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Women-led SMEs: Innovation and collaboration → performance?

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ABSTRACT

Scholars and practitioners recognize the importance of innovation and collaboration for enhancing business performance. Gender diversity also influences business performance, either directly or indirectly. Gender diversity in a board of directors improves companies' innovative performance and, consequently, their performance. However, research on innovation in women-led small and medium-sized enterprises (SMEs) is limited, which significantly restricts our understanding of the innovation–performance relationship in such businesses. Thus, in this study, using a sample of 503 women-led SMEs, we show that innovation is not a determinant of businesswomen's business performance. Our study provides insights into how women-led SMEs deciding to innovate or collaborate are unable to appropriate the benefits suggested in the literature.

KEYWORDS

Women CEO; SME; innovation; collaborative innovation; firm performance; emerging economies

Introduction

The hypothesis of a positive relationship between innovation and business performance has been widely accepted in academic research (Chen et al., 2009; Gronum et al., 2012; Hernandez-Espallardo et al., 2018; Ramadani et al., 2019; Singhal et al., 2020). Innovation and collaborative innovation have been shown to contribute to business development and economic growth (Christensen, 1998). Several studies highlight that gender diversity on the board of directors positively affects innovation performance and, consequently, higher company performance (Chen et al., 2018; Ruiz-Jiménez & Fuentes-Fuentes, 2016; Guerrero, 2020). This study questions whether innovation is really important for women-led small and medium-sized enterprises (SMEs). It has also been found in the literature and statistics that businesswomen engage in low levels of innovation and collaboration (GHK, Technopolis, 2008; Vershinina et al., 2019). Little research has been found regarding women-led SMEs' innovative and collaborative behavior (Belghiti-Mahut et al., 2016). This gap invites exploration beyond the simple difference in performance between male and female entrepreneurs due to innovation and collaboration.

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The Average Treatment Effect (ATE) estimator is calculated by propensity score matching (PSM) to determine if, of all the SMEs led by women, those that have innovated or collaborated have better performance than those that have not. This research shows no significant relationship between innovation and company performance, nor is the effect of collaborative innovation significant. It is interesting to observe how SMEs led by women decide to get involved in innovation activities, or collaborations do not manage to appropriate the improvements in business performance that have been widely reported in the literature.

This article continues with the theoretical framework and the development of hypotheses. In the third section, the methodology and results are presented. The conclusions and discussion are included in the fourth section. The fifth section contains the implications of the study.

Theoretical framework

Innovation has been of particular interest to academic research, as it allows for business growth and generates competitive advantages (Christensen, 1998). Recently, a topic that has attracted attention in this field is collaborative innovation and how those involved can establish mutually beneficial relationships (Diamond & Vangen, 2017; Ystrom & Agogué, 2020). Through collaborative innovation, companies can access resources, such as capital, information, knowledge, and technology, through a cooperation agreement with external actors that involve specific actions to contribute to each party (Ferreira et al., 2017).

Collaboration with different external actors (for example, suppliers, competitors, universities, customers) improves knowledge transfer, including market knowledge, and promotes innovation capacity (Clauss & Kesting, 2017). Najafi-Tavani et al. (2018) found that collaborative innovation is effective when company managers have developed the capacity to scan and acquire external knowledge. In this sense, to benefit from collaborative innovation, SMEs must have absorption capacity. However, they are at a disadvantage compared to larger companies because their personnel show a lower educational level and are less willing to collaborate (Kurdve et al., 2020). In the particular case of SMEs run by women, Ruiz-Jiménez and Fuentes-Fuentes (2016) concluded that women in management positions positively moderate the relationship between management skills and innovation.

One of the critical aspects of developing collaborative innovation is the amplitude of the entrepreneurs' social networks; these networks allow one to find external collaborators of different natures that enrich collaborative innovation activities (Xue et al., 2018). Lindberg et al. (2014) found that women entrepreneurs have smaller and more local social networks than male entrepreneurs, so they are less likely to access collaborative innovation relationships. Very little research has been done on businesswomen's collaborative innovation

behaviors (Belghiti-Mahut et al., 2016). This literature gap motivates us to explore whether SMEs led by women involved in collaborative innovation benefit from innovation and cooperative relationships. In this regard, the following hypotheses are put forward:

H1. *SMEs run by women who perform innovation activities have better financial performance than companies led by women who do not innovate.*

H2. *SMEs run by women involved in collaborative innovation relationships have better financial performance than companies led by women who do not cooperate with others in innovation.*

Methodology and results

These research data were extracted from the Fifth Longitudinal Survey of Companies 2017 of Chile (Instituto Nacional de Estadísticas, 2017). This database is the largest official source of information regarding the Chilean business ecosystem and considers its business diversity representative. It considers a sample of 503 SMEs managed by women and has between 5 and 25 years of operation. The PSM method is used to obtain the ATE estimator. We identified two analysis models, first establishing whether companies that carry out innovation activities have better performance than their non-innovating counterparts. Second, we evaluate whether SMEs involved in collaborative innovation perform better than SMEs involved in this type of relationship.

The dependent variable is a measure of business performance represented by the return on assets. The selection (or treatment) variables are: In the first model, a dichotomous variable that takes the value 1 for companies that perform and 0 otherwise; in the second model, it is a binary variable that takes the value 1 if the company is involved in collaborative innovation and 0 otherwise. The control variables for both models will be the company's age, size, and capital intensity. Table 1 shows the detail of the variables, the units of measurement, and the descriptive statistics.

The results are presented in Table 2. The first model's findings indicate that innovation activities in SMEs led by women do not represent a significant improvement in the company's financial performance ($M = 0.023$; $p > .10$) concerning companies led by women who do not innovate. In the second model, the results are not significant ($M = 0.008$; $p > .10$). Therefore, women-led SMEs' participation in collaborative innovation does not affect other women-led SMEs' performance. Therefore, the results obtained do not support the hypotheses raised.

Table 1. Descriptive statistics.

Variable	Description and measure	Mean	*SD*
Return on assets	The ratio of net income to total assets	0.140	0.273
Innovation	1 = the company has innovation activities 0 = otherwise	0.163	0.370
Collaboration	1 = the company has innovative collaborations 0 = otherwise	0.072	0.258
Age	Company's age in years	14.374	6.302
Age square	Control to account for nonlinear effects	246.247	194.488
Capital intensity	The ratio of total assets to the number of workers	37,937.8	313,385.4
Size	Natural logarithm of the company's fixed assets	12.867	1.828

Table 2. Average Treatment Effect (ATE) for innovation and collaboration.

Return on assets	Coef.	*SD*	*z*	$P > \|z\|$	95 percent conf. interval		Obs.
ATE innovation (1 vs. 0)	0.023	0.036	0.65	0.516	−0.047	0.093	503
ATE innovative collaboration (1 vs. 0)	0.008	0.051	0.15	0.881	−0.093	0.108	503

Note. ATE = Average Treatment Effect.

Discussion and conclusion

Statistics show that women's SMEs show low participation in innovation and collaborative innovation relations with third parties (INE, 2017). Other studies have reported similar findings in different contexts (GHK, 2008; Vershinina et al., 2019). Although it has been shown that innovation and collaborative innovation have significant positive effects on business performance (Hernandez-Espallardo et al., 2018), this study shows that SMEs run by women and that innovate have not benefited from improvements in business performance. This research has not compared female leadership with male leadership, as is generally done. The purpose is to analyze SMEs' competitiveness through the impact of their innovation decisions on company performance. This work questions a series of investigations that claim that innovation and collaboration improve company performance (Chen et al., 2009; Gronum et al., 2012; Hernandez-Espallardo et al., 2018; Lee et al., 2019; Ramadani et al., 2019). Some explanations for this counterintuitive result are proposed.

When the focus is on a specific portion of the business ecosystem, such as women-led SMEs, the effects of innovation and collaboration on these well-defined groups are more accurately captured. It opens the discussion of how generalizable results support the hypothesis about the positive relationship between innovation and business performance. It has been recognized that the field of innovation and collaboration is predominantly male (Belghiti-Mahut et al., 2016). Therefore, gender gaps in access to opportunities and resources for innovation and collaboration are good arguments to explain why women-led SMEs are little involved in these processes. In general, SMEs have fewer capabilities and resources for innovation and collaboration (Kurdve et al., 2020). Suppose we add to this the limited social

networks of businesswomen (Song & Berger, 2019). In that case, the concentration of SMEs under women's leadership in low-innovation industries (Nissan et al., 2012) and the risk preferences of female managers (Huysentruyt, 2014) makes this study relevant and interesting. Chen et al. (2018), in a study of gender diversity on boards of directors, found that female directors positively influenced the company's innovative and financial performance. This study argues that when women are the highest decision-making unit in an SME, innovation's positive performance is not sustained, considering a uniquely female business environment.

Implications

It is surprising to note that women-led SMEs fail to obtain the business performance benefits from innovation or collaborations activities. It is a warning sign because lower performance in innovative SMEs can generate a setback in innovation coverage in specific business sectors. Because women-led SMEs are concentrated in low-innovation industries, it is essential to direct entrepreneurship support programs to the insertion of women entrepreneurs in innovation-intensive economic sectors. The SMEs considered in this study have two characteristics that have been defined as lagging in innovation: they are smaller and run by women. It means that public policies that promote innovation at the business level must improve the performance of innovation by considering these two characteristics simultaneously. Before inviting entrepreneurial innovation, institutions must ensure that the entrepreneurial ecosystem is sufficiently developed to ensure growth opportunities for all.

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