



Influence of financial environment, macroeconomic environment, organizational structure, and transparency on business failure

*Influencia del entorno financiero, el entorno
macroeconómico, la estructura organizacional y la
transparencia en la quiebra empresarial*

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Abstract

The role of companies in the economy of any country should not only be viewed from an economic and financial perspective, but also from an organizational and transparency perspective. The following research proposes and develops a Model of Structural Equations (MES) of a formative type based on Partial Least Squares (PLS) in order to assess the degree of influence exerted by the Financial Environment, Macroeconomic Environment, Organizational Structure and Transparency constructs in Business Bankruptcy. We work with a sample of 2,000 companies that were structured based on the insolvency reports issued by the Superintendency of Companies of Colombia. The results indicate that each of the proposed constructs influences the event of business bankruptcy, with the Financial Environment being the construct with the greatest influence, while the Organizational Structure the least influencing.

JEL Code: B23, C02, G33

Keywords: business bankruptcy; organizational structure; transparency; structural equation model; partial least squares

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Resumen

El papel que tienen las empresas en la economía de cualquier país no solo se debe mirar desde una óptica económica y financiera, sino también desde una mirada organizacional y de transparencia. La siguiente investigación plantea y desarrolla un Modelo de Ecuaciones Estructurales (MES) de tipo formativo fundamentado en Mínimos Cuadrados Parciales (PLS) con el objeto de evaluar el grado de influencia que ejercen los constructos Entorno Financiero, Entorno Macroeconómico, Estructura Organizacional y la Transparencia en la Quiebra Empresarial. Se trabaja con una muestra de 2.000 empresas que se estructuraron con base en los reportes de insolvencia que emite la Superintendencia de Sociedades de Colombia. Los resultados indican que cada uno de los constructos propuestos influye sobre el evento de la quiebra empresarial, siendo el constructo con mayor influencia el Entorno Financiero, mientras que, la Estructura Organizacional el de menor influencia.

Código JEL: B23, C02, G33

Palabras clave: quiebra empresarial; estructura organizacional; transparencia; modelo de ecuaciones estructurales; mínimos cuadrados parciales

Introduction

Business failure is considered a loss-making event, both economically and socially, that revolves around each of the company's stakeholders. It constitutes a risk factor for international investors due to an inefficient allocation of financial capital among countries, which is why it is sometimes considered a cause of internal economic crises. The evolution of the concept began with the term "failure," proposed by Beaver (1966), while the term "bankruptcy" was established by Altman (1968); however, throughout the different studies, both terms have been used interchangeably to talk about business failure. In Colombia, business failure is analyzed based on Law 1116 of 2006, which establishes in its legal framework five scenarios: Reorganization and Validation, Compulsory Liquidation¹, Judicial Liquidation, Concordat² and Restructuring³.

This research studies business failure in a management context and is based on Coase's Theory of the Firm (1937). The studies developed so far on business failure are mostly based on the Financial Environment construct. Additionally, studies have been developed based on a second construct, the Macroeconomic Environment proposed by Rose, Andrews, and Giroux (1982), Mensah (1984), Peel, Peel, and Pope (1986), Kovacova et al. (2018), and Shi, Evans, and Li (2018). Given the evolution of the Structural Contingency Theory and the Transparency Theory postulated by the Organization for Economic

¹It began with Law 222 of 1995 and ended in 2006 with the passage of Law 1116, replacing the bankruptcy process of Compulsory Liquidation with that of Judicial Liquidation.

²Law 550 suspended it, nevertheless, Law 222 in its article 205 includes it within the process of Compulsory Liquidation, a reason for which some companies as of 2000 appear registered under this category.

³ Law 550 of 1999.

Cooperation and Development (OECD), this paper proposes two new constructs, the Organizational Structure posited by Mintzberg (1980) and Transparency established by the works of Bushman, Piotroski, and Smith (2004) and Eijffinger and Geraats (2006).

Thus, the objective of this paper is to evaluate the degree of influence exerted by the constructs Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency on business failure. A formative Structural Equation Model (SEM) based on variance under the partial least squares routing method is implemented to achieve this objective.

Theoretical background

Coase's Theory of the Firm (1937) defines the organization as an economic unit of production, which is born and develops within a market, and it is within this theory that the study of business failure is framed. Since no bankruptcy law exists in Colombia, this is analyzed based on Law 1116 of 2006, corresponding to the business insolvency regime. Therefore, the companies under study will be those that are categorized under the classifications of Reorganization and Validation, Compulsory Liquidation, Judicial Liquidation, Concordat, and Restructuring, all of them implemented by the Superintendence of Companies of Colombia (Supersociedades).

Following conceptual traceability, the first construct used to predict and explain business failure was the Financial Environment, where Beaver (1966) and Altman (1968) were the first to use financial indicators to forecast bankruptcy through a univariate model and discriminant analysis, respectively. Nevertheless, it was Kaplan and Norton (2004) who defined the Financial Environment construct in their work, referring to the representation of a company's financial situation, focusing on the indicators of liquidity, indebtedness, and profitability as the fundamental axes.

The second construct is the Macroeconomic Environment, where the studies of Rose et al. (1982), Mensah (1984), and Peel et al. (1986) were the first to include macroeconomic variables in business failure forecasting models, more recently followed by the works of Nouri and Soltani (2016), Acosta, Fernandez, and Ganga (2019), Kovacova et al. (2018), and Shi et al. (2018). These studies define the Macroeconomic Environment as the representation of the economic situation of a country and how it affects the company. This approach is based on the fact that the macroeconomic situation of a country is reflected in three aspects: economic growth, which is analyzed through the growth of the gross domestic product; internal risk, which is analyzed through the variation in the interest rate; and inflation, which is analyzed based on the increase in the consumer price index.

The Financial Environment and the Macroeconomic Environment are constructs that have traditionally been part of the explanation of business failures; nevertheless, it is necessary to consider two

"new" constructs: Organizational Structure and Transparency. Thus, the third construct is framed within the Structural Contingency Theory, which in this case, would be the Organizational Structure proposed by Mintzberg (1980) and defined as the set of all the scenarios into which the work is divided given the different tasks to be performed and their subsequent. In addition, Mintzberg (1980) argues that the different characteristics of the company as an organization are focused on a natural harmony. Thus, failure to accommodate this configuration causes the organization to malfunction and not achieve said natural harmony.

On the other hand, Mintzberg (1980) proposes an Organizational Structure in five different ways: simple structure, mechanical bureaucracy, professional bureaucracy, divisional structure, and adhocracy. This ranking order is directly related to the variables age, size, sector, and location. To date, different authors have demonstrated the relation between each of these variables mentioned by Mintzberg (1980) and business failures, such as Turetsky and McEwen (2001), who relate age with business failure; Serrano, Mar, and Gallizo (2005), Mselmi, Lahiani, and Hamza (2017), Kovacova et al. (2018), Ayadi, Lazrak, and Xing (2019), and Wadas and Md-Rus (2018), who do so for size; Mures, García, and Vallejo (2012), who take the sector to which the bankrupt companies belong as a reference; and the works of García, Sánchez, and Tomaseti (2016), Rodríguez, Maté, and López (2017) and Bernstein, Colonnelli, Giroud, and Iverson (2019) that studied location as a focus of expansion of business failure.

The fourth construct is Transparency, proposed by the Organization for Economic Cooperation and Development (OECD) and defined in the works of Bushman et al. (2004) and Eijffinger and Geraats (2006) as the level of disclosure of accounting, financial and management information available from the company to the market through the web. A work that relates the company with Transparency is that of Serrano, Fuertes, and Gutiérrez (2007), which validates the different indicators related to this construct.

Hypotheses

According to the components of the Financial Environment, the Macroeconomic Environment, the Organizational Structure, and Transparency—inherent in the Theoretical References—the hypotheses and sub-hypotheses that will be validated to achieve the objectives set out in the research arise.

Hypothesis 1 (H₁): Positive Financial Environment directly and negatively impacts business failure.

This hypothesis proposes that the financial environment is an essential element when analyzing business failure. Different studies have shown that companies with low profitability levels and high debt margins are prone to business failure. This construct proposes some sub-hypotheses between the measurable variables and the event under study.

Sub-hypothesis H_{1a}: The operating return on equity negatively and significantly influences business failure.

Sub-hypothesis H_{1b}: The operating return on assets negatively and significantly influences business failure.

Sub-hypothesis H_{1c}: The current ratio negatively and significantly influences business failure.

Sub-hypothesis H_{1d}: Investment negatively and significantly influences business failure.

Sub-hypothesis H_{1e}: cash flow negatively and significantly influences business failure.

Sub-hypothesis H_{1f}: The level of indebtedness positively and significantly influences business failure.

Hypothesis 2 (H₂): A country's negative Macroeconomic Environment directly and positively impacts business failure.

The aim is to validate the relation between the macroeconomic situation of a country and business failure, given that, in a certain way, a positive macroeconomic scenario stimulates the company's growth. In contrast, a negative scenario discourages and even leads, in many cases, to bankruptcy. This construct establishes the following sub-hypotheses between the measurable variables and business failure.

Sub-hypothesis H_{2a}: The increase in interest rates positively and significantly influences business failure.

Sub-hypothesis H_{2b}: Inflation positively and significantly influences business failure.

Sub-hypothesis H_{2c}: The country's economic growth negatively and significantly influences business failure.

Hypothesis 3 (H₃): Higher Composition Organizational Structure directly and negatively impacts business failure.

This hypothesis validates the influence of organizational structure on business failure, based on a theoretical proposition developed by Mintzberg (1980), where he proposes the structuring of the company from an organizational point of view. Within this same conceptual development, this composition is related to the variables size, location, sector and age, which are individually supported by the works of Turetsky and McEwen (2001), Garcia et al. (2016) and Rodriguez et al. (2017), and Mures et al. (2012); and Serrano et al. (2005), Mselmi et al. (2017), and Ayadi et al. (2019), respectively. Through these variables, the Organizational Structure can be related to business failure. Therefore, older and larger organizational structures, better sectors, and better locations will support the companies' sustainability in the market. Next, the sub-hypotheses of the construct are presented.

Sub-hypothesis H_{3a}: Age negatively and significantly influences business failure.

Sub-hypothesis H_{3b}: Location influences business failure both positively and negatively.

Sub-hypothesis H_{3c}: The sector influences business failure both positively and negatively.

Sub-hypothesis H_{3d}: Size influences business failure both positively and negatively.

Hypothesis 4 (H₄): High levels of transparency directly and negatively impact business failure.

This hypothesis aims to demonstrate that companies that make accounting, financial, and management information available to the public create greater confidence in the market. This approach builds on studies developed by Bryant (1980), Bernanke and Gertler (1990), Chen, Marshall, Zhang, and Ganesh (2006), Eijffinger and Geraats (2006), Tadesse (2006), Akhigbe and Martin (2006), Nyitrai and Virág (2019), and Bernstein et al. (2019). The sub-hypotheses that relate the formative indicators of the construct to business failure are:

Sub-hypothesis H_{4a}: The level of financial information published on the web negatively and significantly influences business failure.

Sub-hypothesis H_{4b}: The level of financial information not in the financial statements published on the web negatively and significantly influences business failure.

Sub-hypothesis H_{4c}: The number of financial reports viewed on the web negatively and significantly influence business failure.

Hypothesis 5 (H₅): Positive Financial Environment and Macroeconomic Environment, Organizational Structure with the highest composition, and high Transparency levels directly and negatively influence business failure.

This hypothesis aims to validate the relation between the system formed by the four constructs concerning business failure so that the model has statistical validity, given the conceptual development of each element. As a result of the hypotheses and sub-hypotheses proposed, Figure 1 represents the path graph belonging to the Structural Equation Model (SEM) of the formative type proposed in this work, which aims to explain business failure based on the constructs of Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency.

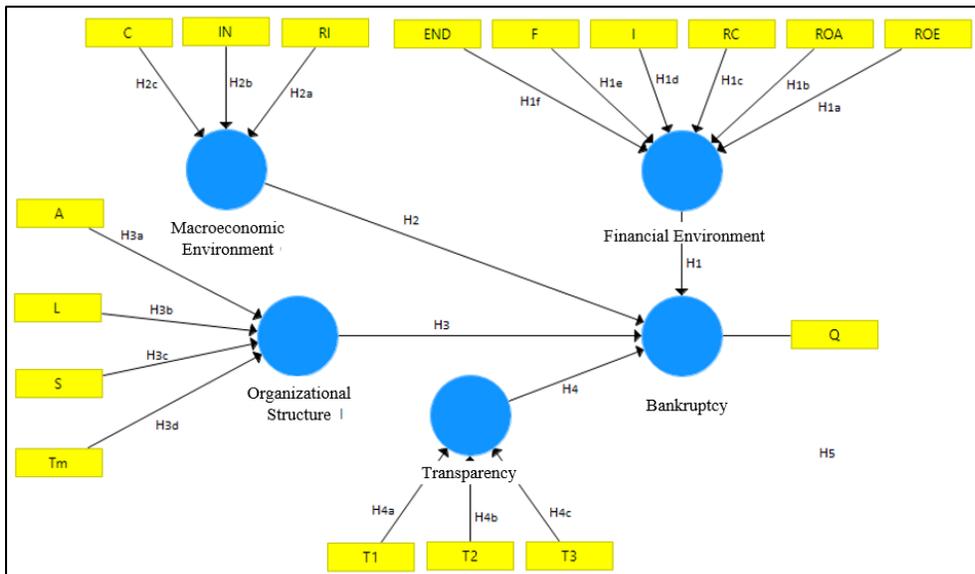


Figure 1. Initial formative model path graph
 Source: created by the authors in SmartPLS

Database

The sample of companies was structured based on the December 31 (2016) report, presented by Supersociedades, and covering the period from 1997 to 2016 under the categories of Reorganization and Validation, Compulsory Liquidation, Judicial Liquidation, Concordat, and Restructuring. The report provides data such as tax identification number (NIT), company name, city, sector, size, financial statements, and start and closing date of the process, among others. Table 1 shows the indicators for each construct, their definitions and the studies that support the choice of these indicators.

Table 1
 Constructs and indicators with their respective definitions

Construct	Indicators	Definition	Studies
Bankruptcy	Q1	1 if the company is bankrupt	
	Q2	0 if the company is not bankrupt	
Financial environment	Current Ratio (CR)	Current assets/Current liabilities	Beaver (1966)
	Indebtedness (END)	Total liabilities/Total assets	Altman (1968)
	Operating Return on Equity (ROE)	Net Profit/Equity	Tascon and Castaño (2012)
	Return on Operating Assets (ROA)	Net profit/Total assets	
	Investment (I)	Difference in net invested capital	

	Cash Flow (F)	Revenues minus expenses	
	Growth (C)	1 preceded by an increase in GDP 0 otherwise	Rose <i>et al.</i> (1982) Mensah (1984)
Macroeconomic environment	Internal risk (I)	1 preceded by an increase in interest rates 0 otherwise	Peel <i>et al.</i> (1986) Nouri and Soltani (2016)
	Inflation (IN)	1 preceded by an increase in the CPI 0 otherwise	
Organizational structure	Size (Tm)	Ln (Total Assets)	Acosta <i>et al.</i> (2019) Turetsky and McEwen (2001)
	Location (L)	Amazonian (1), Orinoco (2), Pacific (3), Caribbean (4), Andean (5)	Rodríguez <i>et al.</i> (2017)
	Sector (S)	Mining (1), Construction (2), Manufacturing (3), Agriculture (4), Services (5), Transportation (6), Trade (7)	Mures <i>et al.</i> (2012)
	Age (A)	Ln (years of the company's existence)	Serrano <i>et al.</i> (2005)
Transparency	T1	(1) Opaque; characterized by minimal legal and contact information for the entity (2) Short; a summary of accounting information (3) Paper lovers; allows you to download the accounts in PDF or similar	
	T2	(1) Information on main business activities (2) Brief description of the company's main executives (3) Information on good governance practices	Serrano <i>et al.</i> (2007)
	T3	(1) Directors' report (2) Balance Sheet and Income Statement (3) Statement of Cash Flows (4) Historical series for more than 3 years (5) Notes to the financial statements	

Source: created by the authors

The data of the companies were taken based on the year prior to the entry into the process, discarding those that had less than five years of existence and those that did not have complete financial statements, as well as information required from their Web page, leaving a sample of 1,000 bankrupt companies. In addition, taking as a reference what was proposed by Zmijewski (1984), Palepu (1986),

and Alfaro, Gámez, and García (2008), a matched sample was then obtained in order to ensure a sufficient number of bankrupt companies in the sample. For matching, the mixed method proposed by Bell (1997) of Random Stratified Sampling was used, ensuring that the companies selected belonged to the same year and were of the same size as the bankrupt companies, as specified in the works of Dietrich (1984), Mora (1994), and Gomez, De la Torre, and Roman (2008).

The financial indicators were calculated based on the financial statements filed with Colombia's Superintendency of Corporations (Supersociedades) and the Superintendency of Finance (Superfinanciera). Macroeconomic indicators were obtained from the Departamento Administrativo Nacional de Estadísticas (DANE) and Banco de la República database. Size, location, sector, and age were obtained from the Supersociedades report, and transparency indicators were based on information obtained from the companies' websites.

Methodology

The technique used is Structural Equation Modeling (SEM), which combines three multivariate statistical techniques: Path Analysis, Factor Analysis, and Multiple Linear Regression. This model type presents two approaches, one based on covariances developed by Karl Jöreskog and the other on variances developed by Herman Wold, which takes the name of PLS (Partial Least Squares).

SEMs are used to validate theoretical hypotheses requiring empirical data. This paper applies the PLS approach based on the maximum variance technique because it is a formative model. In this case, the correspondence rule goes from the indicators (observable variables) to the construct (latent variable). Thus, in this model, the observable variables explain the latent variable, as Tenenhaus (2008) proposes, so a linear combination of the indicators defines the construct. In this case, the sequence of events determines a cause-effect relation between endogenous and exogenous variables, so a cause must occur before the event under study, in this case, business failure.

There are three basic characteristics of the formative indicators. First, there is no restriction on the correlations between indicators of the same latent variable, meaning the result can be positive, negative, or zero. Second, validity and reliability analyses are not required, and third, since the formative measurement model is based on multiple regression, sample size and indicators with multicollinearity affect the stability of the indicator coefficients. In addition, the variance method (PLS) does not require that the variable distributions have a specific distribution nor assumptions about the measurement scale, allowing continuous, ordinal, and even nominal variables to be modeled. Thus, this technique can evaluate complex models without generating estimation problems, specifying the estimation of latent variables, and eliminating possible problems related to multicollinearity. The SmartPLS statistical package was used

in this work, supported by the studies of Serrano et al. (2007) and Serrano, Fuertes, Gutiérrez, and Cuellar (2011), in terms of validity of structural equation modeling with the partial least squares (PLS) method.

Results analysis

For the proposed model, the minimum size was calculated based on Figure 1, showing four relations between the latent variables resulting from the five latent variables (Bankruptcy, Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency) proposed in the model. Therefore, following the criteria of Marcoulides and Saunders (2006), the minimum sample size is 65 observations. If, on the contrary, Hoyle (1995) is taken as a reference, the sample should be larger than 200 observations. In this case, the sample size meets both measurement parameters since a sample of 2,000 observations is used, which exceeds the requirements of Hoyle (1995) and Marcoulides and Saunders (2006). Concerning the degrees of freedom, the model has 18 observed variables and 17 parameters to estimate. They were replaced in the following formula:

$$gl = \frac{18 \times (18 + 1)}{2} - 17 = 154$$

The above calculations show that the model has 154 degrees of freedom, which implies that the model is parsimonious, which in the case of SEM means that the data fit within the model and, therefore, associations between observed and latent variables should be expected to be significant.

Ensuring the minimum size of observations and the degrees of freedom, based on the formative model proposed, the following aspects were considered: multicollinearity in the Structural Equation Model (SEM) of formative type, the statistical significance and relevance of the hypotheses raised, the accuracy of the predictions through the R2 indicator, the size of the f2 effects, the measure of model fit with the standard normal root of the residuals (SRMR), the goodness of fit index (GFI), the comparative fit index (CFI) and the normed fit index (NFI), and finally, the predictive relevance of the model through the Q2 statistic, all of the above being in order to validate the relevance of the measurement model (internal) and the structural model (external).

It should be noted that the results are bounded by the multivariate normal distribution, which implies that small changes in this distribution could lead to changes in the Chi-square tests. In addition, during the model validation process, no out-of-sample data (Outliers) were found.

Multicollinearity

The Variance Inflation Factor (VIF) indicator was used to detect collinearity, which had to be less than 5, as stated by Hair, Ringle, and Sarstedt (2011). Using SmartPLS, 5,000 iterations were performed with a stopping criterion of 10^{-7} , using the path option as the weighting scheme.

Table 2 shows the VIF for each of the observable variables established in the external model, where all the values are less than 5, guaranteeing the measurement model's non-collinearity. Therefore, the significance of the weights is validated to conclude the final hypotheses in the model.

Table 2
 Collinearity statistic VIF of the variables of the external model

Financial Environment		Macroeconomic Environment		Organizational Structure		Transparency	
Indicator	VIF	Indicator	VIF	Indicator	VIF	Indicator	VIF
END	1.158	C	3.269	A	1.001	T1	1.000
F	1.667	IN	3.269	L	1.002	T2	1.002
I	1.300	RI	1.001	S	1.002	T3	1.002
CR	1.368			Tm	1.003		
ROA	1.226						
ROE	1.032						

Source: created by the authors with SmartPLS

To verify that the variables are truly significant, the Bootstrapping option of SmartPLS is used to calculate the t-statistics and their respective P-values. As can be seen in Table 3, the t-statistics are above 1.96, and the P-values are less than 0.05. Therefore, based on the statistical theory of validation, they are statistically significant at 95%, i.e., in this case, each variable contributes to its respective construct.

Table 3
 Weights of the observable variables with their constructs or factors of the External Model

Relations	t-statistic	P values
A -> Organizational Structure	2.628	0.000
C -> Macroeconomic Environment	19.697	0.000
END -> Financial Environment	10.455	0.000
F -> Financial Environment	35.405	0.000
I -> Financial Environment	14.616	0.000
IN -> Macroeconomic Environment	7.708	0.000
L -> Organizational Structure	8.099	0.000
CR -> Financial Environment	20.505	0.000
RI -> Macroeconomic Environment	6.847	0.000
ROA -> Financial Environment	11.161	0.000
ROE -> Financial Environment	4.518	0.000

S -> Organizational Structure	3.641	0.000
T1 -> Transparency	2.062	0.039
T2 -> Transparency	4.083	0.000
T3 -> Transparency	5.934	0.000
Tm -> Organizational Structure	2.837	0.005

Source: created by the authors with SmartPLS

On the other hand, to test the hypotheses and the significance of the formative indicators, the Bootstrapping procedure is used again through a sample of 5,000, guaranteeing the same size, thus generating estimates and values of the t-statistic and the P-value, as shown in Table 4.

Table 4
 Values to validate hypotheses of the Structural Model

Relations	t-statistic	P Value	Hypothesis
Financial Environment -> Bankruptcy	14.413	0.000	Accepted
Macroeconomic Environment -> Bankruptcy	24.468	0.000	Accepted
Organizational Structure -> Bankruptcy	2.332	0.000	Accepted
Transparency -> Bankruptcy	2.900	0.000	Accepted

Source: created by the authors with SmartPLS

With the previous t-statistic and P-values, it is concluded that Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency influence business failure. With the above and based on the path coefficients of the four constructs toward business failure, these were greater than 0.5, as shown in Figure 2, with which the following conclusions can be reached for the hypotheses raised in this work, as follows:

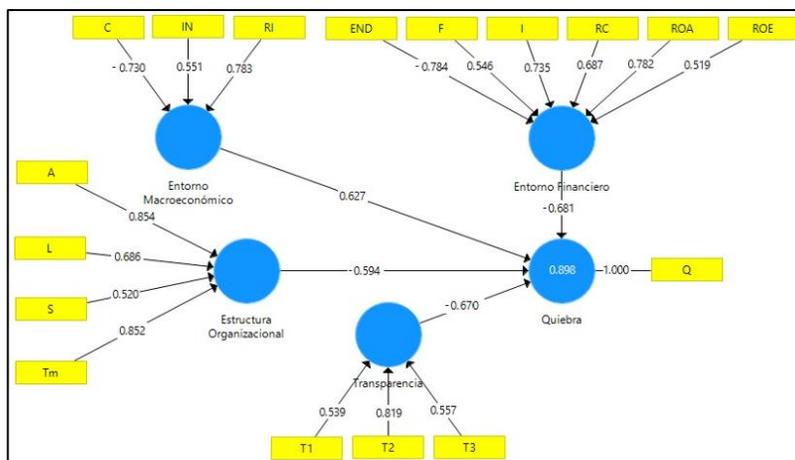


Figure 2. SEM of formative type with estimated weights of the indicators

Source: created by the authors in SmartPLS

Hypothesis 1: The results obtained validate and confirm the hypothesis, so it is accepted that the Financial Environment construct directly and negatively impacts business failure. In addition, the results support what was stated in each of the sub-hypotheses present in the construct, and it can be affirmed that the variables operating return on equity, operating return on assets, current ratio, investment, and cash flow are negatively related to the event, i.e., the higher the levels of these indicators, the lower the probability of bankruptcy of the companies. On the other hand, the indebtedness variable presented a positive relation, which implies that companies with high values in this indicator will have a greater possibility of bankruptcy.

Hypothesis 2: The results validate the hypothesis, so it is accepted that the Macroeconomic Environment construct directly and positively impacts business failure. Simultaneously, the sub-hypotheses raised in this construct are approved, which reaffirms what is established in theory: an economy with inflation and high-interest rates propitiate a bad economic environment for the companies in the country under study, creating a scenario conducive to bankruptcy. The growth variable (measured through the variation of the Gross Domestic Product) showed a negative sign, which means that a growing economy reduces the probability of the event.

Hypothesis 3: The hypothesis that the Organizational Structure has a direct and negative impact on business failure is validated. Additionally, all the sub-hypotheses of this construct are approved, which in their totality are negatively related to business failure, where logic shows that companies with a higher level of seniority and a larger size will be less likely to go bankrupt. On the other hand, companies in the Andean and Caribbean regions are less prone to bankruptcy, which is acceptable, considering that these are the regions that most drive the growth of the country under study. In terms of sector, the agricultural, commercial, and construction companies are the most likely to go bankrupt.

Hypothesis 4: The results support the hypothesis and sub-hypotheses in the construct, indicating that Transparency directly and negatively impacts business failure. In addition, the results of the model show that companies that make their financial information available to the public in terms of the balance sheet, income statement, and cash flow statement, complemented with information concerning their lines of business and corporate governance, among others, are companies that reflect a level of transparency in their management, thus transmitting security to the general public, such as banks, suppliers, consumers and workers. This shows that companies with high levels of transparency have a low probability of bankruptcy.

Hypothesis 5: Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency influence business failure, given that all the constructs were statistically significant for business failure with a statistical significance level of 95%. In addition, upon continuing with the

verification process of the remaining tests to validate the formative type's Structural Equation Model (SEM), the validity of the model was found.

Accuracy of the predicted variable

For this purpose, the Coefficient of Determination R^2 is considered the ideal measure. In this case, the result yielded by the SEM gave a value of 0.898, which implies that the model developed has a predictive power of 89.8% in the selection of healthy and bankrupt companies.

Size of effects (f^2)

This part seeks to measure the exogenous construct's effects on an endogenous construct (latent variable) through the change in the R^2 when the exogenous construct is excluded from the endogenous one.

Table 5
Size of effects

Constructs	Bankruptcy
Financial Environment	- 0.681
Macroeconomic Environment	0.627
Organizational Structure	- 0.594
Transparency	- 0.670

Source: created by the authors with SmartPLS

Consistent with what has already been detected, it can be seen how the constructs of Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency have a significant relation and effect concerning the type of company, in this case with the phenomenon of business failure. Only the Financial Environment construct positively affects bankruptcy, while the other three constructs are negatively related.

Another measure of the predictive relevance of the model is the Q^2 statistic proposed by Stone (1974) and Geisser (1975), which is obtained using the Blindfolding technique in the SmartPLS, as proposed by Chin (1998) and Henseler, Ringle, and Sarstedt (2015). This involves eliminating the data when estimating a latent dependent variable based on the independent ones to estimate those data through the predicted parameters subsequently. For the proposed model, the Q^2 value was 0.878, indicating that the predictive relevance of the model is high.

Table 6
 Cross-validated construct redundancy

	SSO	SSE	$Q^2 = (1 - SSE/SSO)$
Financial Environment	12.000	12.000	
Macroeconomic Environment	6.000	6.000	
Organizational Structure	8.000	8.000	
Bankruptcy	2.000	243.954	0.878
Transparency	6.000	6.000	

Source: created by the authors with SmartPLS

Finally, the SRMR goodness of fit indicator was considered. It measures the difference between the model's observed correlation matrix and the implied correlation matrix. According to Hu and Bentler (1998), a good fit is when a value of less than 0.08 is obtained; for the present model, the value was 0.013, further confirming the results obtained for the proposed model through the SmartPLS. The above was validated with the results obtained from the following tests: GFI = 0.943, CFI = 0.916 and NFI = 910.

Main findings

The approach made in this work and the subsequent results cover the gap signaled in other studies, as in the work of Rodriguez et al. (2017), who pointed to the need to structure a single system composed of the four constructs and manage to relate them to business failure.

The model shows that all the constructs considered in the theoretical part (Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency) were maintained after the different statistical analyses required to validate a Structural Equation Model (SEM) of a formative type.

Conclusions

Regarding hypothesis H₁, the results of this research show that there is a direct and negative relation between the Financial Environment construct and business failure, confirming that a company with high levels of cash flow, good investment, a high current ratio, as well as good margins of operating profitability of assets and equity, are related to a low probability of bankruptcy on the part of the companies. These findings are in agreement with what was found by Antunes, Ribeiro, and Pereira (2017), Caro, Guardiola, and Ortiz (2018), and Acosta et al. (2019) about cash flow, Affes and Hentati (2017), Altman, Iwanicz, Laitinen, and Suvas (2017), Barboza, Kimura, and Altman (2017), Wadas and Md-Rus (2018), and Nyitrai and Virág (2019) for the other indicators. As for the indebtedness variable, its relation was negative with the Financial Environment construct, such that companies with high levels of this

indicator will have a higher probability of bankruptcy. This finding confirms what was found by Lu, Yang, and Huang (2015), Alaminos, del Castillo, and Fernandez (2016), Chou, Hsieh, and Qiu (2017), Condello, Del Pozzo, and Loprevite (2017), and Lukason and Camacho (2019).

Regarding hypothesis H₂, the results obtained validate the relation between the Macroeconomic Environment construct and business failure; this relation is direct and positive. Therefore, it was concluded that inflation and an increase in interest rates increase the probability of bankruptcy in the companies, and, regarding economic growth, it is confirmed that countries whose economy is growing decrease the probability of bankruptcy, confirming what was found in the works of Shie, Chen, and Liu (2012), Kim and Kang (2012), Salehi, Shiri, and Pasikhani (2016), García et al. (2016), Jones (2017), Shi et al. (2018) and Acosta et al. (2019).

On the other hand, hypothesis H₃, which states that the Organizational Structure has a direct and negative impact on business failure, was statistically validated. Thus, large companies with long participation in the market and located in good areas of the country (Andean and Caribbean) have a lower probability of bankruptcy than those of smaller size and age, and which are also located in the Pacific, Orinoco, and Amazon areas. The above findings are in agreement with what was found in the studies of Amendola, Restaino, and Sensini (2015), Manzanique, Priego, and Merino (2016), Nouri and Soltani (2016), Altman et al. (2017), and Rodriguez et al. (2017), on the variable Age, Wang, Yang, and Ma (2014), Reznakova and Karas (2015), Laitinen and Suvas (2016), and Bernstein et al. (2019) on the variable Location and Sector, Jones (2017), Mselmi et al. (2017), Kovacova et al. (2018), and Ayadi et al. (2019) on the variable Size.

Hypothesis H₄ proposes an influence of the Transparency construct, a direct and negative relation with business failure, which was statistically validated, in such a way that companies that make publicly available their legal information, accounting summaries, information related to the company's activities, information on their directors and good governance policies, historical series of their financial statements, as well as the notes to these statements, will be less likely to fail than those that in some way hide this type of information. The results obtained through this hypothesis support the conceptualization of transparency proposed in the work of Bushman et al. (2004) and Eijffinger and Geraats (2006). On the other hand, the results of this work on this construct validate the findings of Serrano et al. (2007) in the study of Transparency and its influence on the stability of Banks.

Finally, hypothesis H₅, which states that the Financial Environment, Macroeconomic Environment, Organizational Structure, and Transparency constructs influence business failure, was validated, thus validating the theory of Rodriguez et al. (2017). In addition, it leaves the possibility open for the model to be replicated in other economies to see the influence of each of these constructs on the event.

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