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Stakeholder pressure and innovation capacity of SMEs in the COVID-19 pandemic: Mediating and multigroup analysis

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ABSTRACT

During environmental crises, it has always been particularly interesting to investigate how companies, specifically small- and mid-sized enterprises (SMEs), find solutions to survive and learn how to act in adverse situations. We conducted our study during the current coronavirus pandemic to analyse how stakeholder pressure affects both the innovation capabilities of SMEs and their firm performance. On the one hand, we examine whether the market and financial performance are better in the presence of less stakeholder pressure. On the other hand, we analyse whether SMEs implement internal mechanisms that enhance their innovation capacity to solve external problems caused by greater stakeholder pressure, which in turn affects firm performance.

Our main findings show that during the pandemic, stakeholder pressure is related to the innovative capacity of SMEs; therefore, the higher the pressure, the more important the innovative response of SMEs. However, with higher pressure, the company's performance would be directly reduced in the short term, as the conditions set would be more unfavourable. Innovation capacity also plays a mediating role in preventing poor business performance because of increased stakeholder pressure.

Owing to the importance of the chief executive officer (CEO) in SMEs, we test, through multigroup analysis, the differences based on the CEO's educational level. For example, commitment to innovation in SMEs may be more important for managers with higher education. Finally, our findings show how managers can learn to face new challenges in unfavourable environments.

1. Introduction

In the context of the coronavirus disease 2019 (COVID-19) driven economic crisis, businesses, particularly small- and medium-sized enterprises (SMEs), operate within an environment of imposed government restrictions, unlike any previous demand-driven crises (Nicola et al., 2020; Pedauga et al., 2021). The negative impact of COVID-19 on the economy and human lives has resulted in the pandemic becoming a disruptive component with dire consequences (Bapuji et al., 2020; Liu and Jintae, 2020). If pre-pandemic research already suggested that the ability of companies to find solutions in a complex, dynamic, global, and highly uncertain environment implied a commitment to improving their innovative capacity (Rubio-Andrés et al., 2022; Keupp et al., 2012), in the COVID-19 era this became even more important. Thus, many SMEs attempt to cope with this changing environment (Bretas and Alon, 2020). To deal with this crisis, firms' capabilities and resources become vital for their permanence in the market (König et al., 2020; Liu, 2020). Moreover, COVID-19 has a major effect on SMEs because their resources are even more limited (Utomo et al., 2021), and many find themselves needing substantial adaptation of their business model (Ritter and Pedersen, 2020). In this context, SMEs are not fully autonomous organisations, but their resources depend on external environmental conditions that impact the achievement of their objectives (Hillman et al., 2009).

We consider that a firm can be described as a set of relationships between groups with a stake in the activities that make up the firm (Freeman, 2010). An important consequence of the COVID-19 pandemic is that external stakeholders, suppliers, customers, and financial

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institutions have had to change the relationships established with SMEs, hardening their conditions due to the existence of a hostile environment (Ding et al., 2021; Ritter and Pedersen, 2020). Primary stakeholders, customers, suppliers, financial institutions, and employees affect business activities because of their direct relationship with companies' operations (Castka and Prajogo, 2013).

Moreover, we know that the competitiveness of SMEs depends heavily on the conditions agreed upon by their stakeholders (Kacperczyk, 2009; Slawinski and Bansal, 2012; Wang and Bansal, 2012), as this affects firm performance and the capability to find new solutions to emerging changes (Turban and Greening, 1997; Sen and Bhattacharya, 2001; Luo and Bhattacharya, 2006; Porter and Kramer, 2006, 2011).

Despite the significant empirical interest researchers have shown in analyzing how stakeholder pressure affects SMEs (Singh et al., 2020; Otchere et al., 2021), the current understanding is still very limited (Abdel-Maksoud et al., 2021), especially the impact on market performance and its mediating role between innovation and firm performance (Gök and Peker, 2017). Furthermore, we find literature confirming the positive influence of stakeholder pressure on improving innovation and overall firm performance (i.e. Otchere et al., 2021). However, some authors find an ambiguous relationship between stakeholder pressure and financial performance (Peloza and Papania, 2008).

Based on stakeholder theory (Freeman, 2010), the present study addresses the research gap in the performance of stakeholder pressure on SMEs during the COVID-19 pandemic and how it affects them in terms of innovation capacity as well as the impact on their business performance. Therefore, we propose the following research question: What is the role of stakeholder pressure in SMEs' innovation capacity and firm performance?

Specifically, we set the following four objectives. Our first objective is twofold: we analyse whether and how stakeholder pressure during the pandemic has affected an SME's innovation capabilities and firm performance (in its two dimensions: financial and market). The second research objective involves studying whether SMEs that boosted their innovation capacity during COVID-19 have improved their firm performance. The third objective is to assess whether innovation capabilities act as an internal mechanism to contain the effect of stakeholder pressure on firm performance in its two dimensions and whether market performance plays a mediating role between innovation capacity and financial performance. Owing to the importance of managers in SMEs, the fourth objective is to test whether there are differences in the impact of innovation on firm performance using multigroup analysis (MGA). For example, we study whether there is a greater commitment to innovation in SMEs if managers have higher education.

To achieve these objectives, we compile the main studies on stakeholder pressure in companies, particularly SMEs, and their relationship with innovation capacity and firm performance. Then, based on the model created, we propose 11 hypotheses while considering the literature. We collect the empirical information through surveys, reaching out to a select group of 1842 Spanish SMEs that employ between 6 and 250 workers from the four main sectors (industry, construction, retail, and service), assuming a sampling error of 2.9 %. Subsequently, we use the partial least squares structural equation modeling (PLS-SEM) and posit hypotheses linked to the research questions. Finally, we describe our main findings on the direct, mediating, and moderating effects of the education of the chief executive officer (CEO) on COVID-19.

The rest of the paper is organised as follows. Section 2 presents a review of the literature and formulates the hypotheses according to the model. Section 3 describes the study methodology, followed by the results presented in Section 4. Section 5 offers a discussion of theoretical and managerial implications, limitations, and future research directions. Finally, Section 6 concludes the paper.

2. Theoretical framework and hypotheses

2.1. Stakeholder pressure and innovation capacity

The relationships firms establish with their stakeholders determine their future capability to generate sustainable competitive advantages over time (Freeman, 2010; Carroll, 1979; Donaldson and Preston, 1995; Mitchell et al., 1997). For SMEs, which are important in Spanish and other European economies, we distinguish between internal stakeholders, workers, external stakeholders, local suppliers, customers, banks, and the local community (Rubio-Andrés et al., 2021). When companies attend to stakeholders, they are more likely to engage in innovative activities, despite uncertainty (Flammer and Kacperczyk, 2016), to try to find new solutions. Thus, attending to stakeholders can encourage CEOs to engage in innovative activities despite the long-time horizon and high uncertainty that arises from such innovative processes.

In the pre-COVID-19 pandemic environment, responding to stakeholders' needs implied that companies were concerned about corporate social responsibility (CSR), sustainability, or corporate citizenship issues (González-Masip, 2018). This means that SMEs focus not only on creating economic value but also social value. This harmonized with Porter and Kramer's (2011) concept of creating shared value, with social value driving economic value (Rubio-Andrés et al., 2022). The main problem is that environmental conditions have changed because of the pandemic, affecting the competitiveness of all firms, suppliers, manufacturers, banks, and customers. Even though SMEs have taken care to attend to the social, environmental, and economic needs of stakeholders to be able to compete, they have had to change the conditions to which they had initially agreed, to a greater or lesser degree, which had repercussions on firm performance.

Numerous studies show how the lack of social responsibility or sustainability, ignoring the needs of customers, investors, and suppliers, leads to increased pressure on firms (Bosse et al., 2009; Yuen et al., 2017). In our case, we do not assess the cause-effect relationship of increased stakeholder pressure when SMEs do not meet their commitments or are not aligned with their objectives (Pinheiro et al., 2021); rather, we study the issue of increased pressure caused by a further hardening of agreed conditions in an environment dominated by the current pandemic.

Ayuso et al. (2006) conducted research that explains that firms innovate because they aim to fulfil the needs of some of their main stakeholders, such as customers and employees. There is also empirical evidence that changes in customer preferences positively affect the innovativeness of SMEs (Prajogo and McDermott, 2014; Uzkurt et al., 2018), which needs to enhance innovation to respond to new customer demands. Customers and suppliers demand innovation in value chain activities (Yang et al., 2019). Stakeholder theory focuses more on the elements that influence organizational relationships than on the outcomes derived from these relationships, such as learning and innovation. Currently, technological capability and the use of new disruptive technologies determine the innovation capability of firms, as information and knowledge of customers, suppliers, and employees are obtained through digital tools that strengthen a direct two-way relationship between stakeholders. Open inbound and outbound innovation is seen as an effective innovation modality for the creation of new products and services (Valdez-Juárez and Castillo-Vergara, 2021).

The academic literature highlights the role of stakeholder dialogue as an opportunity for innovation (Kanter, 1999; Hall and Vredenburg, 2003; Hart and Sharma, 2004), finding evidence that stakeholder pressure is a determinant factor for a firm's innovation decisions (Amaeshi and Crane, 2006; Ditlev-Simonsen and Midttun, 2011; González-Benito et al., 2012; Hall and Wagner, 2012). Singh et al. (2021) examine the direct and indirect effects of stakeholder pressure, dynamic capabilities, innovation, and performance of emerging market SMEs.

The internal heterogeneity of stakeholders and dynamics of resource

dependence results in stakeholder pressure, showing different levels of influence on corporate innovation decisions (Bansal, 2005; Kassinis and Vafeas, 2006). Considering the arguments of previous authors (e.g. Guoyou et al., 2013), we understand that different stakeholders lead to heterogeneous effects on innovation decisions.

In our study, we begin by stating the importance of a dynamic and sustainable vision of the firm. We understand that a more intense relationship with stakeholders leads to important competitive advantages in the form of innovation (Rodriguez et al., 2002). Hence, a fundamental variable for innovation capacity depends on the pressure exerted by its stakeholders. Therefore, we propose the following hypothesis:

H1a. . Stakeholder pressure has a negative and direct relationship with innovation capacity.

2.2. Stakeholder pressure and firm performance

The COVID-19 pandemic has caused firms to shut down and disrupted supply chains, forcing many firms, especially SMEs, to face great pressure in terms of capital shortages (Guo et al., 2020; Song et al., 2020). Other studies have also explored the responses of financial service providers to external shocks, such as natural disasters and financial crises (Cortés and Strahan, 2017) and how, as they find it more difficult to compete, they become more demanding of their customers. Therefore, in addition to the already difficult business viability problems caused by the lower demand for products, there are more difficult conditions for stakeholders.

In our study, we include stakeholder theory because of its interest in the discussion of competitiveness and firm performance (Harrison et al., 2010), such that the competitive advantages derived from a stakeholder management approach are related to causal ambiguity, which provides a solid foundation. Indeed, stakeholder theory contributes to the understanding of increasingly complex environments (Waxenberger and Spence, 2003). Along these lines, following Yuen et al. (2017), stakeholders' capability to punish or reward firms gives them the power to influence their performance outcomes, which is our starting point for defining the first hypothesis. Therefore, due to the hostile environment itself, certain key stakeholders such as suppliers, customers, and banks, which exert greater pressure on the conditions agreed with SMEs, would be detrimental to firms and have a negative influence on their firm performance. We believe that because of the COVID-19 pandemic, banks have had to change, to a greater or lesser extent, the amount of financing, conditions, and guarantees to SMEs, which has affected their performance.

Moreover, before the COVID-19 pandemic, research on the relationship between stakeholder management and firm performance also found a positive correlation (Griffin, 2000; Orlitzky et al., 2003; Marom, 2006; Wu, 2006; Margolis et al., 2009; Cho et al., 2019). However, other authors have pointed to negative correlations (Griffin and Mahon, 1997), causal ambiguity (Waddock and Graves, 1997), or a bidirectional relationship (Choi et al., 2010). Recent research emphasises firm performance as the outcome of a complex multilevel process (Fiss, 2011; Misangyi et al., 2017), dependent on both the firm's strategy and its environment (Gupta et al., 2020). Therefore, we propose the following hypotheses:

H1b. . Stakeholder pressure has a positive direct relationship with market performance.

H1c. . Stakeholder pressure has a positive direct relationship with financial performance.

2.3. Innovation capacity and firm performance

Innovation is the implementation of a new or significantly improved product, process, marketing, organizational method, business practice, workplace organisation, or external relationship (OECD, 2005). Previous research has developed measures of innovation related to products and the mechanisms that cause them (Leenders and Wierenga, 2002; Burdon et al., 2015). This is one of the most important competitive strategies for small and large firms (Sancho-Zamora et al., 2021; Kaufmann and Tödtling, 2002). Therefore, from an economic perspective, stimulating innovation in the SME sector is an important challenge (Keizer et al., 2002). Managers of innovative firms seek adequate human resource management, efficient risk, and change management (Staniewski et al., 2016). New challenges that can be obtained from innovations can be the starting point for the next generation of innovations (Lichtenthaler, 2017). Klewitz and Hansen (2014) distinguish between incremental and radical innovations (Li et al., 2018). An incremental innovation represents the continuous improvement of an established innovation, whereas follow-on innovations are those linked to an earlier, mostly radical, key innovation. Radical innovation differs from current products or technologies, and its acceptance requires changes in prevailing cognitive structures (Tushman and Nadler, 1986; Schmitt, 2014). Incremental innovation is more frequent in SMEs. In our model, the organisation's capability to innovate (Bocquet et al., 2013) considers product, process, and management innovation (organisation and human resources).

Innovation enables firms to transfer learned knowledge and offer better solutions (Sancho-Zamora et al., 2022; Maranville, 1992) to meet new societal needs and implement innovative ideas and decisions (Cegarra-Navarro et al., 2016). Therefore, it is important for firms seeking to achieve technological leadership to develop new products and services (Lumpkin and Dess, 1996; Rauch et al., 2009).

In the current COVID-19 pandemic, SMEs are looking for technological competitiveness and improvements in their innovation activities (Valdez-Juárez and Castillo-Vergara, 2021). Technological capability is supported by practical and theoretical knowledge that drives firms towards continuous improvement through the development of new products and processes (De Mori et al., 2016; Valdez-Juárez et al., 2016). New technologies have had an important influence on SMEs' innovation processes as they can better meet the needs of their customers and achieve higher firm performance (Jean, 2007).

Amit and Zott (2012) highlight the importance of innovation for its positive effects at three levels: first, it allows the firm to create value; second, its protective effect against possible imitation by competitors; and finally, it is a powerful competitive tool. Battaglia et al. (2014) explored how innovation in SMEs can involve the creation of new working methods, products, services, processes, and market opportunities that can help build trust and support among stakeholders, allowing them to realise new social and economic gains (Blakely and Aparicio, 1990).

The literature widely analyses the impact of innovation on variables such as financial performance (Capon et al., 1992; Yeh-Yun Lin and Yi-Ching Chen, 2007) and business growth (Christensen et al., 2003; Piperopoulos and Scase, 2009; Vaccaro et al., 2010; Börjesson and Löfsten, 2012; Szczygielski et al., 2017). Alam et al. (2013) show that to have a greater impact on a firm's overall performance, organisations need to implement effective innovation, which enables them to grow on a larger scale. Similarly, Ngo and O'Cass (2012) demonstrate a positive relationship between innovativeness and customer-related firm performance.

Jaruzelski et al. (2011) state that firms exhibiting cultures closely aligned with innovation can see their value increase by up to 30 % compared to their rivals. Bodlaj and Cater (2019) empirically found that encouraging higher levels of innovation enables SMEs to achieve better financial performance. Most business innovation studies view SMEs as cohesive groups (Jeong et al., 2018). For the most part, these studies have focused on product and process innovation (De Toni and Nassimbeni, 2003; Mosey, 2005; Oke et al., 2007; Mariani and Mealli, 2018); even empirically, SME innovation focuses on those types (Ramos-González et al., 2022).

Baregheh et al. (2009) suggest that the process of developing new

ideas improves business performance. According to Hirshleifer et al. (2013), innovation is a strong predictor of future firm performance and plays a vital role in explaining operating results, market returns, and stock prices. Sroufe and Gopalakrishna-Remani (2019) suggest that employee involvement and training (indicators of firm innovation) have a positive effect on firm performance.

The innovation capability implies a survival mechanism to escape a crisis, allowing firms to recover more quickly (Bodlaj and Čater, 2019). The greater demands of stakeholders mean that SMEs are looking for new formulas that will enable them to compete during the COVID-19 pandemic, and innovation is the way out of their crisis. Innovation capability leads to better firm performance, both market and operational, such that changes in products, processes, and management improve business performance. Recently, Singh et al. (2021) developed a study on 248 SMEs whose results confirm that process and product innovations significantly improve the financial and market performance of the firms analysed.

For the first dimension of firm performance, that is, financial performance, we use the procedure of Baron and Kenny (1986) to test the direct relationship between innovation management and firm value, which should be validated in an initial model with only two variables. Therefore, we propose the following hypotheses:

H2a. . Innovation capacity is positively associated with market performance.

H2b. . Innovation capacity is positively associated with financial performance.

2.4. Firm performance: market and financial performance

Firm performance manifests in many ways (González-Benito et al., 2012; Amores-Salvadó et al., 2015). Previous research (Varadarajan and Jayachandran, 1999; Ravichandran and Lertwongsatien, 2002; Wang et al., 2012) distinguish market and financial performance. For these authors, firm performance is defined as having operational and market dimensions.

Following this idea, Tippins and Sohi (2003) explain how customer retention and higher levels of satisfaction, in addition to competitive or quality products, should lead to higher sales growth (Slater and Narver, 1995) with better performance relative to direct competitors. Hooley et al. (2005) highlight a significant and positive relationship between customer satisfaction and financial performance. According to Rust et al. (2004), business performance results from having previously achieved market success.

According to these authors, we can verify whether higher-quality products, achieving more satisfied customers, and adapting earlier to changes lead to sales growth and improved profitability. Therefore, we propose the following hypothesis:

H3. . Market performance leads to improved financial performance.

2.5. The mediating role of innovation capacity and firm performance in the model

The innovation network theory may also shed light on how firms integrate multiple stakeholders during the innovation process (Kazadi et al., 2016). SMEs must be capable of managing the knowledge-creation process in their interactions with stakeholders. In traditional innovation networks, multiple actors represent similar types of stakeholders, but today, the sources of innovation vary and include customers, suppliers, the government, competitors, and non-governmental organisations (NGOs) (Perks and Jeffery, 2006). In their bibliometric study, Hueske and Guenther (2015) analyse several articles related to external barriers to innovation. The most important ones linked to external stakeholders start with difficulties related to financial institutions, such as obtaining finance (Hadjimanolis, 1999; Love and Roper, 2001), and continue with supply difficulties related to suppliers.

SMEs are under increasing pressure to improve their technical, organizational, and social capabilities to become more innovative and competitive (Del Giudice et al., 2017). For this reason, stakeholder-related capabilities could become not only a driver but also a precondition for them to grow and become more profitable when faced with dynamic business environment conditions (Del Giudice et al., 2019). Indeed, SMEs can develop unique innovation capabilities with the potential for competitive advantage by finding innovative solutions to the changes demanded by external stakeholders, which would generate benefits for the firm (Cohen and Levinthal, 1990). Leveraging external knowledge leads a firm to develop innovation capacity, which in turn improves firm performance (Driessen and Hillebrand, 2013). Ghassim and Bogers (2019) postulate that although stakeholder relations provide firms with new knowledge resources, they may not result in superior performance if the knowledge is not previously converted into innovation. Similarly, we highlight the recent study by Valdez-Juárez and Castillo-Vergara (2021); their results show that if SMEs have an efficient technological capability, they manage to be more innovative, which subsequently improves their business performance, adopting an open innovation model that involves greater interaction with stakeholders.

For this reason, we consider that innovation capacity plays a mediating role between stakeholder pressure and firm performance because the pressure from stakeholders forces entrepreneurs to make riskier decisions and find new innovative formulas that improve their expectations. Thus, innovation capacity offsets stakeholder pressure's effect on firm performance.

H4a. . Innovation capacity mediates the relationship between stakeholder pressure and market performance.

H4b. . Innovation capacity mediates the relationship between stakeholder pressure and financial performance.

Market and financial performance are not simultaneously generated, but market performance is the key construct in the conversion of innovation into financial performance. Thus, innovation improves a firm's financial position through market-based advantages (Gök and Peker, 2017). Indeed, when a firm innovates, it obtains higher quality products and services or more efficient processes, which means more satisfied customers and a higher-level impact on its financial performance (Ramaswami et al., 2009). Therefore, we propose the following hypothesis:

H4c. . Market performance mediates the relationship between innovation capacity and financial performance.

2.6. The moderating role of entrepreneurial education

Examining which CEO qualities affect firms' strategic management has become an important topic of study (Hiller and Hambrick, 2005; Chatterjee and Hambrick, 2007). Because a CEO has a very important, sometimes almost dominant, influence on the firm's activities, their personalities have a strong influence on strategic behaviours and business decisions (Peterson et al., 2003).

One of the most relevant variables shaping the CEO's personality is the education they have received. Prior studies have shown that CEO education is important in many corporate decisions (Malmendier and Tate, 2008). The outcomes of such decisions reflect the quality of the CEO (Saidu, 2019). Bowers and Seashore (1966) postulate that advanced technical and managerial skills are exhibited when a manager attains a higher level of education. Robinson and Sexton (1994) assert that education and experience are two inseparable qualities of a good manager with a strong entrepreneurial drive. We accept that higher education leads to better qualifications, which implies that the CEO would make better decisions that would positively affect business performance. For this reason, the level of education of the entrepreneur plays a relevant role in the model, so we define two groups:

entrepreneurs with a university education and those without a university education, to verify whether the effect of innovation capacity on firm performance is greater in the case of entrepreneurs with university education.

Previous studies, such as that of Kiss et al. (2021), capture CEO education level by considering the number of years spent in post-secondary education (i.e. undergraduate and graduate degrees). Other research, such as the study by Bhagat et al. (2010), questions whether CEO capability measured through objective indicators, such as the level of education obtained, positively affects firm performance. These authors confirm that the higher the education level, the better the financial performance. Adams et al. (2005) studied the impact of CEO power on the variability of firm performance. They find that CEO ownership has a positive impact on firm performance. Similarly, Jalbert et al. (2002) empirically demonstrate that holding a university degree has explanatory power for the Return on Assets (ROA) and Tobin's Q of a firm in which the CEO is active. Moreover, these authors highlight that university-educated founders of firms, as is the case in our study, produce a higher return on assets than other CEOs. In turn, findings link higher CEO education to improved profitability (Saidu, 2019). However, some studies have reported contradictory findings (Bhagat et al., 2010; Gottesman and Morey, 2010; Lindorff and Jonson, 2013). These authors found no empirical evidence of a systematic relationship between CEO business education and firm performance, concluding that there is a lack of influence due to a lack of significance.

Herrmann and Nadkarni (2014) explore the relationship between innovation, firm performance, and CEO education level. According to these authors, CEO education levels may be correlated with risk preferences, thus introducing additional variation in the firm's innovation and performance outcomes. Similarly, we try to analyse whether CEOs with higher education make better innovation decisions, which would have better consequences for firm performance. Therefore, we propose the following hypotheses:

H5a. . CEO education moderates the relationship between innovation capacity and financial performance, such that innovation capacity leads to higher financial outcomes in the group of highly trained entrepreneurs.

H5b. . CEO education moderates the relationship between innovation capacity and market performance, such that innovation capacity leads to higher market outcomes in the group of highly trained entrepreneurs.

Fig. 1 shows a graphical representation of the empirical model and the proposed hypotheses.

3. Methodology

3.1. Sample and data collection

This study used a cross-sectional approach to empirically validate the proposed theoretical model. We randomly selected SMEs operating in Spain using the Central Directory of Companies, published by the National Statistics Institute (DIRCE) (2021). Subsequently, we used the *Sabi database* as a selection framework to locate the specific data for the sample. The sampling was performed by stratifying the population. The stratification criteria considered the structure of the population, so the strata were set according to the sector (industry, construction, retail, and services) and size (micro-, small-, and medium-sized enterprises). The selection was performed by simple random sampling in each stratum. Data were collected between February and April 2022 through a random online and telephone survey of SME managers.

A total of 1842 completed surveys were returned and used for further analysis. Regarding the sampling error, the final distribution obtained has a maximum error in the estimation of 2.9 % with a confidence level of 95 %.

The largest group of participating firms was from the services sector (35 %), followed by industry (33 %), retail (19 %), and construction (14 %). In addition, the majority of firms were small, with fewer than 50 employees (52 %), followed by micro-SMEs with 6–9 employees (35 %), medium with 50–249 employees (12 %), and without employees (1 %).

3.2. Measures

Our model is reflective because causality occurs between the construct and its measures, so we consider the indicators to be a representative sample of all possible items available within the

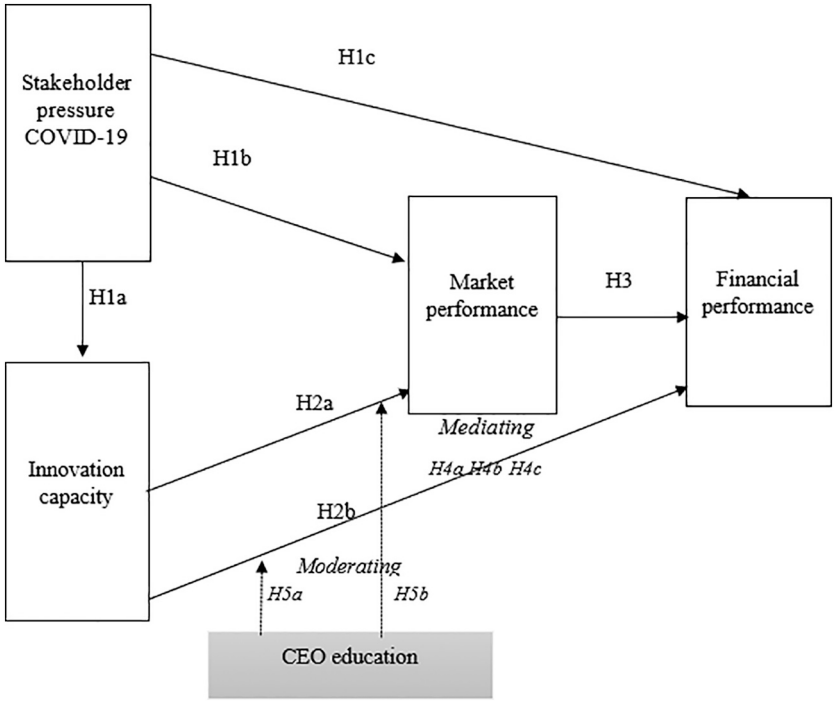

Fig. 1. Conceptual framework.

corresponding construct (Hair et al., 2011). Therefore, the indicators associated with the construct are closely correlated with each other (Khan et al., 2016). If the items have sufficient reliability, they are interchangeable and, thus, could be left out individually without altering the sign of the construct.

The constructs and their corresponding indicators supported by previous studies are explained below:

Innovation capacity is the construct that forms the dependent variable, with indicators measuring three types of innovation. First, it assesses changes or improvements in existing products/services and the launch of new products in the market. Second, process innovation considers indicators of change or improvement in the production process and the acquisition of new capital goods. Third, management innovation is measured through changes or improvements in the organisation, changes or improvements in purchasing or procurement, and commercial or sales changes or improvements. The seven indicators used in this construct have been validated in previous studies (Oke et al., 2007; Burdon et al., 2015; Cegarra-Navarro et al., 2016; Lichtenthaler, 2017; Harel et al., 2021). In the survey, these indicators were transformed into questions using a 5-point Likert scale response format according to the importance of these actions in the firm, from 1 (not very important) to 5 (very important).

Market performance: The first dimension of firm performance is measured through the following items: offering higher-quality products or services, more efficient customer-facing processes, having more satisfied customers and adapting earlier to changes in the environment. These four indicators were previously validated by Homburg and Jensen (2007), Alam et al. (2013), Ingenbleek et al. (2013), Jabbour et al. (2015), and Pinheiro et al. (2021).

Financial performance, as the second dimension of firm performance, is the main endogenous variable where all the latent variables of the model converge, and the two indicators that measure this construct are business growth and profitability (Li, 2000; Pekovic and Vogt, 2021).

In the survey, the described firm performance indicators (market and financial) were transformed into questions with a 5-point Likert response format, establishing a comparison between the firm and its direct competitors, from 1 (definitely worse than the direct competitors) to 5 (definitely better than the direct competitors). The survey did not collect sensitive performance data because of its potential competitive implications (Tippins and Sohi, 2003).

Stakeholder pressure is the independent variable and includes three primary stakeholders to measure the pressure on SMEs. First, there is pressure from suppliers through the supply chain and delivery time of raw materials. Second, there is pressure from customers to assess payment terms, order cancellations, and losses due to non-payment by customers. Third, bank pressure is measured through the volume of financing offered, the costs and commissions required, the guarantees and collateral needed to access financing, the cost of financing, the response time of the financial institution to the request, and the time required to repay the capital. These 11 indicators were defined by considering the scales proposed by Jakhar et al. (2018), Sarkis et al. (2010), Singh et al. (2020), and Pinheiro et al. (2021). In the survey, the options were evaluated on a 5-point Likert scale, ranging from 1 (an unfavourable situation) to 5 (a favourable situation). The higher the score obtained, the lesser pressure exerted by stakeholders and, therefore, the more favourable for the firm.

The survey also collected personal data on the CEO's level of education, gender, age, years of experience, and family business.

3.3. Data analysis

We used SmartPLS 3 (Ringle et al., 2015) to analyse the data in two steps: the measurement models and the structural model. When evaluating a reflective measurement model, it is necessary to consider internal consistency, convergent validity, and discriminant validity. To evaluate the structural model, we used a bootstrap procedure with 5000 subsamples and 1842 bootstrap cases without any significant change. We calculated the collinearity in the structural model (VIF), coefficient of determination (R2), predictive relevance (Q2), and f^2 effect size.

We used CEO education (higher education, lower education) as a moderating variable because, in SMEs, the role of the manager is fundamental in decision-making. We first tested for invariance using the measurement invariance of composite (MICOM) models (Henseler et al., 2016) and then MGA.

4. Results

We use SEM-PLS to analyse our model and test our hypotheses. First, we assessed the suitability of the measurement model to ensure the suitability of the instrument. We also employed the MGA to test for significant differences in parameter estimates between a predefined dataset (CEO education). To carry out this analysis, we employed MICOM (Henseler et al., 2016) before analyzing the existence of differences in the paths predicted across the two samples.

4.1. Evaluation of the measurement model

To analyse the relationships between the different constructs and their indicators, we adopted the latent model perspective, in which the latent variable is understood to be the cause of the indicators. Therefore, we refer to reflective indicators as first-order constructs or dimensions. Four constructs in the model are operationalised as first-order reflective constructs (i.e. stakeholder pressure, innovation capacity, market performance, and financial performance). The results revealed no problems in the three samples: the total sample, the CEO lower education sample, and the CEO higher education sample. We tested the individual reliability of each indicator or manifest variable by examining the weights obtained by PLS (λ) or the simple correlations of the manifest variables with their specific constructs. We performed an initial iteration of the algorithm by using SmartPLS. We removed indicators with standardised weights below 0.4 (Churchill Jr., 1979, cited in Henseler et al., 2009) and reformulated the model (Table 1). We deleted the indicator Banks_1 because it did not meet this requirement. The analysis confirmed the reliability and convergent validity of the measurement model in terms of reliability, and all constructs had composite reliability higher than the threshold of 0.7.

Cronbach's alpha obtained in this study is satisfactory because they are >0.70 (Hair et al., 2011). They are between 0.755 and 0.880 for the total sample, 0.758 and 0.885 for the CEO lower education sample, and 0.756 and 0.875 for the CEO higher education sample. This result confirms the constructs' high reliability. Composite reliability is a recommended criterion that would reach an appropriate value (Fornell and Larcker, 1981). The results were higher than the suggested 0.70 in all samples. Furthermore, convergent validity was demonstrated as the average variance extracted (AVE) for all constructs was higher than 0.5, and all indicators were significant with outer loadings >0.5, except for the innovation management construct, which achieved a very close AVE (0.498), although its cross-loadings were within the recommended range (0.4–0.7; Table 2). On average, each relationship had a stronger connection with its measures than those established by Fornell and Larcker (1981).

Henseler et al. (2016) showed that a lack of validity is best detected through the heterotrait–monotrait ratio indicator. We found that the heterotrait–monotrait ratio was less than one. The proposed constructs complied with the established criteria. We examined the residual matrix of correlations and found no significant residual values that would indicate a substantial prediction error for the indicators or manifest variables that make up each of the constructs in the model (Table 3).

4.2. Analysis of direct effects

Table 4 presents the results of the structural model. Except for H2b,

Table 1
Item loadings.

Dimensions	Indicators	Loads (λ)
Stakeholder pressure		
Suppliers 1_ Supplier chain affected by COVID-19	SP_1	0.537/na/na
Suppliers 2_ Supplier delivery time	SP_2	0.646/na/na
Customers 1_ Customer payment terms	SP_3	0.771/na/na
Customers 2_ Cancellation of customer orders	SP_4	0.711/na/na
Customers 3_ Customer insolvency and late payments	SP_5	0.731/na/na
Banks 2_ Commissions and expenses demanded by the banks	SP_6	0.511/na/na
Banks 3_ Guarantees and collateral required for access to financing	SP_7	0.518/na/na
Banks 4_Cost of bank financing	SP_8	0.494/na/na
Banks 5_Response time from the bank to the loan request	SP_9	0.495/na/na
Banks 6_Required repayment period	SP_10	0.519/na/na
Innovation capacity		
Products 1_ Changes or improvements in existing products/services	IC_1	0.782/0.819/0.755
Products 2_Market launch of new products/services	IC_2	0.727/0.756/0.704
Processes 1_ Changes or improvements in the production process	IC_3	0.815/0.820/0.813
Processes 2_ Acquisition of new capital goods	IC_4	0.570/0.532/0.607
Management 1_ Changes or improvements in organisation	IC_5	0.814/0.809/0.810
Management 2_ Changes or improvements in purchases and procurement	IC_6	0.799/0.807/0.790
Management 3_ Changes or improvements in commercial and sales	IC_7	0.807/0.806/0.800
Market performance		
Market 1_Higher quality products	MP_1	0.789/0.790/0.785
Market 2_More efficient processes to improve sales	MP_2	0.808/0.802/0.812
Market 3_Satisfied customers	MP_3	0.778/0.771/0.777
Market 4_Proactive adaptation to the market	MP_4	0.781/0.774/0.782
Financial performance		
Financial 1_ Sales achieved	FP_1	0.902/0.901/0.901
Financial 2_Profitability	FP_2	0.891/0.894/0.892

CA = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extract; na = not applicable.

Table 2
Construct reliability, and convergent validity across the total, lower, and higher education samples.

	CA total/Lower education/Higher education	CR total/Lower education/Higher education	AVE total/Lower education/Higher education
Stakeholder pressure	0.818/na/na	0.830/na/na	0.498/na/na
Innovation capacity	0.880/0.885/0.875	0.906/0.909/0.903	0.583/0.593/0.574
Market performance	0.801/0.795/0.801	0.869/0.865/0.869	0.6237/0.615/0.623
Financial performance	0.755/0.758/0.756	0.891/0.892/0.891	0.803/0.805/0.804

CA = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extract.
na = not applicable.

Table 3
Evaluation of discriminant validity using the heterotrait–monotrait ratio.

	Innovation capacity	Financial performance	Market performance
Innovation capacity	0.141		
Financial performance	0.287	0.624	
Market performance	0.205	0.309	0.097

Table 4
Results of partial least squares structural equation modeling analysis.

Hypothesis	Causal model			
Direct, indirect, and total effects	t statistic	Path coefficient	95 % confidence interval	Decision
Direct effects				
H1a stakeholder pressure → innovation capacity	5.352	−0.196**	[−0.268,-0.123]	Supported
H1b stakeholder pressure → market performance	3.887	0.104**	[0.052, 0.158]	Supported
H1c stakeholder pressure → financial performance	12.360	0.254**	[0.214, 0.295]	Supported
H2a innovation capacity → market performance	11.278	0.268**	[0.222, 0.315]	Supported
H2b innovation capacity → financial performance	1.853	0.042*	[−0.002, 0.087]	Supported
H3 market performance → financial performance	23.285	0.475**	[0.435, 0.514]	Supported
Indirect effects				
H4a stakeholder pressure → innovation capacity → market perfomance	4.839	−0.052**	[−0.075,-0.032]	Supported
H4b stakeholder pressure → innovation capacity → market financial → financial performance SP-MP-FP: 0.049 SP-IC-FP: −0.008 SP-IC-MP-FP: −0.025	0.943	0.016ns	[−0.017, 0.050]	Not supported
H4c innovation capacity → market performance → financial performance	9.905	0.127**	[0.103, 0.153]	Supported
Total effects				
SP-IC		−0.196		
SP-FP		0.270		
SP-MP		0.052		
IC-FP		0.169		
IC-MP		0.268		
MP-FP		0.268		

ns = not significant.
$n = 1842$, with 5000 bootstrapping resamples.
FP = financial performance; IC = innovation; MP = market performance; SP = stakeholder pressure.
* $p < 0.1$.
** $p < 0.001$.
Source: own elaboration.

which we will discuss later, all the hypotheses of the direct effects were accepted with a high significance level ($p = 0.000$); zero is not included in any of the confidence intervals.

Hypotheses H1a, H1b, and H1c were confirmed. They concern the

direct effect of stakeholder pressure on innovation capacity ($\beta_{H1a} = -0.196$, $T_{H1a} = 5.352$, $p = 0.000$), market performance ($\beta_{H1b} = 0.104$, $T_{H1b} = 3.887$, $p = 0.000$), and financial performance ($\beta_{H1c} = 0.254$, $T_{H1c} = 12.360$, $p = 0.000$). We found a negative relationship between stakeholder pressure and innovation capacity: if stakeholder pressure is low, the firm is less innovative, as it does not need to find new products or processes to remain competitive. By contrast, we found that less stakeholder pressure means that firm performance, both market and financial, is more positive, as it does not suffer the consequences of more demanding conditions from suppliers, customers, and banks.

Hypothesis H2, which assesses the impact of innovation capacity on firm performance in SMEs, is divided into two hypotheses. H2a measures the relationship in terms of market performance and H2b with financial performance. For H2a, the relationship was confirmed with a high level of significance ($\beta_{H2a} = 0.268$, $T_{H2a} = 11.278$, $p = 0.000$); However, for H2b, the relationship was significant, but at a lower level ($\beta_{H2b} = 0.042$; $T_{H2b} = 1.853$, $p = 0.064$). This is because of the mediating role of market performance, as explained in the mediation analysis.

Finally, H3, which measures the impact between firm performance variables (market on financial performance), was also significant ($\beta_{H3} = 0.475$, $T_{H3} = 23.285$, $p = 0.000$), indicating a direct relationship.

4.3. Mediation analysis

Below, we discuss the indirect effects and whether they are more important than the total effect. We used bootstrapping to analyse the mediating hypotheses (H4a, H4b, and H4c). We followed Baron and Kenny's (1986) explanation of the need to create two models to study the relevance of the mediating variable. The initial model analysed the impact without mediation. This model examines the direct link between innovation capacity and financial performance, revealing a highly significant relationship between the two variables ($\beta = 0.129$, $T = 6.06$, $p = 0.000$).

We then created a final causal model that included all mediating variables. The direct relationships studied in the initial model are still significant ($p = 0.064$), albeit with less importance, particularly in the case of innovation capacity on financial performance. Thus, we confirmed the existence of partial mediation in the model caused by market performance; that is, there is a direct relationship between the independent variable and the dependent variables, and at the same time, a significant link between the mediating variable and the dependent variable.

To gauge the importance of the mediating variables' impacts, we tested their indirect effects. The numerical values are presented in Table 3. Mediating hypotheses H4a and H4c were confirmed ($p < 0.001$). Regarding H4a, the negative mediating effect of innovation capacity (−0.052) made the total effect of stakeholder pressure on market performance (0.052) smaller than its direct effect (0.104). In other words, SMEs fail to reap the benefits of increased innovation because they exert little pressure.

In relation to H4c, the mediating effect of the market performance was significant (0.127), even exceeding the direct effect of innovation capacity on financial performance (0.042), and the total effect was, therefore, 0.169. This means that market performance enhances the effect of innovation capacity on financial performance and implies that the direct hypothesis H2b has a low level of significance.

By contrast, the mediating hypothesis H4b was not significant ($p = 0.346$, exceeding the minimum standard of $p < 0.01$). This hypothesis is based on the joint mediating effect of the three specific mediating effects. The specific mediating effect of market performance on the relationship between stakeholder pressure and financial performance was significant ($\beta = 0.049$, $p = 0.000$). By contrast, the mediating effect of innovation capacity on stakeholder pressure and financial performance was not significant ($\beta = -0.008$, $p = 0.000$). The last specific mediating effect involving innovation capacity and market performance was significant because of the strength of the first in the mediation ($\beta = -0.025$, $p = 0.000$). Hence, innovation capacity is the cause for the lack of significance in this hypothesis.

4.4. Moderation analysis

We examine the moderating effect of CEO education on the relationship between innovation capacity and firm performance (H5a and H5b) by dividing the sample into two groups: CEOs with higher education ($n = 821$) and CEOs with lower education ($n = 1001$). Twenty participants did not answer this question; therefore, they were not included in the results. Before performing the MGA, we ensured that measurement invariance was supported as a prerequisite for comparing the path coefficients across the two samples (higher vs lower education) (Henseler et al., 2016). We used the MICOM procedure, which involves a three-step process (configural invariance, compositional invariance, and equal means and variances across groups) to determine whether measurement invariance is present. This means that the potential variations in path coefficients across the two samples are a result of the moderating variable and not because of the potential differences in the measurement models of each group/sample. The MICOM procedure revealed a full measurement invariance (Table 4). Step I was performed because the research model (same composites, items, and estimation method) was the same across the two groups (Henseler et al., 2016). The results of Step II supported partial measurement invariance; to assess the result, we compared the result of correlation c between the composite scores of the first and second group with the 5 % quantile, which revealed that the quantile was smaller than correlation c for all the constructs. This result was corroborated by the permutation's p-values that were larger than 0.05 (using 1000 permutations, as recommended by Cheah et al. (2020), indicating that the correlation was not significantly lower than one (Table 5a and b), thus indicating that the composites do not differ much between the two samples. Finally, to assess the composite (construct) equality of mean values and variances across groups (Step III), we checked the first column (mean original difference) and ensured that the value of each construct fell within the 95 % confidence interval. Specifically, we compared the mean original difference with the lower (2.5 %) and upper (97.5 %) values.

Table 5
(a) Results of invariance measurement testing using permutation: Step II. (b) Results of invariance measurement testing using permutation: Step III

(a)

Constructs (Step II)	c-value (= 1) original correlation	95 % confidence interval	Partial measurement invariance established?
Innovation capacity	0.997	[0.996, 1.000]	Yes
Financial performance	1.000	[0.999, 1.000]	Yes
Market performance	1.000	[0.998, 1.000]	Yes
Stakeholder pressure	0.997	[0.913, 1.000]	Yes

(b)

Construct (Step III)	Equal variance assessment differences	95 % confidence interval	Full measurement invariance established?
Innovation capacity	−0.083	[−0.112, −0.115]	Yes
Financial performance	−0.036	[−0.164, 0.156]	Yes
Market performance	−0.114	[−0.143, 0.130]	Yes
Stakeholder pressure	−0.067	[−0.122, 0.122]	Yes

As shown in Table 4, the null hypothesis cannot be rejected because the mean values and variances of the composites in the sample of CEOs with lower education show significant differences compared with those of the sample of CEOs with higher education. Overall, the results obtained in the MICOM analysis supported full measurement invariance for the two groups, allowing us to compare the path coefficients using MGA (Hair et al., 2018).

Table 6 shows the results of the assessment of the structural model and MGA using both Henseler's MGA (Henseler et al., 2009) and the permutation test (Chin and Dibbern, 2010). Henseler's MGA directly compares the group-specific bootstrap estimates from each bootstrap sample. According to this method, a *p*-value of differences between path coefficients <0.05 or >0.95 indicates a 5 % level of significant differences between specific path coefficients across two groups (Henseler et al., 2009; Sarstedt et al., 2011). The permutation test also returns a p-value; however, the differences are only at the 5 % level of significance if the p-value is <0.05. Our MGA revealed two findings regarding the multigroup moderating hypotheses. Concerning H5a, as predicted, we confirmed that innovation capacity was more strongly related to financial performance in the group of SMEs with university-educated entrepreneurs than in those with less education ($\beta_{CEO\ HIGHER\ EDUC} = 0.090$, $p < 0.05$; $\beta_{CEO\ LOWER\ EDUC} = -0.031$, $p > 0.05$ [not significant]; path difference $= -0.121$, $p_{PLS-MGA} = 0.012$; $p_{permutation} = 0.006$), thus allowing us to accept H5a. Conversely, we could not accept H5b (Table 6): the innovation capacity of an SME led by a CEO with higher education does not lead to significantly stronger market performance compared to an SME led by a CEO with lower education.

4.5. Predictive relevance of the model

We evaluated the model's predictive relevance by examining several indicators. The R^2 of the main endogenous variable (financial performance) is high (0.310). If we consider the CEO lower education sample, it is 0.259, and in the case of the CEO higher education sample, it is 0.309 (Fig. 2).

Considering the effect size f^2, we confirmed a major effect of market performance on financial performance (0.304) and a small effect of innovation capacity on market performance (0.074). In the case of stakeholder pressure on innovation capacity, the effect of size was significant, albeit small (0.040). Finally, the blindfolding-based cross-validated redundancy values (Q^2) for all endogenous variables were above zero, confirming the model's predictive relevance.

5. Discussion

During the economic crisis resulting from the COVID-19 pandemic, stakeholder pressure has strengthened owing to adverse environmental conditions affecting SMEs and society in general, influencing innovation capacity and firm performance, causing different impacts per sector, reduced labour supply, restrictions on human mobility, self-isolation, and large decreases in capacity utilisation (Pedauga et al., 2021). Because of the pandemic, many SMEs have significantly reduced their business expectations, adding to the increased stakeholder demands.

In this turbulent environment with high uncertainty, stakeholders play a key role. They have also suffered from the COVID-19 pandemic, transferring the negative effects (e.g. higher supply prices, higher financing requirements, order cancellations, and longer payment terms) to SMEs so that stakeholder pressure is higher than under normal conditions (Song et al., 2020).

Despite this research, knowledge of how stakeholder pressure affects firm performance is limited, and the existing knowledge in the current literature is sometimes ambiguous (Peloza and Papania, 2008) and limited in terms of how it affects innovative capacity (Abdel-Maksoud et al., 2021). In our study, we set out to answer the following research question: How does stakeholder pressure affect the innovative capacity of SMEs and their firm performance in times of COVID-19?

On the one hand, our first research objective analyses whether stakeholder pressure during the pandemic has affected innovation in SME capacity (H1a), and our results confirm this hypothesis. We find that when SMEs face increased stakeholder pressure, the firm improves its innovation capacity, driven by the need to find new products, processes, and new forms of governance to compete in the market (Bocquet et al., 2013).

On the other hand, following this first objective, we studied how stakeholder pressure affects firm performance in two dimensions, financial and market, corresponding to H1b and H1c. Our model considers three categories of external stakeholders: suppliers, customers, and banks. During a crisis such as the COVID-19 pandemic, the dependence on bank financing and the inability to obtain other sources of short-term financing have turned liquidity shortages into a solvency problem, which is a major concern for governments worldwide (Kalemli-Ozcan et al., 2020). Moreover, following Ravichandran and Lertwongsatien (2002), using two dimensions of firm performance, we find that the first dimension, market performance, directly and significantly influences financial performance (H3).

Our second research objective studies whether SMEs that have enhanced their innovation capacity during the COVID-19 pandemic have improved their firm performance. Based on this objective, we assess the importance of an SME's innovation capacity as a step towards the creation of firm performance. In the empirical research, we showed that process innovation, together with organizational innovation, management innovation, and human resources innovation, create social and business value. As explained in the literature, we confirm the importance of implementing innovation management that merges various types of innovation rather than merely optimising each kind of innovation separately (O'Regan and Ghobadian, 2004; Lau and Tovstiga, 2015).

The third objective is to explore whether innovation capabilities act as an internal mechanism to contain the effect of stakeholder pressure on firm performance and whether market performance plays a mediating role between innovation capacity and financial performance, corresponding to H4a, H4b, and H4c. To this end, we followed the recommendations of researchers who support studying the relationship between innovation outcomes and firm performance to understand the importance of innovation for firm managers (Crossan and Apaydin, 2010). Furthermore, as a finding of our research, we highlight the relevant role of innovation in the positive relationship between reduced stakeholder pressure and increased financial performance in SMEs, with innovation capabilities contributing to a firm's competitive advantage and market leadership (Porter, 1990; Baregheh et al., 2009). Based on our empirical research, we reject the hypothesis that innovation capacity mediates the relationship between stakeholder pressure and financial performance (H4b) but accept that it mediates the relationship between stakeholder pressure and market performance (H4a). Hence, market performance plays an even more relevant role in firm performance because it also significantly influences financial performance,

Table 6
Multigroup analysis test results: testing H5a and H5b.

Hypothesis	Path coefficient Higher education	Path coefficient Lower education	Difference	t-statistic	Henseler (PLS-MGA) p-value	p permutation	Support?
H5a	0.090	−0.031	−0.121	2.568	0.012	0.006	Yes/yes
H5b	0.262	0.261	−0.001	0.025	0.967	0.971	No/no

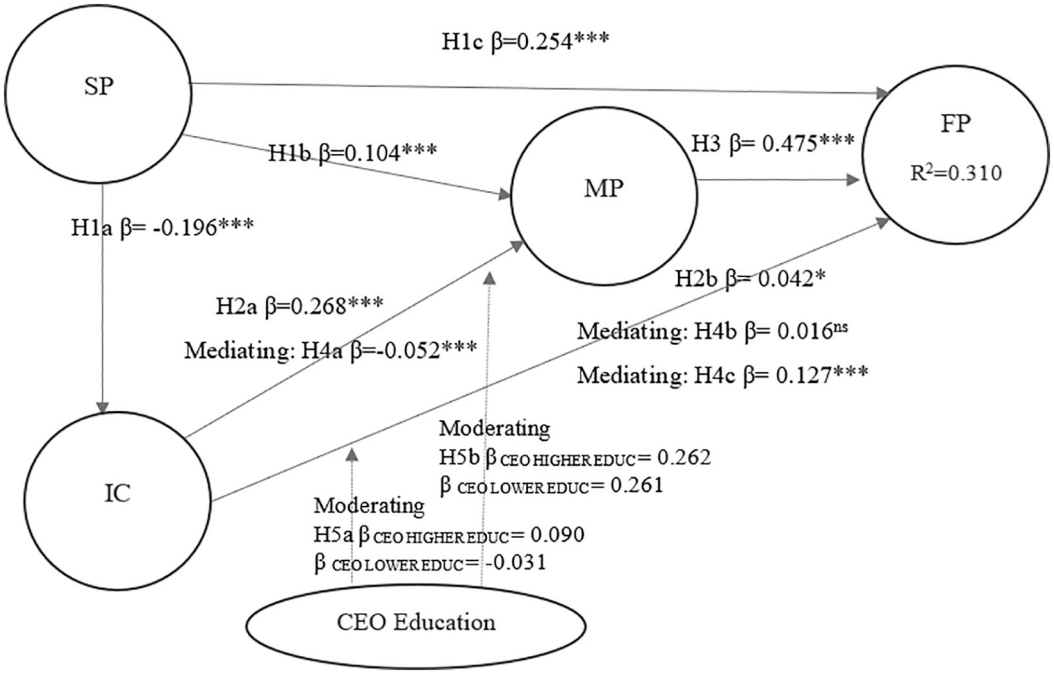

Fig. 2. Results measurement model.
Notes: *** $p < 0.001$, ** $p < 0.01$, ns = non-significant.

making it essential for SMEs to improve profitability and business growth.

Finally, the relevance that the manager represents for SMEs led us to propose a fourth objective: to test whether there are differences in the direct impact of innovation capacity on firm performance. We considered the premises of Robinson and Sexton (1994), who referred to more advanced managerial skills when managers had higher educational levels. Our findings confirm that commitment to innovation in SMEs may be more important if managers have a higher level of education, leading to higher firm performance. We empirically demonstrate that more educated managers can transform innovation capacity into better financial performance (H5a).

5.1. Theoretical implications

We have based our research on stakeholder theory to understand how stakeholder pressure acts on SMEs (Singh et al., 2021), especially during the COVID-19 pandemic.

Our findings contribute to the integration of the stakeholder theory (Freeman, 2010). Primary stakeholders such as suppliers, customers, and banks have exerted additional pressure on SMEs' decisions during the pandemic, which has affected their firm performance. It is more difficult for SMEs to be competitive if stakeholders put more pressure on them because of the complexity of the environment (Waxenberger and Spence, 2003). However, we have shed light on this issue: SMEs can act by investing in innovation capabilities.

A point worth highlighting is how we have approached the innovation capacity as a survival mechanism to escape the crisis through dialogue with stakeholders (Kanter, 1999; Hall and Vredenburg, 2003; Hart and Sharma, 2004). Valdez-Juárez and Castillo-Vergara (2021) explored the impact of innovation on the financial performance of SMEs (a study of 684 SMEs in Mexico) and confirmed that innovation has a moderate but significant effect on firm performance, consistent with the theoretical and empirical approach taken by other authors (Chesbrough, 2011; Vanhaverbeke et al., 2018). In our study, we consider that the greater demands of stakeholders have led SMEs to seek new formulas that have allowed them to compete during the COVID-19 pandemic. Innovation has provided a way out of their crisis, creating, as Cohen and Levinthal (1990) argue, benefits for a company because it exploits its competitive advantages.

This innovation capacity leads to better firm performance both in the market and financially in such a way that changes in products, processes, and management improve firm performance. We understand that innovation capacity also plays a mediating role between stakeholder pressure and firm performance, as stakeholders encourage managers to make riskier decisions and find new, innovative ways to improve their expectations. Thus, innovation capacity mitigates the effects of stakeholder pressure on performance. Hence, we confirm previous studies and build on them by enhancing the rationale for why SMEs must innovate.

We follow the works of Tippins and Sohi (2003) and Wang et al. (2012) and distinguish between market and financial performance. However, studies that simultaneously investigate the interrelationships between innovation and market and financial performance are limited (Gök and Peker, 2017; Stock and Reiferscheid, 2014; Gunday et al., 2011). Our contribution is the understanding that they are not generated simultaneously, but that market performance has a direct influence on financial performance as a mediator through innovation capacity.

Finally, our study is unique in including CEO education in the model, a variable employed in previous studies (Hiller and Hambrick, 2005; Chatterjee and Hambrick, 2007; Malmendier and Tate, 2008). The results of our research suggest that SME CEOs can achieve better business performance through innovation. Managerial education plays a relevant role in the model; therefore, we generated two groups: higher-educated and lower-educated managers. We consider this finding relevant, as we have confirmed the effect of education on firm performance, which is higher in the case of higher-educated managers. Innovation helps SMEs remain competitive in an environment complicated by the COVID-19 pandemic.

5.2. Managerial implications

In this study, we also find some implications for SME managers, especially when the environment is more turbulent and changing. As the first recommendation to CEOs, our findings point to the need to innovate, justified because we confirm that increased pressure has benefited

those managers who have been forced to innovate, which has resulted in a 'less bad' market performance during the COVID-19 pandemic. Innovation has always been a key competitive factor for companies, but in times of pandemic, and especially for SMEs, it has become an essential factor to continue to compete. Therefore, following Bodlaj and Čater (2019), SMEs should consciously work hard to prioritise innovation.

A second recommendation for CEOs is to engage in management education, as it is important to better exploit innovation opportunities in SMEs.

As demonstrated empirically, managers with more education are better able to convert SMEs' innovative capacity into better firm performance. However, those who are less educated find it more difficult to convert innovation into business results.

5.3. Limitations and future research directions

A limitation of our research is that we conducted an empirical study exclusively for Spain. It would be interesting to expand the analysis to all of Europe, given the importance of SMEs there. Another limitation concerns the use of questionnaires for self-diagnosis, based on the opinion of managers of their firms, such that the information they provide might be deemed subjective.

Contrary to previous research showing that firms similarly respond to different stakeholders (Murillo-Luna et al., 2008), firms respond selectively and differently to different stakeholder groups (Guoyou et al., 2013). Hence, we believe it would be interesting to deepen this research by broadening the stakeholders that constitute the main exogenous variable in our model. Academics classify stakeholders into primary and secondary stakeholders (Clarkson, 1995; Post et al., 2002; Waddock et al., 2002; Hall and Vredenburg, 2003). In our research, we have considered customers, suppliers, and financial institutions, and it would be interesting to conduct more in-depth research considering secondary stakeholders and even including the environment as primary and substantial stakeholders, as proposed by Driscoll and Starik (2004). We propose that interactions with external stakeholders can ultimately increase SMEs' innovation capacity (Klewitz and Hansen, 2014).

We also suggest that future researchers conduct comparative research between SMEs and large firms to analyse the differences in terms of the direct and indirect effects between stakeholder pressure, innovation capacity, and firm performance.

Despite the limitations, we consider that the results of this study present several important conclusions for theory, researchers, and organisations about innovation and firm performance in SMEs in the context of the COVID-19 pandemic.

6. Conclusions

The capacity of SMEs to relate to their immediate environment may vary depending on the relationship established with their stakeholders in such a way that companies with a greater capacity to relate to their stakeholders perceive their concerns better, which allows them to innovate more (Jiang et al., 2020) and adapt better to turbulent environments. Our study comes at an essential time of the major crisis caused by COVID-19, which has particularly affected Spanish SMEs. This has also allowed us to learn about future crises and turbulence in the environment and discover which variables are fundamental for managing difficult situations.

In our study, we analysed SME managers who have improved their innovation capacity and have managed to emerge from the COVID-19 pandemic. Although the pandemic has required primary stakeholders such as customers, suppliers, and banks to increase pressure on SMEs, the most successful response of managers has been to generate innovative solutions in terms of products, processes, and management.

SMEs are obliged to promote and develop innovation in terms of their ability to compete in this new environment. In this sense, CEO education has become a key instrument for developing innovation in the capacity of companies and transforming this innovation into both market and financial results.

CRediT authorship contribution statement

M.R.-A, M.A.S.-C, designed the questionnaire. M.R.-A M.M.R.-G., M. A.S.-C. and S.G.-B. designed, performed, and analysed the research and the methodology, searched the literature, and wrote the manuscript. All authors contributed to the article and approved the submitted version. All authors have read and agreed to the published version of the manuscript.

Declaration of competing interest

The authors declare that they have no conflict of interest.

Data availability

The authors do not have permission to share data.

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Appendix A. Questionnaire, scale items

Stakeholder pressure	In the stakeholder relationship (suppliers) with your company, please indicate how the COVID-19 crisis has affected your management. *(Scale: 1. totally agree; 2. partially agree; 3. neither agree nor disagree; 4. partially disagree 5. totally disagree)* In the stakeholder relationship (consumers) with your company, please indicate how the COVID-19 crisis has affected your management. *(Scale: 1. totally agree; 2. partially agree; 3. neither agree nor disagree; 4. partially disagree 5. totally disagree)* How do you think the following variables have evolved in the last two years of the pandemic? *(Scale: 1. very unfavourable; 2. Unfavourable; 3. neither favourable nor unfavourable; 4. Favourable; 5. very favourable)*	*Supplier:* Because of COVID-19, the supply chain has been affected and their conditions have been tightened. Our suppliers have tightened their delivery time. *Consumers:* Our customers' payment conditions have become longer. Cancellation of customer orders has increased significantly. Our losses due to non-payment by customers have increased delinquency and/or insolvency. *Banks:* The volume of financing offered by banks is not significant. The fees and commissions required by	Jakhar et al. (2018), Sarkis et al. (2010), Singh et al. (2020), and Pinheiro et al. (2021).

(*continued on next page*)

(*continued*)

		banks The guarantees and collateral required by your SME to access bank finance The cost of bank financing The time between the application for financing and the response provided by the financial institution The time required to return the loan or credit granted	
Innovation capacity	Please indicate whether your firm has made the following innovations in the last two years and, if so, indicate the degree of relevance of each of them. *(Scale: 1. not important; 2. somewhat important; 3. neither minor nor very important; 4. quite important; 5. very important)*	*Product:* Changes or improvements to current products/services Launch of new products/services on the market *Process:* Changes or improvements in production processes Acquisition of new capital assets *Management:* Implementation in the SME of new changes or improvements in organisation and/or management Implementation of new changes or improvements in purchasing and/or procurement in the SME SME implementation of new or improved marketing and/or sales changes or improvements	Oke et al. (2007), Burdon et al. (2015), Cegarra-Navarro et al. (2016), Lichtenthaler (2017), and Harel et al. (2021)
Market performance	In relation to your direct competitors, please indicate how much you agree with the following indicators of your firm's performance. (*Scale: 1. definitely worse; 2. worse; 3. neither worse nor better; 4. better; 5. definitely better)*	Offers higher quality products Has more efficient processes to improve SME sales Has more satisfied customers Adapts earlier to changes in the market	Homburg and Jensen (2007); Alam et al. (2013); Ingenbleek et al. (2013); Jabbour et al. (2015); Pinheiro et al. (2021)
Financial performance	In relation to your direct competitors, please indicate how much you agree with the following indicators of your firm's performance. (*Scale: 1. definitely worse; 2. worse; 3. neither worse nor better; 4. better; 5. definitely better)*	Sales are increasing more than competitors The firm is more profitable	Li, 2000; Pekovic and Vogt, 2021

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