitive thinking implies the ability to make quick, intuition-based decisions, which can be especially valuable in dynamic and complex business environments by addressing the needs of employees and promoting their growth and job satisfaction. This translates into increased employee motivation, commitment, and performance, strengthening organizational strategy and its ability to achieve established objectives.

On the other hand, the relation between emotional management GEM and human development management HP, with a direct influence of 0.34, has important implications for the effectiveness of organizational strategy. Emotional management refers to the ability to recognize and regulate one's own and others' emotions in the work environment. Decision-makers with emotional management skills can promote a healthy and positive work environment where employees feel valued and emotionally supported. These results support the motivation-oriented perspective of employees in implementing organizational strategy. According to Li et al. (2010), this perspective implies having a management team aligned with the company's strategy to carry it out effectively, directly impacting employee productivity and satisfaction by reducing work stress and promoting emotional well-being. A leader with emotional management skills ultimately strengthens organizational strategy by creating a culture of commitment, collaboration, and resilience, generating superior business results and a sustainable competitive advantage.

Decision-making style factors, especially intuitive thinking PINT and emotional management GEM, have significant implications for the effectiveness of organizational strategy, specifically in the dimensions of process development and business management. According to the data obtained, PINT positively correlates with both dimensions. This implies that the development of intuition in a decision-maker can be beneficial in improving both internal processes and business activities of organizations by enabling them to recognize new opportunities and make quick decisions in complex situations. Nevertheless, according to Matzler et al. (2014) and Okoli and Watt (2018), it is important to remember that intuitive decision-making should not completely replace deliberate, data-driven decision-making. Both approaches can complement each other to achieve an effective organizational strategy.

The results of the present study have also made it possible to identify specific competencies that a decision-maker can develop to contribute to the execution and control of organizational strategies that promote their effectiveness. These identified skills or competencies are part of the observable variables of each factor determining the decision-making style. The Kruskal-Wallis's test was applied to analyze

variance since the assumptions of parametric variables were not met. With this test, a comparison was made based on the predictor variables of economic activity of the DM2 companies, the position level of the DM3 collaborators, and the size of the DM4 companies. The results show some skills of the decision-makers that present significant differences; see Table 6.

Table 6
Comparison of decision-making style skills by company's economic activity, job level, and company size

	Economic activity		Position Level		Company size	
Key skills	Chi^2	p	Chi^2	p	Chi^2	p
EDC5: Negotiation	0.8037	0.6691	8.8629	0.0119*	2.2453	0.0839
EDPR3: Analysis of information supported by verifiable facts	8.4189	0.0149*	4.9797	0.08292	2.5548	0.4655
EDPS4: Evaluation of cause-effect relations	2.1597	0.3396	0.49425	0.781	8.0968	0.044*

Significance code: 0.01 **, 0.05 *
Source: created by the authors

No significant differences were found in the negotiation skills of individuals in the organization according to the economic activity of the company or its size. Nevertheless, when comparing by position level, the Wilcoxon rank test shows a significant difference between tactical or middle management and strategic decision-makers ($p = 0.012$). Additionally, it shows a difference (-0.276), which indicates that strategic-level decision-makers are more successful in developing negotiation skills than tactical-level managers. Negotiation skills are important in decision-making, involving reaching favorable agreements, resolving conflicts, and achieving mutually beneficial outcomes. Moreover, it is not a planned process; rather, it arises from spontaneity, and, according to Tarantino-Curseri (2017), it is present at all organizational levels. This statement partially differs from the results obtained since no evidence of negotiation skills was found at the operational level.

This result is unsurprising since top managers must acquire communication skills to argue, persuade, and involve those with whom they have relations. These competencies are developed from the knowledge acquired and the constant interactions of managers with related publics (entrepreneurs, collaborators, regulators, colleagues, suppliers, and clients). At the strategic level, two fronts must be addressed, one inside and the other outside the organization. There is a greater degree of complexity in decision-making than at the tactical level, which only focuses on the inside of the organization. The manager at the strategic level has a diffuse panorama and must interpret the behavior of the market and the stakeholders to make the decisions that guide the organization. On the other hand, the likelihood ratio shows that the a priori probability in the development of negotiation skills increases as one moves up the

position level (12.945106, p=0.044), which is consistent with the results of Kohlberg and Hammer (2014). In this regard, Zohar (2015) states that intuition or experience is not enough, although experience can be useful in bringing negotiations to a successful outcome.

The information analysis supported by verifiable facts showed significant differences between companies in the Industry and the Services sectors (p = 0.027). In addition, the Wilcoxon rank test suggests a higher development of this skill in the Industrial sector with a mean difference of -0.2402. These results agree with Wahlström (2018); even though in the author's research, there is no comparison by company type, the conclusion is that decision-makers present a preference for information supported by facts and interest in the knowledge of details. There are several reasons for the significant differences between companies in these sectors. On the one hand, there are inherent differences like their economic activity. Firms in the Industry sector tend to be involved in producing tangible goods, while those in the Services sector focus on providing intangibles. These contrasts may require different decision-making approaches, such as analyzing information related to products or processes versus analyzing customer data or service satisfaction.

Additionally, the Industry and Services sectors are influenced by specific knowledge and experience requirements. For example, companies in the Industry sector need technical and engineering skills to evaluate and make data-driven decisions related to production and efficiency. In contrast, companies in the Services sector require relational management-oriented skills and knowledge in areas such as marketing. Organizations must identify and develop these skills based on their business activity. Although the level of position and company size did not show a significant association, it is important to consider other factors that may influence decision-making style, such as organizational culture and the specific context of each company.

The statistical results also show no significant difference in cause-effect relation evaluation skills as a function of the company's economic activity or position level. Nevertheless, a significant difference was found as a function of company size (p = 0.044). The Wilcoxon signed-rank test reveals that this difference is more pronounced in small companies than in medium-sized and large companies (p = 0.048). Firstly, this difference can be attributed to small companies having a flatter and less hierarchical organizational structure than medium or large ones. This means that decisions are made more quickly and efficiently, allowing for a greater focus on evaluating cause-effect relationships. In addition, in small companies, teams tend to be closer and more cohesive, facilitating communication and collaboration in identifying and evaluating the causes and effects of decisions. Second, small businesses often have limited resources, which can foster a mindset of optimization and efficiency in decision-making. This can drive leaders and employees in these companies to build stronger skills in evaluating cause-effect relations to maximize results with the limited resources available.

Consistently with these results, Matzler et al. (2014), Okoli and Watt (2018) agree that the organizational structures usually found in large companies may hinder the application of this decision-making style due to the greater dependence on rules and procedures, despite having resources, infrastructure, and technology to analyze causes and effects. According to Birch (2010), the greater development of the competence to establish cause-effect relations in the decision-making style of managers of micro and small companies is due to the learning acquired from new experiences, market demands, and the speed of decision-making, which also generates dynamics of adaptation and reinvention that enable them to adapt to the requirements and needs.

The authors consider it interesting to highlight as findings other competencies that did not show significant differences concerning the business sector, size of the company, or level of position of the decision-makers. This indicates that these skills and competencies are relevant in all organizational contexts and for people at different hierarchical levels. The results highlight the importance of a proactive attitude to reduce risks; this competence is essential as it helps anticipate potential problems and take preventive measures. Likewise, fostering creative thinking is crucial to proposing innovative solutions that boost the growth and competitiveness of the organization, as stated by Senge (2012).

A third competence is to build analytical skills from a general and detail-oriented perspective. Both approaches are necessary to understand the aspects of a problem thoroughly and to evaluate the different decision alternatives comprehensively. Correspondingly, the ability to search for, evaluate, and organize information is essential for obtaining a complete picture of the situation and making informed decisions. From the perspective of Seiffert and Loch (2005), this involves understanding the organizational process from the relationships between its elements and the physical, economic, social, and cultural aspects. Fourth, but no less important, is the ability to perceive the long-run implications of decisions. This ability implies considering the immediate results and future effects that may influence the organization. Finally, managing emotions in risky situations is essential to maintain mental clarity and make objective and balanced decisions. In summary, developing and strengthening these skills and competencies in decision-makers can have a meaningful impact on the effectiveness of organizational strategy and achieving business objectives.

Conclusions

Due to the high demands on leaders to respond effectively to the conflicts that arise in organizations, it is necessary to understand the influence of thinking and emotional management as determining elements in the leader's behavior that will invariably determine not only the leader's actions but also, in the long run, the effectiveness of the organizational strategy. The main purpose of this study was to determine the

factors of decision makers' DMS decision-making style that predict the effectiveness of the EOS organizational strategy in Latin American companies. An epistemological approach was used to test the related theories through empirical methods, applying structural equations to achieve this.

The results reveal that every person presents characteristics that intervene in solving problems, determining their decision-maker profile. These personality characteristics are related to their way of thinking and managing their emotions. Each decision-maker develops different competencies and skills depending on the level of position held, the business sector, and the size of the company. It was also found that the greater the development of the skills that make up the decision-making styles, i.e., those related to systemic thinking, analytical thinking, intuitive thinking, and emotional management, the greater the chances of carrying out effective organizational strategies. Based on the above, it could be said that there is a positive relation between the level of complexity and the development of competencies that determine the decision-making style. This complexity may be due to the position's activities and responsibilities, the business sector's demands, or the challenges posed by the size of the companies.

One limitation of this study is related to the percentage participation of Latin American companies. Of the 20 countries that make up the Latin American continent, the study had a scope of 16 countries, leaving out Cuba, Haiti, Nicaragua, and Paraguay. On the other hand, given its proximity to Latin American culture, Puerto Rico was included, even though it is considered one of the free states with self-government associated with the United States of America. In the selected sample of 230 Latin American companies, the largest share is 20% of Colombian companies. The rest of the countries have an average participation of 4.5% companies. One of the recommendations for future studies is to expand the analysis of other factors that could be determinants of the effectiveness of the organizational strategy, such as the cultural aspects of each country. This would allow a more complete understanding of the specific dynamics and challenges companies face in different regions of Latin America.

The importance of the present study's findings lies in at least three fundamental aspects. First, they help to understand decision-making styles and the competencies involved, facilitating the resolution of decision problems. Second, they highlight the interaction and importance of emotional management and analytical, systemic, and intuitive thinking to achieve effective strategies. Finally, they highlight the ability of organizations to foster dynamic capabilities in their leaders through the confrontation with decision problems and the implementation of strategies.

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