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Predictors of the business model validated by managers of small and medium-sized companies in Monterrey, Nuevo Leon, Mexico

Factores predictores del modelo de negocio validado por directivos de pequeñas y medianas empresas de Monterrey, Nuevo León

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Abstract

This research studies collaborative relationships, the seasonal behavior of demand and the in-tellectual capital and how these variables predict the business model, according to the percep-tion of the leaders of SMEs in Monterrey, Nuevo León, Mexico. This study is quantitative and predictive. A sample of 233 SME managers from Monterrey, Nuevo León, Mexico was used. The 74.7% of the variance dependent business model was carried out, a linear regression analysis by the method of stepwise. It has also been found that the variables of intellectual capital and seasonal behavior of demand are good predictors ex-plained by 76% variance of the variable criterion business model.

JEL Code: M10, M13, M19
Keywords: collaborative relationships; seasonal behavior of demand; intellectual capital; business model; business innovation

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Resumen

Esta investigación estudió las relaciones de colaboración, comportamiento estacional de la de-manda y capital intelectual y, cómo estas variables predicen la práctica de un modelo de nego-cio, según la percepción de directivos de Pymes de Monterrey, Nuevo León, México. Este estudio es de tipo cuantitativo y predictivo. La muestra que se utilizó fue de 233 directivos de Pymes de Monterrey, Nuevo León, México. Se realizó un análisis de regresión lineal por el método de pasos sucesivos, mediante el cual se encontró que las variables capital intelectual y comportamiento estacional de la demanda explican en un 76% la varianza de la variable criterio modelo de negocio.

Código JEL: M10, M13, M19
Palabras clave: relaciones de colaboración; comportamiento estacional de la demanda; capital intelectual; modelo de negocio; innovación empresarial

Introduction

Collaborative relations, seasonal demand behavior, intellectual capital, and business model practice are key factors for success in a company that are not studied together. Most authors have studied them separately and recognize that they are important for a company (Spreitzer, 1995; Giraldo Marín, 2012; Bozart, Warsing, Flynn, & Flynn, 2009; and Villena Manzanares & Souto Pérez, 2015). On the other hand, the National Institute of Statistics and Geography (INEGI, 2016) regards it as a necessity that companies have potential investments in innovation and that these become business opportunities, improving processes to achieve long-term relations with their clients. It should be noted that SMEs are the backbone of the national economy due to the recent trade agreements Mexico has entered into and their high impact on job creation and national production. In Mexico, there are approximately 4 million 15 thousand business units, of which 99.8% are SMEs that generate 52% of gross domestic product and 72% of employment in the country. Such is the example of Monterrey, one of Mexico's most developed cities and the country's main business center. It is the city with the best quality of life in Mexico, ninth in Latin America and 112th in the world. It is home to many national and international companies such as Cemex, Oxxo, FEMSA, Vitro, and Grupo Alfa, which is why it is called Mexico's Industrial Capital.

Likewise, authors such as Camisón Zornoza, Garrigós Simón, and Palacios Marqués (2007) and Garcés, López, and Pailiacho (2017) emphasize that business models reduce the complex structure of organizations by summarizing it in categories and that these are a guide for managers since they help them to understand in a summary form how a company makes money, generates value, and offers a service or product with value. Also, Macri, Tagliaventi, and Bertolotti (2002) state that a company is more entrepreneurial when it identifies and exploits new business opportunities. Furthermore, Den Hertog, Van der Aa, and de Jong (2010) add that, with the business model defined, new ways of valuing innovation

capabilities can be proposed with a conceptual and theoretical framework for management and administration; that is why the purpose of this study is to evaluate the perceptions of managers of some SMEs in Monterrey of their collaborative relations, seasonal behavior of demand, and intellectual capital as predictors of the business model. The investigation of knowledge about the reasons for the differences in outcomes between organizations continues to be one of the central and most challenging topics of study (Claver Cortés, Pertusa Ortega, & Molina Azorín, 2010).

Review of the literature

The first variable under study was collaborative relations; in this regard, Faust, Christens, Sparks, and Hilgendorf (2015) point out that the new modes of collaboration involve bilateral resource flows and planning and strategic efforts by both sectors. Lee and Choi (2003) mention that companies operating in dynamic and highly competitive industrial sectors face strong pressures to offer attractive products in terms of price and quality. To achieve this, from the point of view of Giraldo Marín (2012), companies must allow and support the empowerment of their employees, since when an employee is empowered, it is because they are thought of as a person with high creative potential, knowledge, and initiative to develop and contribute to organizational goals. On the other hand, Martín Ríos and Septiem (2013) point out that for companies to succeed in today's open and competitive economic context, it is not enough to channel and manage internal resources to develop products and services. Companies often need to collaborate with other companies, and even competitors, to obtain information on essential aspects such as ways of organizing work, innovating, and producing or offering services. For this research, collaborative relations are defined as the work of several people working together to achieve a very difficult result to obtain individually and to help achieve something they could not accomplish on their own.

The second variable under study was the seasonal behavior of demand; for Alonso and Arcila (2013), it is the documentation of seasonality in the behavior of prices in markets, both of financial assets and raw materials; knowing this information generates a competitive advantage since the aspects to be evaluated should be seasonality, trend, random variation and cyclical variation, making it necessary to perform an analysis of the market in segments and try to forecast a period taking into account all the factors for this to be satisfactory. Similarly, Bozart, Warsing, Flynn, and Flynn (2009) and Lavanda and Rodriguez (2011) mention that aggregate demand and supply models determine the price level and output, giving a set of variables. Likewise, these models enable different temporal analyses to be carried out through their respective variants for short, medium, and long-term analysis. An important aspect to highlight in this variable, according to Cuevas Vargas, Aguilera Enriquez, Gonzalez Adame, and Servin (2015), is that SMEs face multiple challenges to remain in the highly competitive and changing global

markets because of the behavior of the demand they currently face. For this research, seasonal demand behavior is defined as the statistics for a given product showing seasonality when the underlying time series undergoes a predictable cyclical variation depending on the time of year.

The third variable under study is intellectual capital. Intellectual capital comprises all tacit and explicit knowledge that generates economic value for the entity (Brooking, 1997; Sagástegui, 2014). For Secundo, Dumay, Schiuma, and Passiante (2016), IC is a multi-dimensional concept of knowledge assets, experience, and practical capabilities to create value.

Several authors divide intellectual capital as follows: (a) human capital, (b) structural, and (c) relational capital (Bontis, Chua, & Richardson, 2000; Wee & Chua, 2016). Reyes (2011) mentions that human capital is people's talent and is an organization's main asset. Structural capital comprises the company's most valuable strategic assets, such as organizational capabilities, cultural processes, patents, copyrights, trademarks, and databases (Denicolai, Ramusino, & Sotti, 2015; Hejazi, Ghanbari, & Alipour, 2016). Finally, Alvarez and Gonzales (2013) divide relational capital into external and internal agents. External agents are clients, suppliers, vendors, and public administrations. Internal agents have to do with good relations with shareholders, managers, employees, the market (image and logo), reputation, ethics, and brand. In summary, intellectual capital is defined as the degree of competence required in the functions of an occupation, obtained as a combination of factors that determine the complexity, the degree of autonomy and responsibility, and the knowledge requirements for the proper performance of those functions.

The business model is the fourth and last variable under study for this research. According to Manrique Henao, Robledo Velásquez, and Lema Tapias (2014), in recent decades, the possibility of accessing large amounts of information in developed countries has allowed the formulation of innovation analysis methodologies and models for companies. Consequently, Garcés, López, and Pailiacho (2017) define a business model as a conceptual tool that, through a set of elements and their relationships, makes it possible to express the logic by which a company tries to make money by generating and offering value to one or several client segments, through the architecture of the company, its network of allies to create, market, and deliver this value, and the relational capital to generate profitable and sustainable sources of income. The management cycle in which a business plan is constructed generally takes the business model for granted and is concerned with formulating strategies that achieve an advantageous competitive position within the boundaries of the model; this practice can be enriched if combined with business model design. For this research, the term "business model" refers to an organization's abstract representation, either textually or graphically, of all related concepts and financial arrangements, as well as the core portfolio of products or services that the organization offers and will offer based on the actions necessary to achieve the strategic goals and objectives

Theoretical basis of the model

De Oliveira Cabral, Fernandes Mateos Coelho, Fernandes Coelho, and Braga Costa (2015) present a model tested with data from 498 exporting companies distributed across all Brazilian manufacturing sectors by company size. The research shows a strong correlation between collaborative relations, intellectual capital, and the business model, but it does not impact product innovation. Data were collected through a questionnaire. On a seven-point Likert scale, this questionnaire contained 38 questions, with 1 meaning "not at all" and 7 meaning "extremely." As a result, evidence was found that there is a strong relation between collaborative relations, intellectual capital, and the business model.

Manufacturing SMEs were analyzed in the empirical research of Villena Manzanares and Souto Pérez (2015). The sample included 150 SMEs in the province of Seville (Spain). The research model incorporates the following variables: relational capital, sustainable culture, quality certification, capacity for competitive improvement, organizational capacity, and orientation toward R&D (importance for the company of having technologies that improve the characteristics of its products or production processes), as part of the level of intellectual capital. The analysis concluded that the foreign trade-oriented relational capital and the company's sustainable culture, quality certification, competitive improvement capacity, and R&D orientation positively impact the company's export performance (business model). They also concluded that other internal characteristics of the companies analyzed, such as sustainable culture and the capacity for competitive improvement, affect export performance similarly.

García Osorio, Quintero Quintero, and Arias Pérez (2014) conducted cross-sectional, empirical, and explanatory quantitative research using an instrument for the collection of empirical information sent to a database of service companies in Colombia to the emails of their managers. The sample size was 384, where 335 responses were obtained, of which 318 were valid. Due to its importance and dynamism within the Colombian economy, this research focused on the service sector. The collection of information made it possible to establish the values of the constructs client-oriented innovation capability (CIOC), marketing-oriented innovation capability (CIOM), technology-oriented innovation capability (CIOT), innovative performance (DI), financial performance (DF), and non-financial performance (DnF), to establish relations between them. The main finding of the analysis is to demonstrate that technology-related innovation capabilities (IC) have no impact on the innovative performance of service companies. For this research, intellectual capital influences the business model, and this, in turn, influences business performance.

Undoubtedly, demand imbalance, collaborative relations and intellectual capital are indispensable variables studied by several authors. As mentioned above, the purpose of this research was to analyze the business models of SMEs in Monterrey, where the research problem is to determine whether

collaborative relations (CR), seasonal demand behavior (CED), and intellectual capital (IC) are significant predictors of the business model (MN), according to the perception of managers in SMEs in Monterrey (see Figure 1).

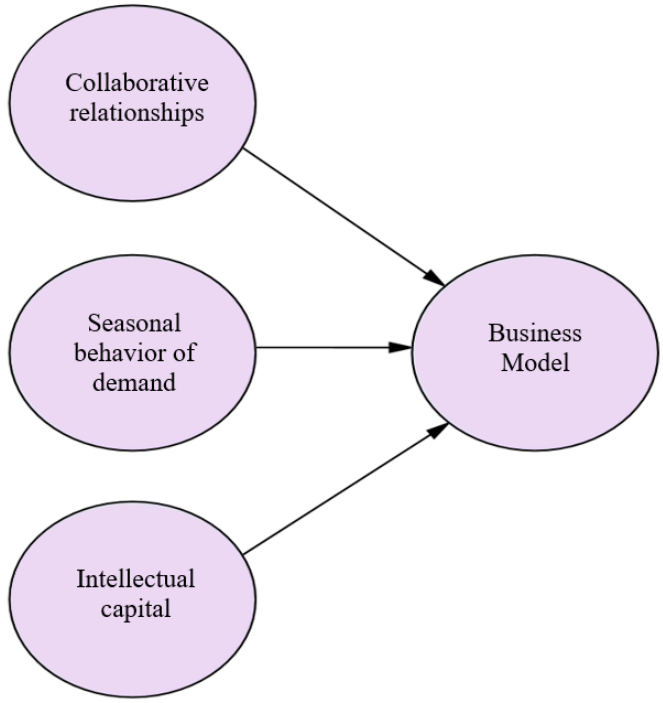

Figure 1. Research model
Source: created by the authors

Methodology

This study has a quantitative and predictive approach. The population used in this research consisted of 2500 SMEs registered in CAINTRA in Nuevo León, Mexico, between September to December 2017. The type of sampling carried out was non-random and by convenience since those managers from companies in Monterrey and its metropolitan area who were willing to participate were selected. The sample was 233 managers, representing 9.32% of the population and has the following characteristics: (a) regarding age, from 20 to 30 years old, 48.7%; from 31 to 40, 29.3%; from 41 to 50, 18.5% and from 51 to 60, 3.4%; (b) regarding gender, 79.3% are men and 20.7%, women; (c) regarding academic level, 14.2% studied up to high school; 69.4%, up to undergraduate degree and up to a postgraduate degree, only 16.4%; (d) regarding their area of work, 3.9% work in sales, 34.3% in production, 8.2% in purchasing, 12.4% in

management, and 41.2% in other areas; (e) regarding the position they hold, 17% work at the operative level, 59.2% are supervisors, 22.9% work at the management level, and only .9% at the director level; (f) regarding the sector, 4.8% are in sales, 88.3% in manufacturing, and 6.9% in services. For data collection, a questionnaire created by Sánchez Valdez (2018) was used with a Likert-type scale where 1 is never, 2 is seldom, 3 is sometimes, 4 is almost always, and 5 is always. Each questionnaire construct is divided into three dimensions and comprises 16 statements.

The reliability of the instrument was measured by a variable with its corresponding Cronbach's alpha: (a) collaborative relations, .936, (b) seasonal demand behavior, .930, (c) intellectual capital, .934, and (d) business model, .934.

Results

This section presents the results of the arithmetic means and standard deviation of each construct and its items. By analyzing the responses provided by 233 managers, an arithmetic mean was obtained for collaborative relations of (M = 4.28, S = .743), seasonal demand behavior (M = 4.07, S = .742), intellectual capital (M = 3.92, S = .756), and business model (M = 3.60, S = .807).

To further study how managers work practically with the variables under study, the arithmetic means of the dimensions were obtained (see Table 1), where the lowest dimension in collaborative relations is teamwork (RCB), and the highest is strategic information (RCA). For the seasonal demand competition variable, the lowest dimension is knowledge transmission (CEDA), and the highest is the technological capacity (CEDC). For intellectual capital, the lowest dimension is organization-related capital (OCR), and the highest is human capital (HIC). For the business model, the lowest is the organization that researches, innovates, and engages. All the arithmetic averages of the statements are shown in the appendix.

Table 1
Arithmetic means by dimensions

	M	S
RCA (Strategic Information)	4.24	.754
RCB (Teamwork)	4.16	.763
RCC (Work Commitment)	4.17	.689
RCtotal	4.19	.646
CEDA (Knowledge transfer)	3.80	.819
CEDB (Reactive capacity)	4.05	.736

CEDC (Technological capacity)	4.24	.681
CEDtotal	4.04	.658
HIC (Human Capital)	3.94	.718
CIB (Structural capital)	3.93	.812
OCR (Organizational-related capital)	3.82	.825
ICtotal	3.90	.704
MNA (Creativity of human capital)	3.59	.752
MNB (The organization that researches, innovates and engages)	3.46	.879
MNC (Innovative Performance)	3.56	.928
MNtotal	3.54	.750

Source: created by the authors

Multiple regression assumptions

Hair, Anderson, Tatham, and Black (2007) mention four assumptions to be tested in multiple regression: (a) linearity of the phenomenon, (b) normality of the residuals, (c) independence of the error terms, and (d) constant variance of the error term (homoscedasticity). For this research, the first criterion analyzed was the linearity of each independent variable with the criterion variable, and it was observed in the scatter plots that there is a positive relation, and the points tend to be a straight line (see Figure 2). The second criterion tested was the normality of the errors using the Kolmogorov-Smirnov statistic ($p > .05$); seven outliers were removed, and the distribution of the residuals was proved to be normal ($p = .200$) (see Table 2). In the third criterion, the independence of the errors was tested using the Durbin-Watson test, whose value was $DW = 1\,970$, which is very close to two; this indicates that the errors are not correlated and are independent (see Table 3). Finally, homoscedasticity was analyzed using the graph of the standardized predicted value and the value of the standardized residual; it was observed that there is no linear relation in the residuals and, therefore, the errors have equal variances (see Figure 3).

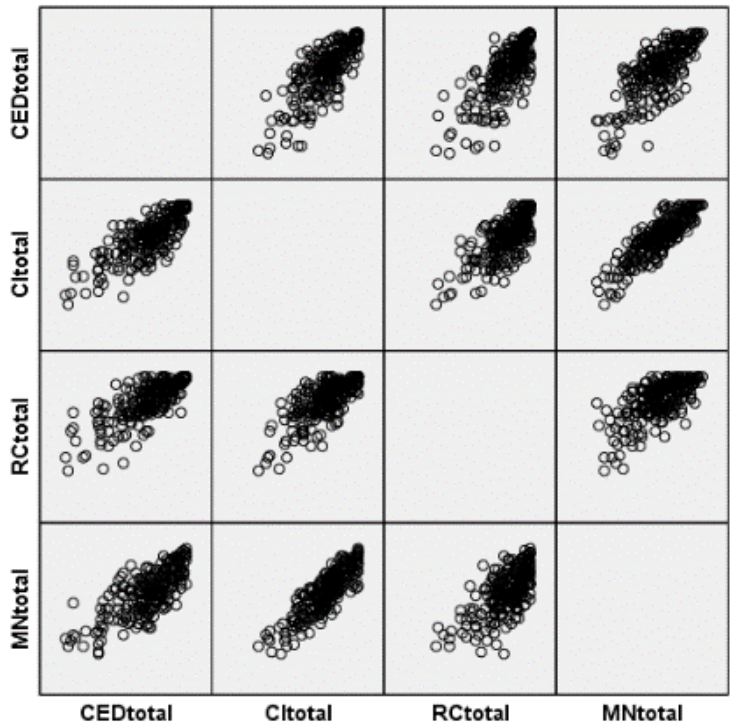

Figure 2. Linearity with the criterion variable
Source: created by the authors

Table 2
Normality test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Gl	Sig.	Statistic	Gl	Sig.
Standardized Residual	.039	226	.200*	.989	226	.073

Source: created by the authors

Table 3
Durbin-Watson Test

Model	R	R square	R-squared corrected	Standard error of the	Durbin-Watson estimation
1	.865[a]	.748	.747	.37762	
2	.872[b]	.761	.759	.36888	1.970

Source: created by the authors

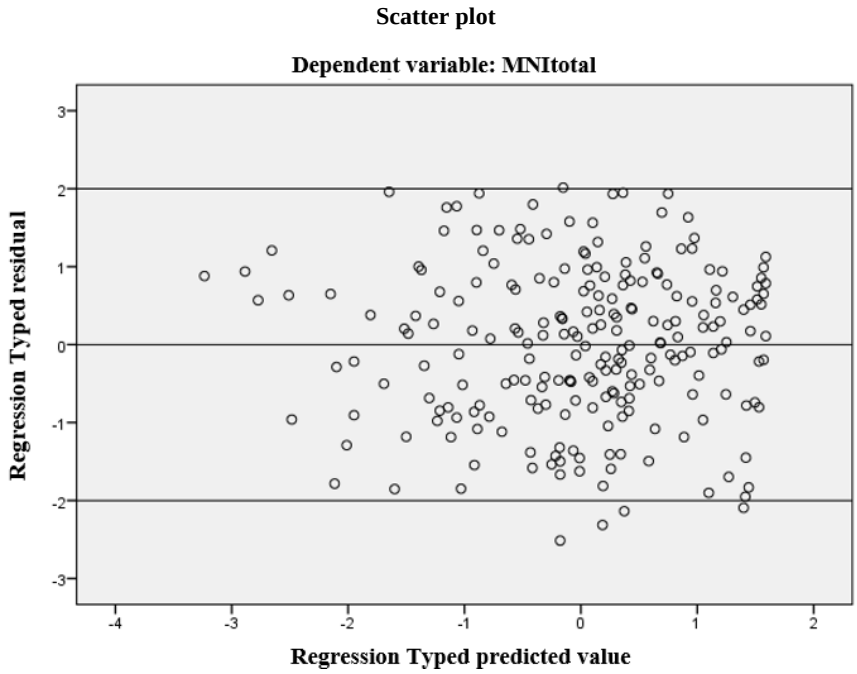

Figure 3. Scatter plot
Source: created by the authors

Null hypothesis test

H_0: The degree of collaborative relations, the seasonal behavior of demand, and intellectual capital are not predictors of the business model perceived by managers of small and medium-sized companies in Monterrey.

For the analysis of this hypothesis, the statistical technique of multiple linear regression using successive steps was used; the degree of collaborative relations, the seasonal behavior of demand, and intellectual capital were considered independent variables, and the business model as the dependent variable.

The model is expressed as follows:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon_1$$

$$MN = \beta_0 + \beta_1 (RC) + \beta_2 (CED) + \beta_3 (IC)$$

Where:

y = business model

x_1= collaborative relations

x_2= seasonal behavior of demand

x_3= intellectual capital

When performing the regression analysis by the stepwise method, it was found that the best predictor was the intellectual capital variable, explaining 74.7% of the variance of the dependent variable business model (see model 1 in Table 4). It was also observed that the intellectual capital and seasonal demand behavior variables are good predictors of the business model (the collaboration relations variable was not significant). The corrected R^2 value was equal to .759, which indicates that these two variables explain 76% of the variance of the dependent variable business model (see model 2, Table 4).

Similarly, in the proposed model 2 shown in Table 4, the *F*-value equal to 354.726 and the *p*-value equal to .000 were obtained. A positive and significant linear correlation is indicated because the significance level is less than .05. The null hypothesis is rejected based on the above.

Table 4
Regression analysis results

Model	Regressors	R	R^2	Adjustment of R^2
1	IC	.865	.748	.747
2	IC and CED	.872	.761	.759

Source: created by the authors

The values of the unstandardized coefficient *Bk*, obtained using the statistical regression technique, were as follows: B_0 equal to -.300, B_1 not significant, B_2 equal to .205 and B_3 equal to .772. With these values, the following regression equation could be constructed using the least squares method:

$$MN = -.300+.205\ (CED)+.772\ (IC)$$

Figure 4 shows the standardized coefficients for seasonal behavior of demand *B* equal to .179 and intellectual capital *B* equal to .725. The collinearity of the constructs was also analyzed, and it was observed that the variance inflation factor of seasonal demand behavior and intellectual capital was less than ten (*IVF* = 2.558). Thus, it is concluded that the business model and seasonal demand behavior constructs do not show collinearity.

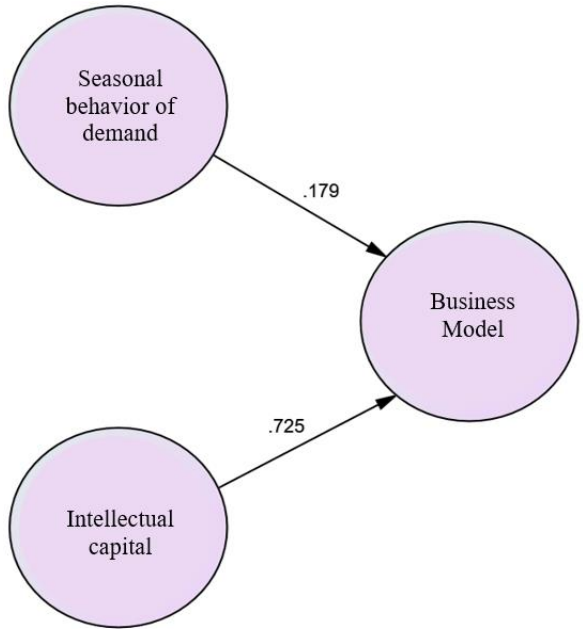

Figure 4. Final model with results.
Source: created by the authors

Table 5 analyzes the dimensions of each construct that best explain the business model, finding that OCR (organization-related capital), HIC (human capital), CIB (structural capital), and CEDA (transmission of knowledge) are the dimensions that significantly explain the business model variable.

Table 5
Model coefficients

Model	Non-standardized coefficients		Typified coefficients		
	B	Typical error.	Beta	T	Sig.
(Constant)	-.219.	.182		-1.199	.232
RCA	.088	.047	.088	1.858	.065
RCB	.002	.052	.002	.036	.971
RCC	-.110	.058	-.101	-1.884	.061
CEDA	.119	.052	.129	2.294	.023*
CEDB	.070	.053	.068	1.317	.189
CEDC	.007	.058	.007	.127	.899

HIC	.311	.059	.298	5.247	.000***
CIB	.172	.057	.186	3.019	.003**
OCR	.307	.048	.337	6.427	.000***

Dependent variable: MNtotal, (* p<.05, ** p<.01, *** p<.001)
Source: created by the authors

Conclusion

The Bank of Mexico (2006) states that research, development, and innovation must be strengthened to improve competitiveness. Concerning this need, this research aimed to answer the question: Are the constructs of collaborative relations, seasonal behavior of demand, and intellectual capital significant predictors of the business model, according to the perception of SME managers in Monterrey? Concerning the research question, the results show that intellectual capital alone explains 75% of the business model, and the seasonal demand behavior variable explains 76%.

These results agree with those obtained by some authors who have carried out similar studies. Cassol, Goncalo, Santos, and Ruas (2016) conducted research intending to analyze a model of strategic management of intellectual capital in the practices of absorptive capacity as an enhancer of business model innovation. The results showed that managers' perception of intellectual capital drives innovation. Therefore, this research contributes empirical evidence that intellectual capital can be promoted by practices in the capacity to enhance innovation, demonstrating the existence of the relation between intellectual capital and business models. Similarly, De Oliveira Cabral, Fernandes Matos Coelho, Fernandes Coelho, and Braga Costa (2015) found a strong relation between intellectual capital and business model.

García Cruz and Real Fernández (2013) studied the variables that influence the affective commitment of employees perceived by the manager, both on their level of trust and on the organizational learning capacity (OLC) and the influence on the OLC of this predisposition of the manager to trust their employees. It was examined whether the manager-perceived affective commitment of employees, managerial trust, and OLC favor product innovation, with the result being that, when the manager perceives commitment in their employees, they tend to trust them; if the manager perceives positive behavioral expectations in employees, such as those derived from being affectively committed, they will tend to adopt positions of trust toward these employees, and the influence of affective commitment and manager-perceived trust influence OLC. This leads to the conclusion that if the manager perceives commitment in the employees and places their trust in them, the OLC improves, and the trust that the

manager places in their employees positively influences learning and the innovative performance of the business model.

Another significant aspect of the results of this study is that the dimensions of intellectual capital have the following order of prediction for the business model according to the standardized coefficients: OCR (organization-related capital) is the most influential dimension, followed by HIC (human capital), and finally CIB (structural capital). With similar results, Ibarra Cisneros and Hernandez-Perlines (2018) conducted a study to analyze which dimensions of intellectual capital most influence manufacturing performance in Mexico (this is related to the innovative performance of business models). The results showed in their standardized coefficients that the best predictor is relational capital, followed by human capital and, finally, structural capital. The authors mention that these results are similar to other studies conducted in Mexico.

The same applies to Aramburu, Sáenz and Blanco (2015), who conducted empirical research on a population of Colombian companies in the technology sector. The results show that intellectual capital, specifically the structural capital dimension, explains to a large extent the effectiveness of generating new ideas and managing innovation projects in the business model.

Another of the results obtained from this research is that the variable that presented the lowest arithmetic mean was the business model, specifically in the dimension "the organization that researches, innovates and involves."

This result shows the need for SMEs in Mexico to develop a business model that includes innovation and employee involvement. This implies paying attention to the following worst-evaluated aspects of the company's business model: (a) having structures, systems and procedures that support innovation, (b) providing economic incentives for employees who generate new ideas and carry out technological exploration, and (c) seeking external financing for innovation.

Correcting the worst-evaluated aspects of the regressors intellectual capital and seasonal demand behavior is also advisable to improve the business model. For the intellectual capital construct, improvements are encouraged in the following aspects: (a) formally evaluating the success or failure of collaboration with strategic alliances, (b) having training programs to constantly develop and update employee competencies, and (c) involving employees in job enrichment and work flexibility programs. On the other hand, in the seasonal behavior of demand, attention should be paid to the following: (a) investing the necessary time to make a forecast, (b) holding meetings with clients to work collaboratively in making the most accurate forecast, and (c) provide training courses to understand the importance of changes in demand.

Due to the complexity of the survey, it was impossible to obtain a random sample of the SMEs affiliated with CAINTRA; the questionnaire was administered only to the managers willing to participate.

Another limitation of this study is the lack of research in SMEs concerning the variables in this study since these variables have been regularly studied in multinational companies (Börjesson, Elmquist & Hooge, 2014; Rosli & Sidek, 2013). An example of this is that, for large companies, the dimension that most influence intellectual capital is human capital, and in the results of this research, it turned out to be the capital related to the organization.

It is recommended for future research to study companies already incorporated into and operating under Industry 4.0 to find out if the reported perception has undergone changes.

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Annex

Table A1
Table of arithmetic means of each item

Statements	Mean	Typ. dev.
They know the mission. (RC1)	4.11	1.022
They know the vision. (RC2)	4.11	1.037
They communicate quality policies. (RC3)	4.25	.982
They establish goals and objectives for their area. (RC4)	4.44	.799
They evaluate the goals. (RC5)	4.34	.857
Feedback is received from the evaluation of the goals. (RC6)	4.20	.949
They promote fellowship. (RC7)	4.14	.941
They promote the exchange of knowledge. (RC8)	4.09	.992
They allow for active participation in problem-solving. (RC9)	4.25	.856
They respect roles and regulations in the work group. (RC10)	4.20	.829
They perceive a climate of communication to propose solutions openly. (RC11)	4.10	.922
There is support for professional and job growth. (RC12)	3.92	1.038
Incentives are used to motivate work performance. (RC13)	3.72	1.106
They feel committed to continuing to grow professionally. (RC14)	4.11	1.000
They are committed to achieving their goals as defined by the company. (RC15)	4.56	.684
They are committed to solving problems and developing negotiation solutions. (RC16)	4.55	.672
They understand demand behavior (backorders, backlogs, inventories, etc.). (CED1)	4.03	.930
They provide training courses to understand the importance of changes in demand. (CED2)	3.30	1.172
They provide adequate protection for confidential information related to the client's claim. (CED3)	4.16	1.031
They invest the time necessary to make a forecast. (CED4)	3.83	1.014
They meet with clients to work collaboratively in making the most accurate forecast. (CED5)	3.67	1.123
They easily place orders and deliver them to the client promptly. (CED6)	3.96	.873

They facilitate communication for scheduling clients' orders. (CED7)	4.14	.893
They anticipate the needs of a high or low demand for products or services. (CED8)	4.00	.881
They have mechanisms in place to quickly withstand changes in demand for products or services. (CED9)	3.90	.923
They comply with the agreements made with clients. (CED10)	4.26	.742
They verify that the information exchanged is reliable or of good quality. (CED11)	4.29	.823
They have information technologies to support the resolution of client complaints. (CED12)	4.18	.913
They invest in information technologies for demand analysis (SAP, ORACLE, DJ Edward). (CED13)	4.14	1.075
They have a computer program for the planning and requirement of materials. (CED14)	4.34	.978
They have indicators in the work area that show the demand behavior in a defined period. (CED15)	4.34	.902
They generally assess the importance of the need for information technology. (CED16)	4.13	.906
The staff is brilliant and creative. (MN1)	3.75	.723
Employees develop ideas and knowledge from external sources. (MN2)	3.76	.773
The employee acquires ideas and knowledge from external sources. (MN3)	3.64	.946
They attend conferences, exhibitions and/or conventions. (MN4)	3.23	1.187
The employee is involved in research, development, and innovations. (MN5)	3.43	1.040
Training is provided on the appropriate protection of related information or confidentiality. (MN6)	3.70	1.080
They investigate strategic purchasing planning methodologies to be carried out in each period. (MN7)	3.57	1.077
They research mechanisms for support or understanding in the case of unforeseen demand contingencies that advance or delay deliveries. (MN8)	3.65	1.009
They research anticipating demand trends and seasonality of demand (MN9)	3.69	.998
They hire external consultants or experts for process improvement. (MN10)	3.42	1.194
They seek external funding for innovation. (MN11)	2.98	1.366
Employees who generate new ideas and carry out technological exploration are given financial incentives. (MN12)	3.10	1.244
They continuously develop innovation projects (products, processes and/or systems). (MN13)	3.71	1.046
They have access to structures, systems, and procedures that support innovation. (MN14)	3.60	1.119
They work with strategic alliances in innovation projects (suppliers, clients, universities, government, research centers, etc.). (MN15)	3.54	1.173
They develop new or improved products and/or services. (MN16)	3.86	1.017
The staff continually learns from others. (IC1)	4.01	.816
Workers have the necessary skills for the job. (IC2)	4.00	.848
The employee participates in job enrichment and work flexibility programs. (IC3)	3.62	1.051
The employee can develop new ideas and knowledge. (IC4)	3.95	.878
The staff copes with difficulties efficiently. (IC5)	3.92	.823
They foster trust and are committed to the company. (IC6)	4.11	.847
Training programs are in place to develop and update employee competencies continuously. (IC7)	3.64	1.102
They have recruitment and selection processes to find the best candidates. (IC8)	3.93	1.049
Employees' knowledge and experiences are stored in manual systems and processes. (IC9)	3.81	1.069
They have documented procedures that help to carry out routine actions. (IC10)	4.21	.873

They have the infrastructure for employees to access relevant information. (IC11)	4.07	.944
They formally evaluate the reasons for the success or failure of the collaboration with strategic alliances. (IC12)	3.75	.946
Employees have good relations through networking with clients, suppliers, partners, and friends for the development of solutions. (IC13)	3.83	.930
They learn from strategic alliances to improve their processes. (IC14)	3.78	.956
Employees rely on suppliers to solve business and strategic needs (costs, quality, timing, production, etc.). (IC15)	3.83	1.036
The staff is responsible for managing long-term client relations. (IC16)	3.92	1.046