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Collaboration impact on financial results and cost reduction in Mexican SMES

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ABSTRACT

In the current competitive market with highly demanding clients, collaboration is considered a fundamental strategy in business in order to achieve the necessary competitiveness and growth. However, existing research and academics have not focused on a cohesive relationship among collaboration, financial results and costs reduction. The objective of this research is to measure the impact of such collaboration onto financial results and costs reduction in SMEs, specifically in enterprises operating in Aguascalientes, México. The results obtained demonstrated a positive and significant relationship between collaboration and financial results and costs reductions in organizations, which have important implications on decision-making in business.

Keywords: *Collaboration, financial results, costs reduction, SMEs.*

RESUMEN

En el actual mercado con un elevado nivel de competitividad y una alta demanda de los clientes, la colaboración es considerada como una estrategia esencial en los negocios, en el sentido de proporcionar los niveles requeridos de competitividad y crecimiento. Sin embargo, existe todavía un número importante de investigadores y académicos que no han considerado la importancia de relacionar las actividades de colaboración con los resultados financieros y la reducción de los costos de la organización. Así, el objetivo de este estudio empírico es la medición del impacto que tienen las actividades de colaboración en los resultados financieros y la reducción de los costos de las Pymes, específicamente en las empresas asentadas en Aguascalientes, México. Los resultados obtenidos demuestran una relación positiva y significativa entre la colaboración y los resultados financieros y la reducción de los costos en la organización, las cuales tienen importantes implicaciones en la toma de decisiones.

Palabras clave: *Colaboración, resultados financieros, reducción de costos, Pymes.*

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INTRODUCTION

Recent studies have shown collaboration as key element to business success, essentially in Small and Medium Enterprises (SMEs), because, among other reasons, it boosts the organization learning process (Nonaka, Toyama & Byosiere, 2003) and reduces barriers for growth (Mesquita & Lazzarini, 2008). Additionally, it has been demonstrated that collaboration allows complex coordination among the various actors in organizations, such as, IT engineers, designers, CEOs and external actors. Besides, collaboration is a crucial indicator in Research and Development (R&D) activities that foster business competitiveness (Carayannis & Grigoroudis, 2014; Ulengin, Onsel, Aktas, Kabak, & Ozaydin, 2014).

At the same time, few studies have focused on the impact for collaboration on financial results and costs reduction in SMEs, which are fundamental indicators in business, especially for SMEs growth. For instance, the majority of collaboration activities, such as, organizations alliances are recognized by its only focus on production processes, R&D and serves (Soda, 2011) but not on its financial results and costs reductions. In fact, such is its lack of attention on these elements, that there are evidence of an imbalance between costs and benefits from such collaborative projects (Austin, Smart, Yearley, Irvine & White, 2010), which impedes effective collaboration practices; this along with evidence about costly impacts from such business malpractices (Zhao, 2011).

As consequence, there is a need to carry out an empirical study on the collaboration impact on financial results and costs reductions in businesses. Therefore, the next section presents the principal contributions from this research. Firstly, a measurement of the collaboration impact on financial results, especially in SMEs operating in Aguascalientes, México. Secondly, a measurement of the collaboration impact on costs reduction, in the same organizations.

LITERATURE REVIEW

In the current literature regarding collaboration in business, it has been defined that costs reduction can be achieved through suppliers integration (Suntichai, Eldridge & Freeman, 2012) and through collaboration expanding (Proenca, Rosko & Dismuke, 2005). Besides that, business performance is improved by internal collaborations (Stank, Keller & Daughtery, 2001). Moreover, according to Kahn, Maltz and Mentzer (2006) collaboration practices supports costs reduction. Whereas, Mesquita and Lazzarini (2008) have described the collective use of resources and innovation in

products as key factors to reduce costs. In fact, in companies (co-entities) that perform collaboration activities its resources investments are dependant on its collaboration and response capacity (Fang, Palmatier, Scheer & Li, 2008).

According to Marquez, Bianchi and Gupta (2004), based on a collaboration perspective, operations integration and decision-making are fundamental elements in organizations. Therefore, better benefits to business as better collaborative decisions, for example, forecasts. On the other hand, Kim and Netessine (2013) have defined a practice named 'expected marginal compromise' (EMC) that integrates collaborative practices directed to costs reduction. Therefore, in order to a collaborative work be effective it has to provide major benefits than its costs (Hembürger & Dietrich, 2012). Kim and Lee (2010) identify an important impact from the use of collaboration systems, which promote a response capacity in supply chains, to international market sales.

In this sense, the collaboration impact on the financial performance and costs can achieved through internal and external collaboration in the company. In regards to internal collaboration, generally this is through teamwork developed by workers and employers in organizations in different function and activities carried out internally in organizations. In a way that daily activities are more effective and efficient (Piriyakul & Kerdpitak, 2011). In consequence, employees and workers from the different departments or functional areas in the business have to carry out activities in conjunction with other areas; independent of the disciplines they have, thriving to find solutions to the business problems (Wang, 2002).

Likewise, diverse researchers, academics and professionals from the economical sciences, have considered that organizations, especially SMEs, with collaboration initiatives among their departments not only have major positive effects on its financial results and costs but also have an important contribution to their overall business success (Piriyakul & Kerdpitak, 2011). Similarly, in the literature on supply chain management, the conclusion is that both internal and external collaboration are both essential activities to make efficient business processes and to achieve high competitiveness.

This way, an effective collaboration is that which tightly relate activities among manufacturers, suppliers, distributors and clients having the same common goal of adding value not only to products and services but to all supply chain participants, especially to satisfy potential customers' needs (Piriyakul & Kerdpitak, 2011). Consequently, internal collaboration is crucial to produce

better goods and services adapted to preferences and needs of final consumers; which allow not only better financial results in business but also to generate new goods and services through external collaboration with other organizations (Lambert *et al.*, 1998; Gimenez & Ventura, 2005).

In relation to external collaboration, a great deal of organizations are implementing this type of activities trying to use all available information in market and common domain, in a way that with this information business can perform collaboration activities with other organizations. So they can share risks, access to new markets and technologies, significantly improve directors and workers' skills, share knowledge, improve research and development of new products and services, reduce production time of new products and services and increase financial performance for all entities participating in the collaboration process (Lassen, Laugen & Middel, 2008).

Besides, financial and economical results in organizations highly depend on external collaboration, overall when it is tightly related to suppliers (Quinn, 1998; Handfield & Nicholls, 1999; Gimenez & Ventura, 2005), because actually suppliers help to solve internal problems in organizations; in consequence, a more effective and efficient business. Therefore, all external collaboration initiatives that are implemented in organizations can generate formal and informal work teams, share information about market and competitors that every organization has, significantly improve logistic process and mutually support problem solving. This is because external collaboration not only generates better financial results but also increase competitiveness levels from companies participating such external collaboration (Piriyakul & Kerdpitak, 2011).

At the same time, several researchers, academics and professionals in management sciences have consider that collaboration activities carried out by organizations (external collaboration), generate more benefits than conflicts because organizations focus on building long-term relationships and mutual support for problem solving obtain a more efficient business (Piriyakul & Kerdpitak, 2011). Thus, organizations that implement in a constant fashion external collaboration activities generally achieve better raw materials' management for production, mainly because suppliers constantly support the selection of best raw materials to better meet customer´s needs in products (Fisher, 1997).

An example of external collaboration can be seen in foods industry in United States, where Organizations constantly follow collaboration practices with suppliers and other organizations producing similar products. External collaboration allows them to achieve better financial results

and reduce costs in logistics and distribution processes. Also, to significantly improve raw materials quality, and to achieve short delivery times, and to establish long-term relationships, and their suppliers and customers help them to solve problems in innovation in products and services, and to generate various competitive advantages in relation to competitors (Kim, Cavasgil & Calantone, 2006).

In this sense, one of the major advantages from external collaboration in businesses participating in this type of activities, is mainly a more efficient and effective planning that makes easier production planning and work team among CEOs, employers and workers, which as a result promotes better financial and economical performance in the organization (Paulraj & Chen, 2007). Similarly, in recent research related to management sciences, external collaboration is considered a strong factor influencing competitiveness levels in participants collaborating, and its levels of performance in marketing and logistic areas (Fawcet *et al.*, 2005; Gimenez & Ventura, 2005; Green, Whitten & Inmas, 2008).

For these reasons, and considering the literature review presented, it is possible to postulate a relationship between collaboration, costs reduction and financial results in organizations.

H1: The better implementation of collaboration activities, the better financial results
H2: The better application of collaboration activities, the better costs reduction

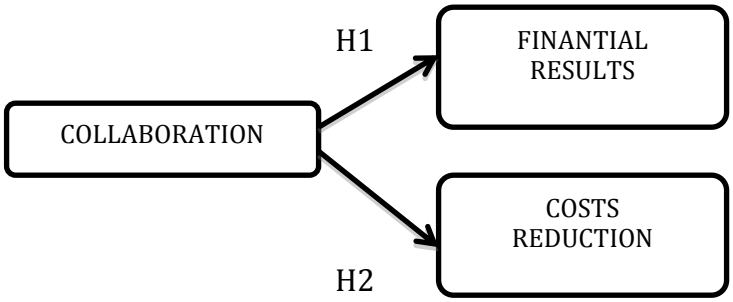

Figure 1 Theoretical Model

RESEARCH METHODOLOGY

An empirical research was carried out in SMEs, operating in Aguascalientes, México, to corroborate the established hypotheses. For this, the Mexican Enterprises System (SIEM from its

acronym in Spanish) was accessed as a theoretical framework. The variables used in this research are collaboration, financial results and costs reduction and these are defined by one-dimensional scales. Variables were measure by a 5 points Likert scale, where 1 = completely disagree and 5 = completely agree. The collaboration variable was measure by fifteen items scale and it was adapted from Heide and John (1990), Zaheer *et al.* (1998) and Corsten and Felde (2005). The financial result variable was measured by a six-items scale adapted from Dröge and Germain (2000), and Gilley and Rasheed (2000). Finally, the costs reduction variable was measured by a six items scale, adapted from Cannon y Homburg (2001).

To evaluate scale's reliability and validity a Confirmatory Factor Analysis (CFA) was carried out by using the Maximum Likelihood Method in the EQS 6.1 software (Bentler, 2005; Brown, 2006; Byrne, 2006). Additionally, the three scales used were evaluated by the Cronbach's Alpha coefficient and the Composite Reliability Index (CRI) (Bagozzi & Yi, 1988). Each of the values from the scale fit the recommended levels, Cronbach's Alpha greater than 0.7, and the CRI provided evidence of sufficient reliability and justifies internal reliability of the three scales used (Nunnally & Bernstein, 1994; Hair *et al.*, 1995).

Table 1 shows that all values from Cronbach's Alpha and Composed Reliability Index (CRI) are higher than recommended 0.7, which provide evidence of reliability from used scales (Nunnally & Bernstein, 1994; Hair *et al.*, 1995). In addition, it suggests that the theoretical model of collaboration offers well-adjusted data ($S\text{-}BX^2 = 431.631$; $df = 149$; $p = 0.000$; $NFI = 0.891$; $NNFI = 0.914$; $CFI = 0.925$; RMSEA = 0.075). Besides, all items from the variables are significant ($p < 0.01$), and the factor loads are greater than 0.6 (Bagozzi & Yi, 1988) and the Extracted Variance Index (EVI) for each pair of constructs related are greater than 0.5 (Fornell & Larcker, 1981).

Table 1. Theoretical Model's Internal Consistency and Convergent Validity

Variable	Indicator	Factor Load	Robust T- Value	Cronbach's Alpha	CFI	EVI
Collaboration	CO4	0.713***	1.000[a]	0.927	0.926	0.583
	CO6	0.723***	15.288			
	CO7	0.796***	16.494			
	CO8	0.801***	15.255			
	CO9	0.818***	15.767			
	CO11	0.806***	14.120			
	CO12	0.799***	14.950			
	CO13	0.649***	11.690			
	CO14	0.769***	14.646			
Financial Results	FP1	0.743***	1.000[a]	0.930	0.930	0.727
	FP3	0.887***	20.845			
	FP4	0.892***	20.411			
	FP5	0.877***	18.664			
	FP6	0.854***	18.145			
Costs Reduction	CR2	0.694***	1.000[a]	0.906	0.900	0.646
	CR3	0.869***	11.832			
	CR4	0.874***	11.563			
	CR5	0.824***	11.618			
	CR6	0.741***	10.616			
$S\text{-}BX^2$ (df = 149) = 431.631 p < 0.000; NFI = 0.891; NNFI = 0.914; CFI = 0.925; RMSEA = 0.075						

[a] = Parameters constrained to that value in the identification process

*** = p < 0.01

Discriminant validity is shown in table 2 by two tests. First, with an interval of confidence, 95%, none of the individual elements from factors posses vale 1.0 (Anderson & Gerbing, 1988). Secondly, the extracted variance index between each pair of constructs from the theoretical model is greater than their corresponding EVI (Fornell & Larcker, 1981). Hence, it is possible to define from this research that there is sufficient evidence of reliability and convergent and discriminant validity.

Table 2. Discriminant Validity from the Theoretical Model

Variables	Collaboration	Financial Results	Costs Reduction
Collaboration	**0.583**	0.024	0.016
Financial Results	0.060 – 0.248	**0.727**	0.046
Costs Reduction	0.040 – 0.216	0.126 – 0.302	**0.646**

The diagonal represents the Extracted Variance Index (EVI) whereas above diagonal the variance. Below diagonal, the estimation of factors' correlation with a confidence interval of 95%

RESULTS

In this research a Structural Equations Model (SEM) was employed in the EQS 6.1 software (Bentler, 2005; Brown, 2006; Byrne, 2006) using the Maximum Likelihood Method, in order to test the research hypotheses and the structure of the theoretical model that includes collaboration, financial results and costs reduction in SMES, in Aguascalientes, México. Nomo logical validity of the theoretical model was analysed through the Chi squared test, in which the theoretical model was compared with the model measurement, no significant statistical differences were found among models (Anderson & Gerbing, 1988; Hatcher, 1994).

Table 3. Results from the Structural Equations Model

Hypothesis	Structural Equation	Standardized Coefficient	Robust T-Value
H1: The better application of collaboration activities, the better financial results	Collaboration → Financial Results	0.222***	3.628
H2: The better application of collaboration, the better costs reduction	Collaboration → Costs Reduction	0.218***	3.000
$S\text{-}BX^2$ (df = 149) = 431.634; p < 0.000; NFI = 0.891; NNFI = 0.914; CFI = 0.925; RMSEA = 0.075			

*** = P < 0.01

The results obtained from this research are shown in Table 3. In relation to the first hypothesis, $\mathbf{H_1}$, the results obtained ($\beta = 0.222$, $p < 0.01$) indicate that collaboration activities have positive effects to financial results. In terms of second hypothesis, $\mathbf{H_2}$, the results ($\beta = 0.218$, $p < 0.01$), indicate that collaboration activities have significant positive impacts on costs reduction. In summary, the results demonstrate that collaboration activities have positive effects on financial results and costs reduction in SMEs, operating in Aguascalientes, México. This allows concluding that collaboration activities are beneficial to reduce costs and improve financial results.

CONCLUSIONS

Considering the achieved results, it is possible to provide two main conclusions. First, collaboration activities both internal and external allow companies to participate to obtain better financial results and a significant costs reduction; which can generate not only a major level of competitiveness. In consequence, organizations that adopt and implement collaboration activities can produce better performance results and success than those that work alone. Second, collaboration activities generate greater benefits than disadvantages for those organizations that apply them, because it is through collaboration can align its objectives with those of its suppliers, distributors and clients. This allows increasing, making efficient use of economic, and human resources to develop new products and services. Moreover, collaboration practices enhance adding value and better financial results to all organizations that participate in the supply chain. This is because every organization in the supply chain can share market and customers information in relation to products and services offered to specific customers and by suppliers.

At the same time, the results obtained have a number of implications for both SMEs managers and whole organization. Firstly, managers have to create an internal working environment for employers and workers in the organization. This is because in order implement internal collaboration activities it is required all personnel in the company perform under a same common objective, look for the same goals, where team work, interchange of experiences and skills, are possible with co-workers and among other functional areas of the company.

Second, organizations that aim greater levels of financial performance and costs reduction should carry out collaboration activities with other organizations from the same sector, or their suppliers, distributor and clients (external collaboration). On the contrary, it would be difficult that organization alone can achieve higher levels of financial performance and costs reduction. Thus, organizations should attend the several support programs such as enterprises chambers and the

various governmental institutions in order to enhance collaboration activities among other companies, private and public. This way it is possible to share risks, information, human and financial resources, useful to adapt their products and services that meet customers needs.

The main limitations of this research are the following. First, in regard to the scales used to measure collaboration, financial results and costs reduction, because they were measured by uni-dimension, which perhaps in future would be necessary to incorporate scales with factors and dimensions that allow to corroborate the obtained results in this empirical studies. The second limitation is data collection, because only were used qualitative variables that measure collaboration, financial results and costs reduction. Therefore, future research would be to use quantitative variables to corroborate if same results are obtained.

A third limitation of this research is that surveys were applied to managers or owners only, from SMEs in Aguascalientes, México. In consequence, the present results can be different if a different sample is used. It would be necessary to apply this survey with suppliers; distributors and customers in order to test the same results can be achieved. A fourth limitation is the size of the organizations surveyed; it was only from five to 250 workers. Thus, in future research organization with less than five workers would be considered, in order to corroborate the presented results. Finally, another limitation is that the majority of SMEs considered that the information requested was confidential, so data here provided might not express full reality from organizations.

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