

SME business performance: an analysis of economic activities by sectors and subsectors in Guanajuato, Mexico

El desempeño empresarial de las Pymes: un análisis de las actividades económicas por sectores y subsectores en Guanajuato, México

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Abstract

This article identifies the factors that influence business performance (BP) in the construction, trade, and services sectors, as well as sub-sectors and branches of the manufacturing sector of small and mid-size enterprises (SME) in the state of Guanajuato, Mexico. A quantitative, descriptive, and correlational statistical analysis was performed on a sample of 460 enterprises, estimating a linear regression model using the ordinary least squares (OLS) method. Empirical evidence reveals that the construction, trade, and services sectors agree that profitability, efficient internal processes, and low labor absenteeism are those factors that mostly influence BP. On the other hand, in sub-sectors of low-technology manufacturing (minerals, metals, plastic and rubber; textile; and leather and substitute materials), the quality of product is the factor viewed as the most relevant to explain BP in Mexican SME.

Keywords: Business performance; financial determinants; internal non-financial determinants; external non-financial determinants.

Resumen

Este artículo tiene por objetivo identificar los factores que influyen en el desempeño empresarial (DE) de los sectores de la construcción, comercio, servicios y subsectores y ramas del sector manufacturero de las pequeñas y medianas empresas (Pyme) en el estado de Guanajuato, México. Con una muestra de 460 empresas se realizó un análisis estadístico cuantitativo, descriptivo y correlacional, estimando un modelo de regresión lineal a partir del método de mínimos cuadrados ordinarios (MCO). La evidencia empírica revela que los sectores de construcción, comercio y servicios coinciden en que la rentabilidad, procesos internos eficientes y bajo ausentismo laboral son los factores que más influyen en su DE. Por otra parte, en los subsectores de la manufactura de baja tecnología (minerales, metales, plástico y hule; textil; cuero y materiales sustitutos), la calidad del producto es el factor que se considera más relevante para explicar el DE en las Pyme mexicanas.

Palabras clave: Desempeño empresarial; determinantes financieros; determinantes no financieros internos; determinantes no financieros externos.

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Introduction

Companies with successful business performance (BP) are productive, profitable, competitive, have prestige, human capital satisfaction and motivation, and satisfied customers. It is paramount in the development of companies to conduct analyses of their BP periodically to evaluate the efficiency and effectiveness of their results (Bonney & Armijo, 2005), bearing in mind that both efficiency and effectiveness are measurements of BP (Kakwezi & Nyeko, 2019; Kumar & Gulati, 2010; McDermott *et al.*, 2011; Soto-Acosta *et al.*, 2015; Zegarra, 2006). However, the smaller the company, the more difficult it is to have a proper BP because management depends on the knowledge of highly qualified human capital which help companies measure their BP. Thus, the size of the companies makes them vulnerable to competition, and even when having talented staff or organizations, they do not take full advantage of their capacity (Ríos *et al.*, 2010).

Through indicators, companies can evaluate, design strategies, and make decisions. Moreover, the demands of the market force them to create strategies to be competitive, which requires information that supports them to analyze and interpret their BP. In general, in the literature found, information on factors that influence performance is very scattered, and the approach of the authors is generally addressed to a single productive sector (Garza-Ríos *et al.*, 2012). In this sense, Sesma *et al.* (2014) state that both the measurement of BP and its research are ambiguous; therefore, it is necessary to establish relevant factors for the company and subsequently generating tools for its measurement. Companies need to evaluate the performance of their organization to create strategies that lead them to obtain competitive advantages, using qualitative and quantitative measures (Camisón, 2001), or using financial and non-financial performance factors.

Financial factors include profitability (Deshpandé *et al.*, 1993; Hill & Jones, 2005) and sustained sales growth (Mavondo & Farrell, 2003), whereas non-financial factors include efficient internal processes, quality of product, satisfied customers, market changes, human capital satisfaction and motivation, and reduction of work absenteeism (Quinn & Rohrbaugh, 1983).

The importance of small and mid-size enterprises (SME) in developing countries such as Mexico is essential due to their economic influence on the country, since they generate a large percentage of jobs and are considered as economic drivers (González *et al.*, 2016; Sánchez *et al.*, 2015). However, these companies face major problems during their development, ranging from technological challenges to market competition (Sánchez *et al.*, 2015). In Mexico, according to the last census conducted by the National Institute of Statistics and Geography (INEGI, 2020a), in 2019 there were 312 285 SME competing against large companies for their survival. Their survival rate is naturally low, since statistically they have a life expectancy of 7.8 years (varying according to the sector). For instance, commercial companies survive 6.9 years, service companies survive 8 years, and manufacturing companies survive 9.7 years (INEGI, 2020a). In 2019, 8.06% of the companies shut down, of which 21.17% were SME and 20.80% micro companies (INEGI, 2020b).

In regards of the evaluation of BP, according to the results of the survey on Productivity and Competitiveness of Micro, Small and Medium-sized enterprises (INEGI, 2019), 66.5% of the micro enterprises and 35.2% of the SME did not monitor their performance indicators. Of the SME, 28.2% monitor from three to five indicators, 13.4% from six to nine indicators, and only 8.8% 10 or more indicators. Regarding micro enterprises, 12.5% monitor between three to five indicators, 3% from six to nine, and only 2.5% more than 10 indicators. Also, 14.4% SME and 15.5% micro enterprises monitor between one and two indicators, whereas 35.7% of the small companies and 20.2% of the medium-sized Mexican companies do not monitor their BP. Only 30.2% medium-sized and 27.6% small companies use from three to five

indicators; the rest monitor BP using from one to more than 10 indicators, although they only mention productivity, competitiveness, business growth, management skills, and technology and innovation. This may suggest that companies in general consider that external factors are responsible for their lack of growth more than internal factors (INEGI, 2019).

There are competitive activities that, by nature, dominate the local economic dynamics (Unger *et al.*, 2014). In the case of Guanajuato, these competitive activities are mainly focused on the manufacturing sector, which generates 75.3% of production and 32.2% of jobs (INEGI, 2015). In short, the lack of development of SME is a matter of concern for the country; in this context, some questions should be addressed: What are the factors that influence the SME's BP? by economic activity, which are the factors they use to evaluate their BP? do the particularities of the sectors, sub-sectors, and branches use the same factors to evaluate their BP?

This article aims to identify the factors that influence business performance in the sectors of construction, trade, and services, as well as in subsectors and branches of the manufacturing sector of SME in the state of Guanajuato, Mexico. The factors of BP considered are profitability, sustained sales growth, human capital satisfaction and motivation, low labor absenteeism, quality of product, efficient internal processes, satisfied customers, and market changes. This aims to provide knowledge to the SME entrepreneurs of Mexico about the importance of BP and its relevant factors.

Literature review

Business performance (BP) is a dynamic management process that demonstrates the changes in the structure of companies. This goes in agreement with Londoño-Patiño & Acevedo-Álvarez (2018), who point out that dynamic capabilities affect companies' performance, their structure and competitiveness, and that is key to improve their BP (Kim *et al.*, 2011). The Commission for Latin America and the Caribbean (ECLAC) defines BP as "The capacity of an institution to adequately manage resources and comply with established objectives and goals" (Armijo, 2010). Four measurement indicators pointed at quality, economy, effectiveness, and efficiency (Bonnefoy & Armijo, 2005).

The BP includes two primary dimensions in its result: efficiency and effectiveness of the activities of an organization (Kakwezi & Nyeko, 2019; Kumar & Gulati, 2010; McDermott *et al.*, 2011; Soto-Acosta *et al.*, 2015; Zegarra, 2006), where "efficiency refers to the ability to develop an activity to the minimum possible cost, while the effectiveness measures if the predefined objectives for the activity are being fulfilled" (Bonnefoy & Armijo, 2005). That is, effectiveness is the ability of companies to generate income, while efficiency is the ability of companies to design, manufacture, and invest in products (Kakwezi & Nyeko, 2019; Kumar & Gulati, 2010). Both are considered units of measure that help the evaluation, comparison, and monitoring of the key internal and external factors of an organization (Spanish Accounting and Business Administration Association [AECA], 2002).

Determinants that influence business performance

The factors that can influence BP are important for making decisions, such factors can be performance, productivity, quality, financial management, human talent management (Zavala, 2005), and profitability (Barroso, 2018; De La Hoz *et al.*, 2016; Dess & Lumpkin, 2003; Gupta *et al.*, 2016; Peña-Vinces *et al.*, 2017; Soto-Acosta *et al.*, 2015).

The BP can be measured using financial indicators (Correa *et al.*, 2011; Nava, 2009), qualitative and quantitative measures (Camisón, 2001), or financial and non-financial performance factors. Among the financial factors are profitability (Barroso 2018; Deshpandé *et al.*, 1993; Gupta *et al.*, 2016; Hill & Jones, 2005; Martínez *et al.*, 2017; Peña-Vinces *et al.*, 2017; Salazar-Mosqueda, 2017; Soto-Acosta *et al.*, 2015) and sustained sales growth (Escudero, 2012; Mavondo & Farell, 2003; Rivera & Ruiz, 2011; Salazar-Mosqueda, 2017), whereas in the non-financial determinants are the efficient internal processes (Ahmed *et al.*, 2015; Ameer & Othman, 2012; Cheung *et al.*, 2012; Gavrea *et al.*, 2011), quality of product (Soto-Acosta *et al.*, 2015;), satisfied customer (Ahmed *et al.*, 2015; Barroso 2018; González *et al.*, 2016; Soto-Acosta *et al.*, 2015; Valenzo *et al.*, 2015), market changes (Li *et al.*, 2017; Martin *et al.*, 2015), human capital satisfaction and motivation (Lourenc, o, 2016; Navarro *et al.*, 2010), and low labor absenteeism (Aguirre & Martínez, 2006; Mejía-Giraldo *et al.*, 2012).

Financial determinants: Profitability and sustained sales growth

Profitability and sustained sales growth are determinants used by companies to evaluate their performance. Profitability is a determinant of competitive success (Ahuja & Katila, 2004; Barroso, 2018; Camisón, 2001; Donrrosoro *et al.*, 2001; Estrada *et al.*, 2009; Gupta *et al.*, 2016; Kim *et al.*, 2008; Martínez *et al.*, 2017; Pelham, 2000; Peña-Vinces *et al.*, 2017; Rubio & Aragón, 2002; Salazar-Mosqueda, 2017; Soto-Acosta *et al.*, 2015), which is related to the growth of the company (Daza, 2016). In itself, profitability is an indicator of efficiency (Geamănu, 2011; Rodríguez & Venegas, 2010), which is why companies see it as one of the most important measures of BP (Camisón, 2001; Chun *et al.*, 2011; Gallizo & Salvador, 2000; Lo *et al.*, 2012; Mahto & Khanin, 2015; Nava, 2009; Pacheco *et al.*, 2002; Quinn & Rohrbaugh, 1983; Torugsa *et al.*, 2012; Wagner *et al.*, 2015). In this sense, evaluating profitability is necessary (Brigham & Houston, 2006; Elizondo & Altman, 2003; Gitman & Zutter, 2012; Nava, 2009; Van Horne & Wachowicz, 2003). For Hax & Majluf (2004), some of the indicators that affect BP are profitability and sustained sales growth (Conte *et al.*, 2014), as well as the size of the company, although in the study by Martín & Cossio (2001) the relationship of profitability and sustained sales growth was not significant.

Sustained sales growth is seen as an indicator of competitiveness success (Camisón, 2001; Donrrosoro *et al.*, 2001; Mavondo & Farell, 2003; Pelham, 2000), and so is business performance (Quinn & Rohrbaugh, 1983). To improve the growth factor in companies, their performance must be improved (Escudero, 2012; Hansen & Mowen, 2003; Rivera & Ruiz, 2011; Salazar-Mosqueda, 2017).

Internal non-financial determinants

Among the internal non-financial or qualitative determinants, factors such as human capital satisfaction and motivation, low labor absenteeism, quality of product, and efficient internal processes can be highlighted (Afcha, 2011; Ahmed *et al.*, 2015; Brenes *et al.*, 2008; González *et al.*, 2016; Mejía-Giraldo *et al.*, 2012; Quinn & Rohrbaugh, 1983).

Human capital satisfaction and motivation and low labor absenteeism

The talent of human capital is a factor found in the literature as a highly relevant element that impacts the performance of the company. Even more necessary is their care for the companies' personnel (Mejía-Giraldo *et al.*, 2012; Morris *et al.*, 1993; Ríos-Manríquez *et al.*, 2019), seeking their satisfaction and motivation (Aragón & Rubio, 2005; Lourenc, o, 2016; Navarro *et al.*, 2010), which will impact on BP and low labor absenteeism (Aguirre & Martínez, 2006; Amozorrutia, 2007; Barroso & Salazar, 2009; Harrison *et al.*, 2006; Judge *et al.*, 2001; Keith & Newstrom, 2000; Lourenço, 2016; Mejía-Giraldo *et al.*, 2012; Navarro *et al.*, 2010; Werther & Davis, 2000). Hence, they are considered as factors related to BP (Quinn & Rohrbaugh, 1983). In this sense,

Camisón (2001) supports this fact by noting that staff satisfaction is an indicator of competitive success; it is a direct performance factor (Griffith, 2006; Hax & Majluf, 2004; Parker *et al.*, 2003; Patterson *et al.*, 2004). Therefore, the more satisfied and motivated the company's human capital is, the more determined it will be to carry out its work, with more commitment and activity, resulting in low labor absenteeism (Aguirre & Martínez, 2006; Mejía-Giraldo *et al.*, 2012; Oshagbemi, 2003).

Quality of product

Another non-financial internal determinant that has no direct relationship with human capital is related to the efficiency of the company, that is, quality of product (Aragón & Rubio, 2005; Baldwin & Sabourin, 2002; Estrada *et al.*, 2009; Koc & Bozdog, 2007; Soto-Acosta *et al.*, 2015). Quality of product and services are important factors of efficiency; they have been studied since 1983 by Quinn and Rohrbaugh as part of their organizational performance analysis methodology.

Efficient internal processes

Efficient internal processes is a determinant that influences the BP (Ahmed *et al.*, 2015; Ameer & Othman, 2012; Bonnefoy & Armijo, 2005; Cheung *et al.*, 2012; Gavrea *et al.*, 2011; Heredia, 2001; Lores & Perdomo, 2010), especially in SME (Garengo *et al.*, 2005). Since it is a factor that analyzes the control of all processes, efficient internal processes is as a variable of organizational performance analysis. It was proposed by Quinn & Rohrbaugh (1983).

External non-financial determinants

In addition to the internal non-financial determinants, there are external non-financial determinants that influence BP, for example, customer satisfaction and market changes, which are important variables of analysis in organizational performance, as pointed out by Quinn & Rohrbaugh (1983).

Satisfied customers

The companies' growth depends on the customers, establishment of objectives, goals, obtaining resources, and external support of the company (Quinn & Rohrbaugh, 1983). So, an external factor for BP that deserves special attention is customer satisfaction (Afcha, 2011; Ahmed *et al.*, 2015; Aragón & Rubio, 2005; Barroso 2018; Benítez-Amado *et al.*, 2010; Brenes *et al.*, 2008; Camisón, 2001; González *et al.*, 2016; Hax & Majluf, 2004; Kyriakopoulos *et al.*, 2004; Mejía-Giraldo *et al.*, 2012; Soto-Acosta *et al.*, 2015).

Market changes

Another external factor is the adaptation of the company to market changes. This factor is important because the company must be prepared to detect opportunities and improvements (Ynzunza & Izar, 2013). Market changes, like satisfied customers, is considered a factor (Afcha, 2011; Ahmed *et al.*, 2015; Brenes *et al.*, 2008; Camisón & Cruz, 2008; Dibrell *et al.*, 2008; González *et al.*, 2016; Li *et al.*, 2017; Martin *et al.*, 2015; Mejía-Giraldo *et al.*, 2012; Singh & Byrne, 2005; Zegarra, 2006) upon which the company depends for its development (Quinn & Rohrbaugh, 1983).

Economic activities in the state of Guanajuato, Mexico

Guanajuato is an important state for the growth of Mexico as a country due to its economic dynamism. With an annual growth rate of more than 5% of its gross domestic product (GDP) (INEGI, 2016a), it is a

receiver of major foreign direct investment (FDI) flows. In the first quarter of 2017, it captured 6.56% of FDI (1026.5 million dollars), and it was ranked as the fourth state (Centro de Estudios de las Finanzas Públicas [CEFP], 2017). For 2018, Guanajuato received in the first quarter of the year 6.10% of FDI. According to CEFP (2018), "the main investors were the United States (56.26%), Italy (16.82%), and Spain (9.73%)". Considering its population, it occupies the fifth most important labor market at the national level (INEGI, 2016c).

In Guanajuato, competitive activities are mainly focused on the manufacturing sector, which generates 75.32% of production and 32.23% of jobs (table 1). For this reason, in this research attention is paid on this sector. To classify the manufacturing sector in Mexico, it was considered what was established by Lall (2000) on the technological structure of manufacturing companies and their relationship with efficiency, based on technological activity and the use of capital productive factors and work. It was also considered the study by López-Mateo (2011) on determinants of investment decisions in Mexican manufacturing companies and the one by López *et al.* (2014) on the analysis of the Mexican manufacturing industry. The structure of the industrial classification system of North America (CSNA) for Canada, the United States, and Mexico (INEGI, 2008; INEGI, 2013; INEGI, 2018) is conformed by five levels: sector, subsector, branch, sub-branch, and class of activity. In this study, the manufacturing industry is classified into four groups:

1. Manufacturing from natural resources (MNR). In general, they consider products that are simple and labor-intensive. Its advantage lies on the availability of natural resources.

2. Low-technology manufacturing (LTM). The production process employs stable and well-known technologies, incorporated into capital goods with a reduced level of expenses in Research and Development (R&D) and simple requirements in terms of specialization. In general, wage costs are an important element of the total production cost and entry barriers to these economic activities, which are relatively low.

3. Intermediate technology manufacturing (ITM). They consider products made with technologies of a high level of technical specialization and high economies of scale. They require the use of complex technologies with moderate levels of R&D, as well as advanced requirements in matters of technical capacity and economies of scale.

4. High technology manufacturing (HTM). The production process requires advanced technologies, very fast evolution, in addition to high levels of investment in the field of R&D, in which the design of the product is essential.

Methods and Materials

In this section, the methodological design of the research is developed. In order to evaluate BP, the effectiveness and efficiency indicators established by the ECLAC (Bonney & Armijo, 2005) were considered for this research, since they are measures for evaluating the performance results of an organization by questioning entrepreneurs about their perception of the efficiency and effectiveness of their BP. Of the factors that can influence the BP, after reviewing the literature, for this research the organizational analysis model proposed by Quinn & Rohrbaugh (1983) was adapted, considering that the variables profitability, sustained sales growth, quality of product, efficient internal processes, human capital satisfaction and motivation, low labor absenteeism, satisfied customers, and market changes are still studied, together or separately, in various investigations to date by some authors (Afcha, 2011; Ahmed *et al.*, 2015; Brenes *et al.*, 2008; Calderón-Hernández *et al.*, 2010; Gálvez & García, 2011; González *et al.*, 2016;

Mejía-Giraldo *et al.*, 2012). In addition, this section considers the design and reliability of the sample, the operationalization of the variables, and the statistical analysis used.

Based on the theoretical approach, to determine the variables that influence business performance by sectors, sub-sectors, and branches of SME, the following hypotheses are proposed:

H₁. In the business performance of SME, there is an influence of factors such as sustained sales growth (SSG), profitability (P), quality of product (QP), efficient internal processes (EIP), human capital satisfaction and motivation (HCSM), low labor absenteeism (LLA), satisfied customers (SC), and market changes (MC).

H₂. In the business performance of the manufacturing industry there is an influence of the factors: sustained sales growth (SSG), profitability (P), quality of product (QP), efficient internal processes (EIP), human capital satisfaction and motivation (HCSM), low labor absenteeism (LLA), satisfied customers (SC), and market changes (MC).

H₃. In the business performance of the trade, construction and services sectors, influencing factors are sustained sales growth (SSG), profitability (P), quality of product (QP), efficient internal processes (EIP), human capital satisfaction and motivation (HCSM), low labor absenteeism (LLA), satisfied customers (SC), and market changes (MC).

H₄. In the manufacturing performance of the manufacturing sub-sectors, based on natural resources and intermediate technology, the influencing factors are sustained sales growth (SSG), profitability (P), quality of product (QP), efficient internal processes (EIP), human capital satisfaction and motivation (HCSM), low labor absenteeism (LLA), satisfied customers (SC), and market changes (MC).

H₅. The factors sustained sales growth (SSG), profitability (P), quality of product (QP), efficient internal processes (EIP), human capital satisfaction and motivation (HCSM), low labor absenteeism (LLA), satisfied customers (SC), and market changes (MC) are influenced by the business performance of the branches of low-technology manufacturing (LTM).

Population and sample

Based on the data obtained from the National Statistical Directory of Economic Units (DENUE, 2014) of Mexico, a population of 2120 SME was determined, excluding the government sector and those SME that did not have a contact telephone number or webpage.

The final sample consisted of 460 economic units of enterprises, small (between 11 to 50 workers) and medium (between 51 to 250 workers), obtained by a stratified simple random sampling with a confidence level of 98% and a sampling error of 5%. In order to obtain the sample of 432 SME, the survey was given out to 470 enterprises, obtaining 465 valid surveys from the trade, construction, services and manufacturing sectors in 19 municipalities of the state of Guanajuato. The latter sector was classified into manufacturing from natural resources (MNR), low-technology manufacturing (LTM), intermediate technology manufacturing (ITM), and high technology manufacturing (HTM); however, since only five responses were obtained from the HTM, it was decided to eliminate it. Table 1 shows that 15.2% of the companies belong to the trade sector, 12.8% are construction companies, 17.4% are related to services, and 54.6% represent the manufacturing sector --of which 10% are MNR, 7.2% ITM, and 37.4% LTM--, which in this study is analyzed by the following representative sub-sectors in Guanajuato: leather, fur, and substitute materials (22.4%); minerals, metals, plastic, and rubber (8.5%); and textiles (6.5%).

Table 1. Characteristics of the sample (in percentages).

Sector of economic activity	Sub-sector	Small (%)	Size Medium (%)	Participation of the sample (%)
Manufacturing from Natural Resources		7.0	3.0	10.0
Intermediate Technology Manufacturing		4.8	2.4	7.2
Low Technology Manufacturing	LTM: minerals, metals, plastic, and rubber	6.7	1.7	8.5
	LTM: Textile	5.4	1.1	6.5
	LTM: Leather, fur, and substitute materials.	12.8	9.6	22.4
	Total Manufacturing participation (%)	36.7	17.8	54.6
Trade		10.7	4.6	15.2
Construction		9.1	3.7	12.8
Services		12.2	5.2	17.4
	Participation of the sample (%)	68.7	31.3	100

Source: Author's own elaboration.

Variables, instrument, and type of analysis

Based on the literature, eight factors that could influence BP were considered for this research, especially those factors established by Quinn & Rohrbaugh (1983). They were classified into financial determinants, internal non-financial determinants, and external non-financial determinants. Table 2 shows the operationalization of the variables that make up the econometric model proposed in the research.

Table 2. Variables and indicators.

Variables/code	Indicators/Code	Code	Referencias
Dependent variable			
Business performance (BP)	Efficiency	E	Kakwezi <i>et al.</i> (2019); Soto-Acosta <i>et al.</i> (2015); McDermott <i>et al.</i> (2011); Kumar <i>et al.</i> (2010); Zegarra (2006); Bonnefoy <i>et al.</i> (2005).
	Effectiveness	EFC	Kakwezi <i>et al.</i> (2019); Barroso (2018); Kumar <i>et al.</i> (2010); Amaru-Maximiano (2009).
Independent Variables			
Financial determinants (FD)	Sustained sales growth	SSG	Salazar-Mosqueda (2017); Escudero (2012); Rivera & Ruiz (2011); Dibrell <i>et al.</i> (2008); Zegarra (2006); Singh <i>et al.</i> (2005).
	Profitability	P	Amaru-Maximiano (2009); Barroso (2018); Koellinger (2006); Blázquez <i>et al.</i> (2006); Gupta <i>et al.</i> (2016); Koellinger (2006); Martínez <i>et al.</i> (2017); Peña-Vinces <i>et al.</i> (2017); Salazar-Mosqueda (2017); Singh <i>et al.</i> (2005); Soto-Acosta <i>et al.</i> (2015).
Internal non-financial determinants (ID)	Quality of product	QP	Baldwin & Sabourin, 2002; Estrada <i>et al.</i> , 2009; Koc & Bozdag, 2007; Aragón & Rubio, 2005; Soto-Acosta <i>et al.</i> , 2015;
	Efficient internal processes	EIP	Ahmed <i>et al.</i> 2015; Ameer & Othman (2012); Cheung <i>et al.</i> (2012); Gavrea <i>et al.</i> (2011); Loes & Perdomo (2010); Bonnefoy & Armijo (2005); Heredia (2001).
	Human capital satisfaction and motivation	HCSM	Lourenço (2016); Navarro <i>et al.</i> (2010); Ríos-Manríquez <i>et al.</i> (2019); Aragón & Rubio (2005).
	low labor absenteeism	LLA	Aguirre & Martínez (2006); Amozorrutia (2007); Harrison <i>et al.</i> (2006); Judge <i>et al.</i> (2001); Keith <i>et al.</i> (2000); Lourenço (2016); Mejía-Giraldo <i>et al.</i> (2012); Navarro <i>et al.</i> (2010); Barroso & Salazar. (2009); Werther <i>et al.</i> (2000); Oshagbemi (2003).
External non-financial determinants (ED)	Satisfied customers	SC	Barroso (2018); González <i>et al.</i> (2016); Ahmed <i>et al.</i> (2015); Soto-Acosta <i>et al.</i> (2015); Mejía-Giraldo <i>et al.</i> (2012); Afcha (2011); Brenes <i>et al.</i> (2008).
	Market changes	MC	Ahmed <i>et al.</i> (2015); Brenes <i>et al.</i> (2008); Camisón <i>et al.</i> (2008); Afcha (2011); Dibrell <i>et al.</i> (2008); González <i>et al.</i> (2016); Li <i>et al.</i> (2017); Martin <i>et al.</i> (2015); Mejía-Giraldo <i>et al.</i> (2012); Singh <i>et al.</i> (2005); Zegarra (2006).

Variables of control				
Sector of economic activity	Manufacture	From natural resources	MNR	INEGI (2018); INEGI, 2015.
		Low technology	LTM: minerals, metals, plastic, and rubber.	INEGI (2018); INEGI, 2015.
			LTM: Textile	INEGI (2018); INEGI, 2015.
			MBT: Leather, fur, and substitute materials.	INEGI (2018); INEGI, 2015.
	Construction Trade Services	Intermediate technology	ITM	INEGI (2018); INEGI, 2015.
			Const	CEFP (2018); INEGI, 2015.
			Com	CEFP (2018); INEGI, 2015.
			Serv	CEFP (2018); INEGI, 2015.

Source: Author's own elaboration.

The instrument includes 10 items of a quantitative type, with a Likert scale of five points, ranging from totally disagree to fully agree (1 to 5), and it was addressed to the owners or maximum senior manager of the SME. To verify the internal consistency of the elements considered in this investigation, Cronbach's alpha was used, obtaining a reliability of $\alpha = 0.840$, which is considered as adequate according to George & Mallery (2003), Hair *et al.* (2007), and Nunally (1978).

A quantitative, descriptive, correlational statistical analysis was performed. A linear regression model was estimated from the ordinary least squares (OLS) method. This method was used because the analysis is cross-sectional. In addition, statistically, the OLS method provides the best unbiased linear estimators (BLUE) under certain assumptions: 1) the model is linear in the parameters; 2) normality; 3) homoscedasticity; 4) the model is correctly specified; and 5) there is no perfect multicollinearity.

Econometric model

The estimation of a probabilistic model of multiple linear regression is performed to evaluate the influence of the eight factors proposed in this research (profitability, sustained sales growth, human capital satisfaction and motivation, low labor absenteeism, quality of product, efficient internal processes, satisfied customers and market changes) on the BP of the sectors, subsectors, and manufacturing branches of SME located in the state of Guanajuato, Mexico (equation 1):

$$BP_i = \beta_0 + \beta_1 P_i + \beta_2 SSG_i + \beta_3 QP_i + \beta_4 EIP_i + \beta_5 HCSM_i + \beta_6 LLA_i + \beta_7 SC_i + \beta_8 MC_i + \varepsilon_i \quad (1)$$

where BP_i = Business Performance; P_i = Profitability; SSG_i = Sustained sales growth; QP_i = Quality of product; EIP_i = Efficient internal processes; HCSM_i = Human capital satisfaction and motivation; LLA_i = low labor absenteeism; SC_i = Satisfied customers; MC_i = Market changes; and ε_i = Random error term.

Ten estimates were made for this model: 1) general model without distinction of sector; 2) trade; 3) construction; 4) services; 5) manufacturing; 6) manufacturing from natural resources; 7) intermediate technology manufacturing; 8) low-tech manufacturing: minerals, metals, plastics, and rubber; 9) low-tech manufacturing: textile; and 10) low-tech manufacturing: leather, fur, and substitute materials; aiming to establish comparisons of economic activities from sector, sub-sector, and branch of the more representative manufacturing enterprises in the state of Guanajuato, Mexico.

Results

Analyzing the average of each factor, it is observed in table 3 that the factor with the highest score in its average is quality of product ($\bar{x} = 4.46$), followed by satisfied customers ($\bar{x} = 4.42$) and market changes ($\bar{x} = 4.40$). That is, owners or managers consider that a substantial differentiation from their competitors is offering quality of product, having satisfied customers, and being prepared to face market changes.

Table 3. Statistics of the determinants of business performance.

Determinants	Average	Typical Deviation
Financial		
Sustained sales growth	4.25	0.842
Profitability	4.18	0.862
Internal non-financial		
Quality of product	4.46	0.644
Efficient internal Processes	4.14	0.827
Human capital satisfaction and motivation	4.16	0.877
low labor absenteeism	4.35	0.807
External non-financial		
Satisfied customers	4.42	0.744
Market changes	4.40	0.750

Source: Author's own elaboration.

Ten regression estimated models were done using the OLS method to compare the results in the subsectors and branches of the manufacturing industry. In model 1, the sample is presented in general, without making distinctions between companies from different sectors; in models 2, 3, 4, and 5, the results are presented by the most representative sectors of the state of Guanajuato: trade, construction, services, and manufacturing (table 4).

In the general model, it was found that the factors sustained sales growth, profitability, quality of product, and efficient internal processes are statistically significant for the performance of the company. In agreement with the goodness of fit of the model, it suggests that 58.2% of the independent variables explain the changes in the BP (dependent variable). However, this only passes the Durbin-Watson test.

When carrying out the analysis by sector of economic activity, it was found that the results vary. In the case of the trade sector, all factors are significant, except for satisfied customers, finding a direct relationship between the factors referred to and the BP. The construction sector highlights profitability, efficient internal processes, low labor absenteeism, and market changes as relevant and statistically significant factors of BP, while the services sector highlights the factors sustained sales growth, profitability, quality of product, efficient internal processes, and low labor absenteeism as statistically significant.

The trade, construction, and services sectors show acceptable values; they do not have autocorrelation problems (Durbin-Watson) because the OLS estimators behave with a normal distribution and converge in probability to the real coefficients (Greene, 2003). In addition, it is observed that the distribution of the data is normal, in agreement to the analysis of the Jarque Bera and Kolmogorov-Smirnov tests. Variable inflation factor (VIF) and tolerance factor (TOL) tests were applied, where all returners have a VIF lower than 10, as well as a TOL value close to 1, which indicates that there are no multicollinearity problems between the exogenous variables (Gujarati, 2003).

In addition, the Breusch-Pagan test was applied to detect heteroscedasticity, given that this is common in cross-sectional data, noting that for these models a constant variance was found in the error term. Therefore, the presence of heteroscedasticity is ruled out; and with the Ramsey Test, it is argued that they do not require to incorporate more exogenous variables to each model (table 4).

Table 4. Performance in the trade, construction, and services sectors OLS.

Indicator	Model 1 General	Model 2 Trade	Model 3 Construction	Model 4 Services	Model 5 General Manufacture
SSG	0.335***	0.383***	0.170	0.428***	0.336***
P	0.288***	0.182***	0.519***	0.224***	0.292***
QP	0.152***	0.288***	-0.077	0.159**	0.170***
EIP	-0.129***	-0.156***	-0.211***	-0.274***	-0.091***
HCSM	-0.014	0.121*	0.088	-0.100	-0.021
LLA	-0.024	-0.174***	-0.180**	0.140***	-0.021
SC	0.013	-0.089	0.109	0.013	0.013
MC	-0.043	-0.181***	-0.224**	-0.064	0.007
Constant	1.290***	2.274***	3.032***	1.526***	0.820***
R ² adjusted	0.582	0.623	0.597	0.639	0.588
F	80.979	15.262	11.729	18.495	45.514***
Prob > F	0.000	0.000	0.000	0.000	0.000
Kolmogorov-Smirnov	3.286	1.339	0.822	0.916	2.222
Prob > Z	0.000	0.055	0.508	0.371	0.000
Jarque Bera	33.93	5.33	2.44	5.72	13.22
Prob > c2	0.000	0.0695	0.2947	0.0572	0.0013
Breusch-Pagan	15.62	0.80	0.25	0.21	7.43
Prob > c2	0.0001	0.3699	0.6188	0.6475	0.0064
Ramsey Test	2.42	0.60	0.26	1.59	1.10
Prob > F	0.0003	0.8475	0.8503	0.1190	0.3483
Durbin-Watson	1.869***	1.882***	1.763***	1.789***	1.965***
Observations	460	70	59	80	251

Note: One, two and three asterisks indicate levels of significance of 10%, 5% and 1%, respectively.

Source: Author's own elaboration.

Regarding the manufacturing sector, it was found that the factors sustained sales growth, profitability, quality of product, and efficient internal processes are statistically significant, with a positive relationship to the performance of the company, except for efficient internal processes, which has a negative relationship. However, the model does not pass the normality tests, indicating that the errors are not normally distributed and have heteroscedasticity problems (table 5).

Making a comparison by subsectors and branches of the manufacturing industry, in model 6 (MNR) it was found that only the sustained sales growth and profitability factors are statistically significant, with a positive relationship with the BP, while in model 7 (ITM) the significant factors are sustained sales growth and quality of product.

In the low-technology models, based on this study and according to the theory, the most representative branches are compared. In LTM, minerals, metals, plastics, and rubber have statistically significant factors of profitability, quality of product and the company's adaptability to market changes, with a positive relationship on the BP. Further, in the LTM, the textile branch, sustained sales growth, quality of product, and efficient internal processes stand out. Finally, in LTM, leather, fur, and substitute materials have significant values for the factors sustain sales growth, profitability, efficient internal processes, and human capital satisfacción, finding a direct relationship with the BP.

It was determined, based on the tests applied, that the values in all models of sub-sector and manufacturing branches are acceptable. In order to verify the goodness of fit test in each model, the autocorrelation (Durbin-Watson) and normality tests were applied through the Jarque Bera tests. In

addition, the VIF and TOL tests were applied, where all the returners have a VIF lower than 10 as well as a TOL close to 1, indicating that there are no multicollinearity problems between the exogenous variables (Gujarati, 2003). The Breusch-Pagan test was also applied to detect heteroscedasticity, a constant variance was found in the error term; therefore, the presence of heteroscedasticity is ruled out with the Ramsey test. This means that they do not require to incorporate more exogenous variables into each model (table 5).

Table 5. Factors influencing business performance in the sectors and subsectors of OLS manufacturing.

Indicator	Model 6 MNR	Model 7 ITM	Models in Low Technology		
			Model 8 LTM: Minerals, metals, plastic, and rubber	Model 9 LTM: Textile	Model 10 LTM: Leather, fur, and substitute materials
SSG	0.345***	0.518***	0.046	0.464***	0.388***
P	0.292***	0.233	0.384***	0.246	0.164**
QP	0.165	-0.309**	0.247**	0.492***	0.299***
EIP	-0.040	0.184	0.140	-0.545***	-0.140**
HCSM	-0.177	-0.062	-0.102	0.212	0.082
LLA	0.012	0.083	0.053	-0.130	-0.042
SC	0.124	0.056	0.188	-0.015	-0.039
MC	0.067	-0.154	-0.183*	0.034	-0.004
Constant	0.301	1.562**	0.484	0.401	0.672**
R ² adjusted	0.588	0.646	0.572	0.614	0.610
F	9.030***	9.661***	6.345***	6.763***	20.947***
Prob > F	0.000	0.000	0.000	0.000	0.000
Jarque Bera	4.81	2.99	3.06	0.59	5.58
Prob > c2	0.0904	0.2238	0.2169	0.7449	0.0613
Breusch-Pagan	1.64	2.77	2.15	0.68	0.13
Prob > c2	0.2007	0.0962	0.2294	0.4107	0.7232
Ramsey Test	0.58	2.28	1.96	0.84	0.78
Prob > F	0.8468	0.0551	0.1297	0.6190	0.7160
Durbin-Watson	1.785***	2.337***	1.827***	1.962***	1.956***
Observations	46	39	33	30	103

Note: One, two and three asterisks indicate levels of significance of 10%, 5% and 1%, respectively.

Source: Author's own elaboration.

Discussion

The analyzed models specify the contribution of each factor proposed in the BP by sectors, sub-sectors, and branches of the SME low-tech manufacturing industry of the state of Guanajuato, Mexico. Below are the most relevant results based on the statistical tests applied and the hypotheses presented above.

The general model is not supported statistically, since economic activities in Mexico are very different from each other, specifically because of two factors (concentration and specialization) mentioned by Quinet & Vickerman (2004), along with contrasting developments and domains according to the region where they are located. This situation has already been mentioned by Unger *et al.* (2014). Therefore, H₁ is rejected.

The same situation happens with the general manufacturing model, since it does not explain the impact of factors on the BP jointly in the entire sector due to the degree of industrialization and acceptance

in the area where it is located, coinciding with what was previously established by Unger *et al.* (2014). In Guanajuato, the economic dynamics of the manufacturing industry has a greater growth and contribution to GDP (INEGI, 2016a) and is considered as one of the states with the highest manufacturing production, highly ranked in Mexico (INEGI, 2019). However, the companies in this sector are very different in nature between subsectors and branches (López-Mateo *et al.*, 2017). Therefore, H_2 is rejected.

Due to differentiation, concentration, specialization, and market penetration of the companies, an analysis was initially carried out in the trade, construction, and services sectors, whose proposed models are statistically significant. This highlights that businessmen and managers agreed that the most relevant factor is profitability, and that efficient internal processes are influenced by BP. However, the trade sector is also influenced by sustained sales growth, quality of product, human capital satisfaction and motivation, low labor absenteeism, and its ability to adapt to market changes. The BP in the service sector is influenced by the independent variables sustained sales growth, quality product, and low labor absenteeism; on the other hand, the construction industry is influenced by profitability and efficient internal processes, low labor absenteeism, and its ability to adapt to market changes. Hence, H_3 is partially accepted.

For the analysis of the manufacturing industry, it was determined that all models proposed in this research are statistically significant. By sub-sector, both in manufacturing based on MNR and in ITM, the factor on which they agree is sustained sales growth as a determinant of BP. In the MNR, profitability is an influential factor, while in ITM quality of product influences BP. Hence, H_4 is partially accepted.

With regards to the LTM subsector, it was the only one that segregated into the most representative branches of the state of Guanajuato. With statistically significant models, it was found that the factor that influences companies' BP was quality of product. Reviewing the results individually, in addition to quality product, profitability and adaptation to market changes influence on LTM: metallic minerals and rubber. Furthermore, sustained sales growth and efficient internal processes influence on LTM: textile. Finally, sustained sales growth, more efficient internal processes (coinciding with the economic activities of the LTM: textile) and profitability (coinciding with the companies of LTM: metallic minerals, plastics, and rubber) influence on LTM: leather, fur, and substitute materials. Hence, H_5 is partially accepted.

In the sectors of trade, construction, services, and LTM manufacturing: metallic minerals and rubber, the adaptation to market changes influences partly on BP. This is similar to what was established by INEGI (2016b, 2019) in relation to the fact that, in general, external factors affect companies' sustained sales growth, although it is not established what those factors are. Another finding is that this study agrees with the study by Hax & Majluf (2004) on the trade sector, noting that profitability and sustained sales growth affect BP. And the sectors of trade, construction, and services; MNR: metal, minerals, and rubber; model 10 LTM: leather, fur, and substitute materials, indicate that profitability is a factor directly influencing BP. In the trade, construction, services, and LTM manufacturing sectors (metallic minerals and rubber), the adaptation to market changes influences BP. This partly agrees with what was established by INEGI (2019) in relation to the fact that external factors affect companies' sustained sales growth, although it is not established what those factors are. Another finding is that this study agrees with the study by Hax & Majluf (2004), regarding the trade sector, noting that profitability and sales growth affect BP. In the model 10 LTM: Leather, fur, and substitute materials, profitability appears as a factor of direct influence on the BP, coinciding with the authors Barroso (2018), Gupta *et al.* (2016), Hax & Majluf (2004), Hansen & Mowen (2003), Martinez *et al.* (2017), Peña-Vinces *et al.* (2017), and Salazar-Mosqueda (2017).

Conclusions and Recommendations

This research was addressed to SME due to their high impact in Mexico and the state of Guanajuato. SME were chosen because of its economic dynamism and the importance of its annual growth rate, as well as its GDP in Mexico. The goal was to identify the factors that influence BP in the sectors of construction, trade, services, and subsectors and branches of the manufacturing sector of SME in the state of Guanajuato, Mexico.

Ten linear regression models were estimated from the OLS method, determining that jointly the independent variables incorporated into the model are relevant to explain BP in eight of them --from the trade, construction, and services sectors, as well as the industry subsectors of MNR, ITM, and the branches of LTM of the SME of the state of Guanajuato.

It was shown in this research that, in order to perform an analysis of BP in SME located in the state of Guanajuato, Mexico, the SME should be analyzed by sector, subsector and/or branch because of the differentiation, concentration, specialization, and market penetration of companies. The results by sector yielded interesting data. First, the entrepreneurs or executives of the trade, construction, and services sectors agree that the most important factors that directly help companies in their BP are profitability (financial determinant) and the efficient internal processes (internal non-financial determinant). This agrees with the study done on the tourism sector by Gálvez & García (2011). Another result is that the trade and services sector perceive that sustained sales growth (financial determinant) and quality of product (internal non-financial determinant) positively and significantly influence BP, while the construction and trade sectors point out the importance of the adaptability companies must have when facing market changes (external non-financial determinant). It is emphasized that the trade sector is the only one that visualizes that human capital satisfaction and motivation (internal non-financial determinant) is a decisive factor for BP. This goes in agreement with Gálvez & García (2011) and Morris *et al.* (1993), who determine that human capital is a key factor in BP, although they establish a positive impact of low labor absenteeism, which in turn runs contrary to the results of this and the study by Ríos-Manríquez *et al.* (2019).

By sub-sector, it is important to highlight that sustained sales growth (financial determinant) is a decisive factor in the manufacturing BP based on natural resources and intermediate technology, whereas in the LTM of the most representative branches of the state of Guanajuato, the factor that employers or managers agree is relevant is quality of product (internal non-financial determinant), coinciding with what was mentioned by Baldwin & Sabourin (2002), Estrada *et al.* (2009), Koc & Bozdog (2007), Aragón & Rubio (2005), and Soto-Acosta *et al.* (2015). It is important for SME in these branches that their product is of quality because they perceive that quality of product is the factor that influences efficiency and effectiveness in their BP; this matches the findings in a study by Gálvez & García (2011).

In the LTM: textile and LTM: leather, fur, and substitute materials, sustained sales growth (internal non-financial determinant) is seen as a decisive factor for BP, coinciding with a study by Hax & Majluf (2004). Meanwhile, in LTM: minerals, metals, plastics, and rubber, the authors point out, apart from quality of product, profitability (financial determinant) and adaptability to market changes (external non-financial determinant) as factors which mostly influence the efficiency and effectiveness in BP.

Other relevant results are that the entrepreneurs or managers of the state of Guanajuato do not consider the factor customer satisfaction to be relevant. This goes in accordance with Barroso (2018) and González *et al.* (2016), but it runs contrary to the results obtained by Gálvez & García (2011), Benítez *et al.* (2010), and Kyriakopoulos *et al.* (2004). By sub-sectors and branches of the manufacturing industry, the participants do not consider the human capital satisfaction and motivation-lower rate of work absenteeism

relationship as directly significant for successful BP; this is opposed to what is described by Quinn & Rohrbaugh (1983), Schneider *et al.* (2003), Robbins (2004), and Blenman (2006).

The main contribution of this article is the detection of the factors that influence BP of the sectors of trade, construction, services, and subsectors of manufacturing based on MNR and ITM; as well as the mineral, metal, plastic, and rubber branches; textile, leather, fur, and substitute materials of the LTM of SME in Guanajuato, Mexico. In addition, this research allowed the identification of the factors classified as financial determinants, internal and external non-financial determinants that have a significant influence on the SME's BP.

The limitation of this research is that it was carried out in a specific geographical area, detecting eight factors proposed as determinants of BP. It can be said that a future line of research is to add other factors that may influence the performance of companies, such as return on assets (ROA), return on equity (ROE), return on sales (ROS), tolerance to risk, corporate identity, productivity improvement, among others, in order to establish an adequate model for measuring the BP of SME. Other future lines of research are to apply the instrument in other states of Mexico to make comparisons at national level and to deepen the statistical analysis by proposing a structural equation model.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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