The impact of entrepreneurial leadership on SMEs' performance: the mediating effects of organizational factors

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ABSTRACT

This research empirically examines the effect of entrepreneurial leadership, entrepreneurial orientation, and technological innovation capability on SMEs' performance. Interestingly, this study investigates the mediating effects of internal organizational factors such as entrepreneurial orientation, team creativity, dynamic capabilities, and competitive advantage on the relationship between entrepreneurial leadership and SMEs' performance. The consistent PLS-SEM approach was applied to analyze valid data collected from 182 small and medium IT enterprises operating at Quang Trung Software City, Ho Chi Minh City, Vietnam. The empirical results reveal that entrepreneurial leadership via the full mediators of team creativity, dynamic capabilities, and competitive advantages can enhance the performance of IT SMEs. While entrepreneurial orientation does not influence SMEs' business performance, technological innovation capabilities can provide some benefits. Besides, entrepreneurial orientation plays no mediation role in the relationship between entrepreneurial leadership and SMEs' performance. Finally, the results allow us to provide meaningful insights and recommendations to manage and promote better entrepreneurial inspiration.

1. Introduction

Several emerging economies are expected to transform from an industrial society to an entrepreneurial one in which entrepreneurial leadership and orientation are supposed to be the core elements contributing to the success of the companies (Cho and Lee, 2018). As the practice of startups becomes rapidly popular and dramatically broad, some scholars have tried to analyze factors affecting the business performance of small and medium-sized enterprises (SMEs) (Cassar, 2014; D'Angelo and Presutti, 2019; Park et al., 2020). After Miller (1983) explored entrepreneurship's correlations, further studies have explored the entrepreneurial process. The scholars focused on entrepreneurial behavior and how companies form the basis of entrepreneurial actions and strategic decisions to accomplish high performance (Basco et al., 2020; Li et al., 2009; Lumpkin and Dess, 1996; Miller and Le Breton-Miller, 2011; Wales et al., 2013).

Entrepreneurial orientation refers to an organization's strategic orientation and its capacity to capture particular market elements and decision-making styles, strategies, and procedures (Boso et al., 2013b). On one side, many researchers point out the positive link between entrepreneurial orientation and business performance, which means companies adopting a more entrepreneurial orientation are likely to perform better (Kajalo and Lindblom, 2015; Rauch et al., 2009). Similarly, other papers suggest that companies with an entrepreneurial orientation are prone to capitalize on opportunities with their commitment and efforts (Covin and Miller, 2014; Wiklund and Shepherd, 2003). However, in some of them, the expected benefits did not materialize (Matsuno et al., 2002), which has brought up the need to elaborate its various contingencies (Wiklund and Shepherd, 2005).

On another side, the positive relationship between entrepreneurial leadership and business performance have been confirmed by prior studies since the business performance is a consequence of strategies implemented by leaders (Jansen et al., 2012; Ren and Guo, 2011; Uhlen-Bien and Arena, 2018). Leadership has a strong influence on the implementation of entrepreneurial orientation (Engelen et al., 2014; Hmieleski et al., 2012). Yet, amid today's growingly competitive and dynamic business environment, the traditional leadership approaches for a better performance of firms have been observed to be ineffective (Leitch and
Volery, 2017). According to these previous studies, many different mediators have been taken into consideration to better illustrate the correlations and clarify the influence on business performance. However, entrepreneurial orientation, entrepreneurial leadership, business performance, and the mediators have not been studied simultaneously. Thus, there exist limitations to examine the relationships between entrepreneurial orientation, entrepreneurial leadership, and business performance within different business contexts and corresponding mediating factors.

When testing different mediating factors in the two relationships, some studies provide evidence of a connection between entrepreneurial orientation, technological innovation capabilities (TIC), and business performance (Calantone et al., 2004; Hull and Rothenberg, 2008; Miller, 1983). Meanwhile, team creativity, dynamic capabilities, and competitive advantage have frequently been suggested as mediators for the relationship between entrepreneurial leadership and business performance (Huang et al., 2014; Leitch and Volery, 2017). More importantly, considering the gaps from previous studies, business context should be taken as the sample for this study. QTSC is the most significant software park in Vietnam that concentrates around 200 firms of different sizes. In this paper, the information technology (IT) sector was selected to be the emphasis due to the presence of short product lifecycles and excellent demand for customization (Liu et al., 2012; Moitra and Ganesh, 2005), which helps highlight the competitiveness and dynamism of the business environment. The IT firms operating at Quang Trung Software City (QTSC) in Ho Chi Minh City (HCMC), Vietnam, were taken as the sample for this study. QTSC is the first and most significant software park in Vietnam which concentrates around 200 firms of different sizes.

Primarily, this study aims to examine the influence of entrepreneurial leadership on entrepreneurial orientation, thereby investigating the impact of entrepreneurial orientation, and technological innovation capabilities on SMEs’ business performance. Another concern is the mediating effects of internal organizational factors, including entrepreneurial orientation, team creativity, dynamic capabilities, and competitive advantage on entrepreneurial leadership - business performance relationship. Finally, the research proposes the theoretical and managerial implications for both companies and the authorities to manage better and promote entrepreneurial inspiration.

2. Literature review and research hypotheses

2.1. Definition of business performance

Business performance generally includes two components, financial performance and non-financial performance (Seo and Lee, 2019). On the one hand, financial performance is used to describe the performance of firms that can be measured in money value and financial operations. On the other hand, non-financial performance is the performance of firms that cannot be measured in money value, such as brand reputation, customer satisfaction, organizational performance, and innovation activities. Financial performance is typically associated with the short-term survival of companies, whereas non-financial performance is more likely to deal with long-term sustainable growth. Hence, for startups or businesses at the early stage, mainly, financial performance is, to some degree, more critical compared to non-financial performance (Choi et al., 2018; Spender et al., 2017). However, it is the most essential to control and combine the two types of performance for startup development (Seo and Lee, 2019).

2.2. Entrepreneurial leadership, entrepreneurial orientation, and business performance

Entrepreneurial leadership involves the organization and motivation of firms’ operation system and employees to achieve the firm’s core values such as taking risks, seizing opportunities, innovating products and processes, creating competitive advantages, and improving dynamic competencies pursued by entrepreneurs (Gupta et al., 2004). Entrepreneurial leadership arises at the crossing between entrepreneurship and leadership (Cogliser and Brigham, 2004; Vecchio, 2003). Entrepreneurial leadership directs the energies and talents of employees toward attaining the organization’s visionary goals (Rastogi, 2003). Since leadership is a collective practice in many firms, the values and perceptions of the leadership team significantly influence the firm strategies and performance (Carpenter et al., 2004). In entrepreneurial ventures where there are commonly less complicated structures and fewer behavioral norms than in established organizations, leaders are mainly considered to hold a strong imprinting impact (Ensley et al., 2006a, 2006b). Thus, leaders of SMEs may exercise greater discretion, and consequently, have a more significant influence on firm strategies and performance. The vital role of entrepreneurial leadership in the success of entrepreneurial ventures has been highlighted by various studies such as those of (Cogliser and Brigham, 2004; Vecchio, 2003; Wales et al., 2011). Moreover, there has been a need to evolve leadership styles coherent with the current entrepreneurial setting. Entrepreneurial success is strongly related to leaders who encourage followers to think and act creatively and innovatively (Gupta et al., 2004; Kuratko, 2007; Surie and Ashley, 2008). As an effective leadership form with a high influence on workforce creativity, transformational leadership has also been brought to studies along with entrepreneurial leadership (Avolio and Bass, 2002, 2004; Gong et al., 2009; Muchiri et al., 2012; YuKl, 2013).

Another broadly accepted approach to enhance firm innovation and performance is the entrepreneurial orientation (Huang and Wang, 2011; Lumpkin and Dess, 1996; Rani, 2016; Resnick et al., 2016). To identify entrepreneurial orientation, Miller (1983) introduced a scale of three dimensions. That entrepreneurial orientation is the simultaneous display of creativity, foresight, and willingness to take a risk (Engelen et al., 2015). Specifically, the first dimension, innovativeness, appears when a firm is inclined to support creative ideas, unique methods, and novel products and services (Boso et al., 2012, 2013a; Lumpkin and Dess, 1996; Morris et al., 2007). The second dimension, proactiveness, describes the ability of a firm to exploit market opportunities and generate a first-initiative preference over competitors (Baker and Sinkula, 2009; Lumpkin and Dess, 1996). Finally, risk-taking shows a firm’s tendency to allocate noticeable resources to high-risk projects (Baker and Sinkula, 2009; Huang and Wang, 2011). Entrepreneurial orientation plays an essential role in creating a firm’s growth and adaptation to environmental changes (Covin and Miller, 2014; Lumpkin and Dess, 1996). Entrepreneurial orientation considerably affects the behaviors and beliefs, with an emphasis on proactively acquiring entrepreneurial opportunities (Huang and Wang, 2011; Zeffane, 2014). By establishing different types of innovations, entrepreneurial orientation helps increase a firm’s ability to respond to environmental fluctuations (Morgan et al., 2015; Otero-Neira et al., 2013). In general, entrepreneurial orientation can be seen as the firm’s trend to depart from the usual road and move to the unknown (Zahra, 2008).

Because of the ever-growing importance of entrepreneurial leadership and entrepreneurial orientation, researchers have been seeking to reveal how leadership affects a firm’s ability to innovate, take risks, and behave proactively (Engelen et al., 2015; Khan et al., 2013; Ling et al., 2008; Tang and Hull, 2012). For example, Jung et al. (2008) found out a positive relationship between leaders, especially transformational leaders, and organizational innovation, supporting a link between entrepreneurial leadership and entrepreneurial orientation. Leaders influence entrepreneurial orientation by inspiring followers to perform beyond expectations and take more self-identity and ownership of their outputs, thus leading to encouraging innovation and changes (Bass, 1985; Walumbwa et al., 2011). Besides, through performing organizational changes, leaders can encourage employees to solve old problems with new methods (Avolio & Bass, 2002, 2004; Bass, 1985). Moreover, leaders assign tasks based on the employees’ ability and quality (Walumbwa and Hartnell, 2011). They influence entrepreneurial orientation when acting as mentors, listening and identifying individual differences, and personalizing their interactions with employees. However, the studies on
entrepreneurial leadership and entrepreneurial orientation are mostly within larger firms and rarely situate the two concepts in smaller firms (Lyon et al., 2000; Yukl, 2013). Thus, there is a need to design extensive research to explore this relationship in the context of SMEs. Based on the above discussion, this paper proposes the following hypothesis:

**Hypothesis 1 (H1): Entrepreneurial leadership is positively associated with entrepreneurial orientation.**

The previous literature considers entrepreneurial orientation as a “contingent” rather than “direct” determinant of firm performance. Thus, various researches examine EO as an influential mediating variable for the relationship between entrepreneurial leadership and firm performance (Cai, 2018; Muchiri et al., 2012; Muchiri and McMurray, 2015). On the other hand, recent literature pays attention to the role of entrepreneurial leadership in determining whether entrepreneurial orientation is implemented effectively in the organization using firms’ capabilities and resources. Regarding the direct impact of entrepreneurial orientation, some researchers believe that entrepreneurial orientation can itself determine firm performance, especially for small businesses (Muchiri and McMurray, 2015). Within the framework of resource dependency theory (Pfeffer and Salancik, 1978) and resource-based view theory (Barney, 1991), EO is considered as a “managerial resource” with a strong emphasis on human capital management that foster entrepreneurial behaviors, processes, and competencies such as risk-taking, new entry-joining, innovation and dynamic capabilities within small firms (Muchiri and McMurray, 2015; Zahra et al., 2006).

As entrepreneurial orientation (EO) relates to entrepreneurial behaviors and strategies that orient the businesses to start new ventures or invest in new opportunities in the marketplace. It is proved to affect firm performance in terms of profitability and reputation (Rauch et al., 2009; Shirokova et al., 2016). In this way, SMEs characterized by low access to all kinds of resources have no choices but a strong motivation to adapt and innovate. Interestingly, SMEs with EO have several advantages in reshaping their businesses to respond to changes in a business environment as they are small and flexible. There is also some empirical evidence for a strong positive impact of EO on SMEs’ performance (Tang and Hull, 2012; Engelen et al., 2013; Anderson and Eshima, 2013). It is undeniable that firms with EO seem to outperform their intra-industry rivals. Since they proactively seek new opportunities and make relentless innovations and improvements to satisfy their primary stakeholders and customers, thereby improving product/service quality, customer satisfaction, sales growth, and reputation (Muchiri and McMurray, 2015). Thus, we propose the second hypothesis as follows.

**Hypothesis 2 (H2): Entrepreneurial orientation is positively associated with business performance.**

2.3. **Technological innovation capabilities (TIC) and business performance**

TIC is a particular type of resource that requires the effective enhancement of an existing product, the manufacturing process, and the creation of new products and services (Damanpour, 1991). Based on this definition, TIC consists of product innovation capabilities and process innovation capabilities. First, product innovation capabilities address groups of interrelated steps used to implement distinct product innovations, such as developing new products and improving existing ones (Laforet, 2011; Tuominen and Hyvonen, 2004). Second, process innovation capabilities relate to the use of manufacturing technologies to develop innovation capability and allow firms to choose and use these technologies in a strategic way in order to promote new production techniques, processes, and methods (Zawislak et al., 2012). Upgrading TIC is an essential task for every firm as global competitiveness is increasing, the product life cycle is decreasing, and imitation is getting easier (Börjesson et al., 2014; Wang et al., 2008). To enhance productivity and increase sales volume and competitiveness, a firm should take innovation as the platform.

Regarding what element can boost TIC, many past studies have pointed out a link between entrepreneurial orientation and TIC. In specific, entrepreneurial orientation helps supply unexploited opportunities to create profitable innovation (Aljanabi and Noor, 2015; Boso et al., 2013a). Innovation has also been considered as an outcome of entrepreneurial orientation (Huang and Wang, 2011). Moreover, Boso et al. (2012) provided an accurate illustration of the connection between entrepreneurial orientation and product innovation, found in a dimension of entrepreneurial orientation, innovativeness at a high level. Besides, other researchers have emphasized the role that other dimensions of entrepreneurial orientation play; for example, risk-taking can foster the production of new products and processes (Chen, 2012; Cheng et al., 2013; Ko and Lu, 2010; Morgan et al., 2015). Hence, this paper proposes the following hypothesis:

**Hypothesis 3 (H3): TIC is positively associated with entrepreneurial orientation.**

Numerous studies analyze innovation capability and its effects on business performance (Calantone et al., 2004; García-Mora et al., 2008; Ortega, 2009; Tsai, 2004; Yang et al., 2009). Some papers highlight the strategic capacity of TIC in producing a higher business performance. Especially, many researchers provide an insight into the relationship between each type of TIC and business performance. Product innovation allows a firm to differentiate its products (Porter, 1985) and changes its offerings to the market (Bessant et al., 2005). Consequently, according to the resource-based view of innovation, product innovation capabilities can be essential to generate and sustain competitive advantage (Barney et al., 2001; Prahalad and Hamel, 1990). Due to the natural difficulty in imitating these distinct products (González-Alvarez and Nieto-Antonín, 2005), TIC has a positive effect on business performance. Meanwhile, process innovation changes how a firm produces and delivers these products (Bessant et al., 2005). Therefore, process innovation capabilities must favor the generation of product innovation capabilities. Therefore, product innovation mediates the relationship between a process innovation and business performance. On the whole, this paper proposed the following hypothesis:

**Hypothesis 4 (H4): TIC is positively associated with business performance.**

2.4. **Team creativity and business performance**

Team creativity can be considered as to how team members develop and produce novel and valuable ideas (Shin and Zhou, 2007). Creativity is a crucial entrepreneurial skill required to successfully establish a new venture (Pretorius et al., 2005). Creativity is the key to create new venture competitiveness (Bridge et al., 2003; Carson et al., 1995; Kao, 1989; Matthews, 2007). Whereas the entrepreneur plays a central role in forming and maintaining creative organizational culture (Ahlén et al., 2014; Cook, 1998; Fillis, 2002; Fillis and Rentschler, 2006; Ward, 2004).

Previous studies have investigated the critical role of team creativity in organizational success and the influence of entrepreneurial leaders on creative results. Particularly, Chen (2007) shows that teams are a significant source of new ventures. Gupta et al. (2004) add that entrepreneurial leaders motivate employees to work together towards collective creativity, supporting a positive link between entrepreneurial leadership and team creativity. The process starts with recognizing the potential growth of team creativity capacity (Chen, 2007), and then entrepreneurial leaders may inspire employees to collaborate, approaching creative outcomes (Gupta et al., 2004). Through the collaborative process, team members may consider working together as a powerful method to produce more energy, thus developing opportunity recognition and risk tasking for creativity (Chen, 2007). However, some studies argue that
collaboration may not always boost creativity. For example, production blocking, social loafing, evaluation apprehension, and lack of unique expertise can hinder team creativity (Diehl and Stroebe, 1987; Nijstad and Stroebe, 2006; Stasser and Birnbaum, 2003). For effective production of creativity, there is a need for high motivation and excellent information exchange (De Dreu et al., 2008; Kohn et al., 2011; Paulus and Dzindolet, 2008). Besides, entrepreneurial leaders appear to supply them by allowing teams to exploit member's diverse potential and generate enormous creativity (Mumford et al., 2002; Offner et al., 1996; Paletz and Schunn, 2011; Paulus et al., 2006; Putman and Paulus, 2009; Shin and Zhou, 2007). Moreover, entrepreneurial leaders may stimulate creative initiatives of team members towards the team's benefits (Morgeson et al., 2010). Therefore, this paper proposes the following hypothesis:

**Hypothesis 5 (H5):** Entrepreneurial leadership is positively associated with team creativity.

Little attention has paid attention to creativity and business performance (Gong et al., 2013; Weinzierl et al., 2011). Many scholars point out that creativity is necessary to gain performance in small businesses (Ahlin et al., 2014; Fillis and Rentschler, 2015; Matthews, 2007; Ward, 2004). Moreover, the empirical studies support a positive association between creativity and business performance (Von Nordenflycht, 2007). Besides, some studies also assume a positive link among creativity, business performance, and competitiveness without empirical evidence (Baer and Oldham, 2006; Gilson, 2008; Mumford, 2003; Zhou and Shalley, 2008). Building upon the above findings, this paper proposes the following hypothesis:

**Hypothesis 6 (H6):** Team creativity is positively associated with business performance.

### 2.5. Dynamic capabilities and business performance

Dynamic capabilities are defined as the abilities to integrate, develop, and reconfigure a firm's internal and external resources as a way to deal with the rapidly changing business environment (Teece et al., 1997). The concept is categorized into two types: opportunity identification capability and opportunity exploitation capability. On the one hand, opportunity identification refers to determining value in specific markets or technological conditions by using new means-end relation frameworks (Ardichvili et al., 2003; Shane and Venkataraman, 2000). This capability is typical for entrepreneurial firms, which have more expertise in identifying the potential for better matching between resource base and market needs (Miller, 1983). On the other hand, opportunity identification is shaped by the productive set of the firm, which is all of the productive opportunities that its entrepreneurs will see and exploit (Penrose, 1959). Opportunity identification is closely related to the knowledge acquisition process (Zahra and George, 2002; Zahra et al., 2006).

Creating extensive information networks between the firm and the market can help explore more entrepreneurial opportunities (Shane and Venkataraman, 2000). On the other hand, after discovering a new opportunity, there is a need for integration between new knowledge and available knowledge stocks, processes, products, or strategies to exploit this opportunity (Ardichvili et al., 2003; Burgelman and Sayles, 1986; Shane and Venkataraman, 2000; Zahra and George, 2002). In the integration process, multiple individuals from different levels within the firm are likely to get involved (Floyd and Wooldridge, 1999; Hayton and Kelley, 2006; Kelley et al., 2009). This involvement is necessary to acquire resources for building and test the new opportunity's value creation potential (Ardichvili et al., 2003). Any opportunity must be proven possible, even before preparing resources to develop it (Burgelman, 1983) preliminarily. The integration of new knowledge may also be influenced by managerial systems, organizational structures, values, and cultures (Smith et al., 2005).

Entrepreneurial leadership appears to have a strong connection with dynamic capabilities. Although there is a lack of research discussing the micro-process issue of how leaders can help develop dynamic capabilities, numerous studies support a positive relationship between entrepreneurial leadership and dynamic capabilities. In addition, other studies point out that managerial cognition significantly impacts the formation and growth of dynamic capabilities (Gruber et al., 2012; Ucbasaran et al., 2009). Moreover, leaders decide on the investment and distribution of time, attention, and resources across the organization, upon which dynamic capabilities depend (Bingham et al., 2007; Felin et al., 2012). Consequently, this paper proposes the following hypothesis:

**Hypothesis 7 (H7):** Entrepreneurial leadership is positively associated with dynamic capabilities.

Teece et al. (1997) found out that a firm's dynamic capabilities positively impact its business performance. Mathivathanan et al. (2017) consider dynamic capabilities as a useful means to examine the overall impact on the increase of a firm's performance. Moreover, dynamic capabilities have a significant position in entrepreneurial resources to increase the business performance of startups and at the same time reliably mediate between resources and performance (Wu, 2007). The study of Lansi and Clark (1994) discovered that the capability of knowledge integration in product development is positively related to business performance and performance enhancements over time. In specific, dynamic capabilities allow managers to transform their existing resources to develop new value-creating strategies and contribute to creating, evolving, and recombining other resources into competitive advantages (Grant, 1996; Pisano, 1994). Amid a volatile environment, even if startups can accumulate enormous resources or replenish their resources, success is not always assured (Eisenhardt and Martin, 2000). Without dynamic capabilities to transfer entrepreneurial resources into competitive advantages, entrepreneurial resources would not translate into business performance (Wu, 2007). Based on these findings, this paper proposed the following hypothesis:

**Hypothesis 8 (H8):** Dynamic capabilities are positively associated with business performance.

### 2.6. Competitive advantage and business performance

Competitive advantage, or a firm's ability to gain performance at a higher level than its competitors (Porter, 1985), is one of the keys leading to entrepreneurial success. Competitive advantage is associated with business strategies that facilitate cost reduction, market opportunity exploitation, and competitive threat neutralization to enhance entrepreneurial results (Newbert, 2008). In highly dynamic environments where the nature of upcoming competition and market situations are challenging to forecast, firms need adaptation based on experience to build a competitive advantage (Schilke, 2014). Besides, firms especially need to be elastic with regard to the time to enter the market or change decisions in response to the current business environment (Sher and Lee, 2004). In the presence of rapid market changes and unsustainable competitive advantages, particularly for the IT sector, the entrepreneurial resource plays an excellent construct to explain a firm's ability to gain considerable performance trajectories. In contrast, other firms fail (Covin and Lumpkin, 2011).

In the literature, entrepreneurial leadership, especially that of top management teams (TMTs), is generally agreed to be an essential
resource of a business to achieve global competitiveness (Banutu-Gomez and Banutu-Gomez, 2007; Bartlett and Birkinshaw, 2003; Birkinshaw, 1997; Hitt et al., 1998). It is argued that TMTs guide the employees toward accomplishing the strategic goals of the firm (Rastogi, 2003), through which they have to possess the capability to make capital out of the potential competitive advantage (Banutu-Gomez and Banutu-Gomez, 2007; Bartlett and Ghoshal, 1988). Furthermore, some other studies supported a link between strategic leadership and sustainable competitive advantage. For example, Ireland and Hitt (2005) discussed that a firm could use its strategic leadership practices as sources of competitive advantage when completing the strategic leadership components. And when strategic leadership is applied in organizations where the ability to develop capabilities appears, competitive advantage can be sustained. According to the resource-based view, several firms have constantly exploited resources and capabilities to create sustainable competitive advantages (Barney, 1986; Prahalad and Hamel, 1990). Most strategic leaders assume that investing in human and social capital can help sustain the firm’s competitive advantage according to the knowledge-based view (Kogut and Zander, 1992; Polanyi, 1996) and the great groups’ view on strategic leadership (Ireland and Hitt, 2005). Thus, the past literature gives the idea that there exists a connection between entrepreneurial leadership and competitive advantage. Yet, prior studies have not confirmed a direct connection, which now needs to be comprehensively validated. This paper, therefore, proposes the following hypothesis:

Hypothesis 9 (H9): Entrepreneurial leadership is positively associated with competitive advantage.

Prior research has brought competitive advantage and business performance to examine the relationship (Prakash, 2014; Yang et al., 2009). For example, Prakash (2014) conducted a study within the manufacturing industry context about the connection of competitive advantage and performance in the internal supply chains. The study indicates a significant effect that competitive advantage puts on business performance. This result is because employee-driven performance is likely to promote competitive advantage and business performance simultaneously. Accordingly, this paper proposes the following hypothesis:

Hypothesis 10 (H10): Competitive advantage is positively associated with business performance.

Based on the developed literature debates above, the theoretical framework illustrates the relationships among the variables included in the nine research hypotheses as depicted in Figure 1.

3. Methodology

3.1. Survey instrument

We have adopted the 5-point Likert scale measurements for the key indicators in line with the previous studies. Firstly, the measurement scale of entrepreneurial leadership reflects what are expected from the top entrepreneurial management, such as innovative ideas for product/service development, willingness to take risks, passion and dedication, a clear vision, creative ways for existing business operation as adopted (Aljanabi, 2018; Chen, 2007; Koryak et al., 2015).

Secondly, the measurement items for entrepreneurial orientation include frequent introduction of new products and services, revolutionary and innovative products and services, investment in high-risk projects and new ventures with market uncertainty, the ability to respond to changes and reshape the business, the ability to adopt competitive strategies within limited resources as adopted in (Boso et al., 2013a; Covin and Lumpkin, 2011; Covin and Miller, 2014).

Thirdly, technological innovation capabilities is measured by production and supply capability, adoption of advanced technology, innovations in the production process and internal management system, technological capability, and the application of environmentally friendly and cost-saving technologies (Camisón and López, 2010; Tuominen and Hyvönen, 2004).

Fourthly, team creativity is measured by whether the team is empowered and encouraged to pursue novel ideas, applications of innovative methods in daily tasks, creative way of problem solving, contribution to business performance, and good role model for other departments (Tierney et al., 1999).

Fifthly, dynamic capabilities are measured by the ability to mobilize resources, the ability to restructure the organizational resources to cope with different situations, the ability to acquire new knowledge and skills, the ability to update and apply the best practices in the industry, and the ability to adapt to rapid changes in a business environment (Girod and Whittington, 2017; Mathivathanan et al., 2017; Protogerou et al., 2011; Yurtkoru et al., 2014).

Sixthly, competitive advantage is measured by the uniqueness of products and services, better features of products and services compared

![Figure 1. Research framework.](image-url)
with intra-industry competitors, cost efficiency, and dominant strategy (Bharadwaj et al., 1993; Schilke, 2014; Spanos and Lioukas, 2001; Wu, 2010).

Lastly, it is better to use financial indicators, which are more objective to measure business performance. However, accessing financial indicators of SMEs, especially small businesses, would be a very challenging task because they rarely prepare reliable financial reports. Therefore, the dependent variable – stakeholder’s overall evaluations measure business performance on firm capabilities toward sustainable development, products and services quality, reputation in the industry, customer overall satisfaction, and improvement in sale volume over time (Fraj-Andrés et al., 2009; Green et al., 2008; Tsamenyi et al., 2010; Yang et al., 2009).

3.2. Data collection

To obtain fresh shreds of evidence on addressing the research objectives, C-level managers and team leaders of SMEs operating in the information technology (IT) industry in HCMC are chosen as a unit of analysis. The selected respondents have faced some managerial issues, have sufficient practical experience and enough authority to answer questions about leadership, business orientation, dynamic capabilities, competitive advantage, and other organizational-level issues. On the other hand, these respondents can also give objective judgements to reflect the leadership style of their higher level without biasing the research results. HCMC is well known for the very high concentration of IT incubations and SMEs. Almost 85 per cent of IT SMEs in HCMC are active members of Quang Trung software city (QTSC). It is worth noting that Vietnam has been recently becoming an attractive destination for IT outsourcing of MNCs like Intel, IBM, Samsung, and Microsoft, besides the competitive counterparts such as India and China, Singapore, Malaysia and the Philippines (Forbes, 2018).

Vietnam also achieved a higher ranking in the Global Service Location Index in 2017 because of a highly adaptive IT workforce and innovative IT SMEs. According to Global Services Location Index (GSLI) 2019, Vietnam was ranked in fifth place among 50 IT outsourcing countries considering four main factors: financial incentives, workforce pool and skills, business environment, and digital resonance. As a result, the use of Vietnam’s IT products and services is more attractive to domestic and international customers due to the cost-effectiveness and availability of skilled and highly adaptive workforce pools. More importantly, the business environment for the ICT industry in Vietnam has improved the emergence of innovative SMEs and startups with internal solid organizational capabilities such as team creativity, dynamic capabilities, competitive advantages, etc.

The target population of this study is SMEs in HCMC, mainly located at QTSC. According to Vietnamese Enterprise Law 2020, the enterprises operating in the service and industrial sectors like the IT industry are categorized as SMEs when the total number of employees doesn’t exceed 300 people. Specifically, the classification clearly defines that a super-small enterprise has a maximum of 10 employees; a small enterprise has 10–200 employees (total capital equals or less than 10 billion VND); and a medium enterprise has 200–300 employees (total capital ranges from above 20 to 100 billion VND). In order to collect data from selected respondents, a preliminarily structured questionnaire was designed and firstly evaluated by the expert panel of IT managers to make initial adjustments fitting in the fundamental practices of this industry. Then, some team leaders or C-level manager of IT SMEs are chosen to respond to the revised questionnaire. Thereby, more appropriate adjustments have been made. After the initial test and revision of the questionnaire, the online survey was sent to more than 700 email addresses of potential respondents from IT SMEs. These email addresses are provided by the customer service department of QTSC, which has built the largest IT ecosystem in Vietnam on the foundation of businesses, universities and research linkages.

3.3. Assessment method

This study uses the reflective measurement model since this model’s latent variables are considered primary causes of the observed variables (Hair et al., 2010). For instance, the latent construct - entrepreneurial leadership may lead to the establishment of observed constructs like the introduction of innovative products and services or the willingness to take risks. Covariance-based structural equation modeling (CB-SEM) and variance-based structural equation modeling (VB-SEM) are two main approaches to estimate the multi-faceted relationships in the structural equation model (Hair et al., 2010). CB-SEM considers constructs as common factors that account for the variability and association between its manifest indicators. The scores of these common factors are both unknown and unnecessary in estimating model parameters.

On the other hand, VB-SEM is proxied to represent constructs, a weighted combination of manifest indicators for a particular construct (Hair et al., 2010; Latan and Noonan, 2017). For this reason, PLS-SEM employed VB-SEM is now widely used in many social science fields. It constitutes a so-called composite-based method to run SEM. Moreover, a relatively small sample size of 182 observations is appropriate for using PLS-SEM. Recent studies have attempted to merge these two SEM techniques into Consistent PLS-SEM estimation to maintain PLS-SEM’s flexibility in distribution assumptions and processing complex models while still obtaining similar results to those of CB-SEM (Cheah et al., 2018).

Therefore, this study employs a Consistent PLS-SEM technique using SmartPLS software to conduct the path analysis of the research model. The use of consistent PLS-SEM also fits in a solid theoretical foundation and valid past empirical data (Cheah et al., 2018). In this way, the construct reliability and validity are firstly assessed using the critical indicators as standardized loadings, Cronbach alpha (α), composite reliability (CR), and average variance extracted (AVE). Then, causal and interacting relationships between the latent constructs will be identified by estimating the proposed structural model. As the multicollinearity problem may bias the causal effects in the estimation model, SmartPLS’s running output also provides the results of variance inflation factors (VIFs) for all latent variables. If the VIFs obtained from the full collinearity assessment do not exceed 3.3, the concern for the common method bias is eliminated (Latan and Noonan, 2017). Besides, the coefficient of determination - R² ranging from 0 to 1 measure the model’s predictive accuracy. In other words, R² indicates how the explanatory variables can explain many per cent of the dependent variable’s variability in the structural model by estimating the combined effects of the exogenous variables on endogenous variables. Last but not least, the effect size f² (f² values of 0.35, 0.15, and 0.02 are considered large, medium, and small effect sizes, respectively) introduced by Cohen (1988) is also important to measure the change in the R² when a specified exogenous construct is omitted from the model (Cheah et al., 2018). The effect size f² is very useful to determine to what extent an explanatory or mediating variable contribute to R² of the dependent variable in the structural model.

4. Results and discussions

4.1. Profile of respondents

After delivering the online survey for three months, the total responses are 280 (response rate is 40%) (see Table 1). The valid answers are 182 (excluding large enterprises’ managers or team leaders and incomplete responses). Because of difficulties faced by SMEs during the Covid 19-pandemic, the survey time lasted longer, and the response rate is also lower than expected. Table 2 shows the profile of respondents that give some general information, including the ownership type, firm size in term of total employees, business scope, and operation length of the business. More than 63.2% of respondents were holding the positions of C-level managers. The remaining respondents were team leaders. Another critical piece of information is that more than half of the participating companies had been doing business for five years and
4.2. Construct reliability and validity

The validity of the construct measurements was tested in terms of content validity, convergent validity, and divergent validity. Before distributing the survey, QTSC’s customer service department has assisted us in evaluating a potential list of C-level managers and panel experts. Those are people who have abundant managerial experience and in close relationship with the respondents. Under their professional advice, the questionnaire was modified several times.

To verify whether a latent variable is well explained by its observed variables, the convergent validity test was conducted. Construct reliability, and convergent validity is measured by examining the standardized loading coefficient, Cronbach alpha (α), composite reliability (CR), and average variance extracted (AVE) (Hair, Risher, Sarstedt and Ringle, 2019). Measurement scales will receive a good convergent validity if the square roots of AVE exceed the satisfactory threshold of 0.7; they range from 0.807 to 0.909. These results indicate a good level of construct validity. The square roots of AVE for all latent constructs are highly satisfied.

Table 1. Profile of respondents.

| Characteristics | Percentage |
|-----------------|------------|
| **Ownership**   |            |
| State-owned firms | 8.8%   |
| Private firms     | 45%      |
| Joint stock firms | 31.3% |
| Foreign invested firms | 13.1% |
| Others          | 1.8%      |
| **No. of employees** |         |
| Less than 20 employees | 26.9%   |
| From 20 to 50 employees | 29.7%   |
| From 51 to 99 employees | 7.1%    |
| From 100 to 200 employees | 20.9%  |
| From 200 to 300 employees | 15.4%  |
| **Firm age**    |            |
| Less than 3 years | 17.6%   |
| From 3 years to 5 years | 26.9%   |
| From 6 years to 10 years | 14.8%   |
| From 11 years to 20 years | 30.8%   |
| More than 20 years | 9.9%    |
| **Business scope** |        |
| Software        | 55.6%     |
| Hardware        | 16.2%     |
| Network & Cybersecurity | 10.7% |
| Multimedia      | 8.8%      |
| Others          | 8.7%      |

above. The majority of respondents, therefore, had enough knowledge in entrepreneurship to complete the survey. Significantly, this sample may qualify to be generalized into the population of IT SMEs.

4.3. Structural equation model

After confirming the construct reliability and validity, the hypothesized structural relationships among entrepreneurial leadership, entrepreneurial orientation, technological innovation capabilities, team creativity, dynamic capabilities, competitive advantage, and business performance were tested by estimating the structural model (Figure 2). In terms of determination coefficient, the model predictability is assessed with respect to the R² value for the dependent latent constructs. Falk and Miller (1992) recommend a minimum value of 10% for R². As depicted in Figure 2, the R² values for the entrepreneurial orientation construct indicate that the entrepreneurial leadership construct explains up to 65.2 per cent of the construct variability. The explanatory factors in the model explained 64.2% of business performance variability. These values determine a satisfactory degree of predictability.

Based on the standardized path coefficients, t-value, and p-value shown in Table 5, eight hypotheses in the structural model were supported (at p value < 0.1), but another two hypotheses were not. As illustrated in Table 5, entrepreneurial leadership is a significant positive predictor for organizational factors like entrepreneurial orientation, team creativity, dynamic capabilities, and competitive advantage (H1, H5, H7, and H9). At the same time, these organizational factors (except entrepreneurial orientation) also contribute to enhancing business performance (H6, H8, and H10). Besides, two insignificant hypotheses are H2 (EO→BIZP: β = 0.145, p = 0.113) and H3 (TIC→EO: β = 0.061, p = 0.634). The result indicates no direct effect of entrepreneurial orientation on business performance and at the same time no influence of technological innovation capabilities on entrepreneurial orientation.

R² only indicates how much predictive variables can explain the dependent variable’s variability. In this way, the effect size f² is very useful to determine to what extent an explanatory or mediating variable contribute to R² of the dependent variable. As shown in Table 5 and recommended by (Cheah et al., 2018), the impact of entrepreneurial leadership on entrepreneurial orientation, team creativity, and dynamic capabilities has a large effect size (f² = 0.697 and f² = 0.565), and f² = 0.617 (above 0.35 respectively) while its impact size on competitive advantage is small (f² = 0.071). It is worth noting that the effect size of dynamic capabilities has the strongest medium impact on business performance (f² = 0.187 (above 0.15 and below 0.35)). It is followed by team creativity and competitive advantage which have small
To analyze the mediation effects, Hair et al. (2014) suggested that the researchers can use the test introduced by Sobel (1982) to examine the significance of mediating effects. This Sobel test compares the direct effect of the independent variable on the dependent variable with the indirect effect of the independent variable on the dependent variable with the presence of a particular mediator. In this way, the test result may indicate five different outcomes: (1) direct-only or no mediation (the direct effect is statistically significant but the indirect effect is not statistically significant); (2) No effect and no mediation (both the direct effects and the indirect effects are not statistically significant); (3) complementary mediation (direct and indirect effects are both statistically significant and in the same direction); (4) competitive mediation (the direct effect and the indirect effect are both statistically significant and in the opposite direction); and (5) Indirect-only or full mediation (the direct effect is not statistically significant but the indirect effect is statistically significant). As demonstrated in Table 6, the indirect effects of entrepreneurial leadership on business performance via team creativity, dynamic capabilities, and competitive advantage are statistically significant, while the direct effect is not. Since there is no direct effect of entrepreneurial leadership on business performance, the mediators as team creativity, dynamic capabilities, and competitive advantage have full mediation effects with indirect-effect path coefficients of 0.097*, 0.215**, and 0.061*, respectively. On the other hand, entrepreneurial orientation does not mediate the entrepreneurial leadership – performance link.
4.4. Discussions

Some prior studies suggested that entrepreneurial leadership can significantly enhance a firm's entrepreneurial orientation and ultimately contribute to elevating the firm's performance (Engelen et al., 2015; Kantur, 2016; Shirokova et al., 2016). Furthermore, mediating factors were introduced into these relationships (Ferreira et al., 2018; Shirokova et al., 2016). From the perspective of SMEs, this paper developed a theoretical model integrating entrepreneurial leadership, entrepreneurial orientation, business performance, and their organizational mediators.

The results of this study, firstly, confirm the positive impact of entrepreneurial leadership on entrepreneurial orientation. Entrepreneurial leadership motivates the innovation skill, risk-taking ability, and proactiveness of a firm, which improves the exhibition of entrepreneurial orientation (Engelen et al., 2015). While TIC fails to predict entrepreneurial orientation, the results verify the directly positive influence of TIC on SMEs’ business performance. The entrepreneurial orientation, at the same time, has no direct effect on business performance. This outcome is not unexpected because much previous literature considers entrepreneurial orientation as a contingent rather than a direct determinant of firm performance (Cai, 2018; Muchiri et al., 2012; Muchiri and McMurray, 2015). Provided that several studies are mainly undertaken in developed economies in company-level entrepreneurship (Cai et al., 2014), this research contributes to the existing literature by examining the company-level entrepreneurship and successful relationships in an emerging market. In emerging markets, the hyper-competitive climate marked by heightened complexity and instability leads to the need to

Table 3. Fornell-Larcker criterion.

|   | 1     | 2     | 3     | 4     | 5     | 6     | 7     |
|---|-------|-------|-------|-------|-------|-------|-------|
| 1 | BIZP  | 0.811 |       |       |       |       |       |
| 2 | COMPE | 0.374 | 0.836 |       |       |       |       |
| 3 | DCA   | 0.679 | 0.264 | 0.767 |       |       |       |
| 4 | EL    | 0.621 | 0.215 | 0.552 | 0.718 |       |       |
| 5 | EO    | 0.558 | 0.221 | 0.561 | 0.566 | 0.761 |       |
| 6 | TEAM  | 0.567 | 0.218 | 0.533 | 0.482 | 0.414 | 0.787 |
| 7 | TIC   | 0.557 | 0.276 | 0.536 | 0.433 | 0.423 | 0.468 | 0.769 |

Square root of AVE in bold on diagonal.

Table 4. Heterotrait–Monotrait ratio (HTMT).

|   | 1     | 2     | 3     | 4     | 5     | 6     | 7     |
|---|-------|-------|-------|-------|-------|-------|-------|
| 1 | BIZP  | 0.365 |       |       |       |       |       |
| 2 | COMPE |       | 0.271 |       |       |       |       |
| 3 | DCA   | 0.627 | 0.208 | 0.571 |       |       |       |
| 4 | EL    | 0.554 | 0.217 | 0.561 | 0.717 |       |       |
| 5 | EO    | 0.566 | 0.226 | 0.531 | 0.552 | 0.467 |       |
| 6 | TEAM  | 0.547 | 0.275 | 0.540 | 0.495 | 0.483 | 0.510 |
understand whether the positive correlation between enterprise-level entrepreneurship and success can replicate in the context. This finding is in coherence with some previous studies (Calantone et al., 2004; Hull and Rothenberg, 2008; Kantur, 2016).

When examining the entrepreneurial leadership – business performance relationship, this study is in line with some prior research (Huang et al., 2014) to support the mediating role of team creativity. Particularly, the owner’s entrepreneurial leadership encourages employees to collaborate in achieving collective creativity (Gupta et al., 2004) and then leverage the creative resource to attain higher performance (Ahlin et al., 2014; Fillis and Rentchler, 2016; Matthews, 2007; Ward, 2004). Consistent with some recent studies (Ferreira et al., 2018), the findings suggest a positive slink from an entrepreneurial leadership to business performance via dynamic capabilities. Leaders are in charge of making decisions on investment and allocation resources that largely influence the creation of dynamic capabilities (Bingham et al., 2007; Felin et al., 2012). Within such a rapidly changing business environment, dynamic capabilities are essential to generate a competitive advantage for increasing firm’s performance (Wu, 2007). More importantly, the mediating role of dynamic capabilities is the most significant, indicating that this variable is the most dominant mediating factor to highlight the impact of entrepreneurial leadership on business performance, especially for SMEs.

The results from this study also endorse previous findings that competitive advantage has a fairly strong connection to the performance of organizations (Prakash, 2014; Yang et al., 2009). Besides, the link between entrepreneurial leadership and competitive advantage is tested. In other words, the results answered whether the competitive advantage is a good mediator for entrepreneurial leadership – business performance relationship. These results provided further support for prior studies (Banutu-Gomez and Banutu-Gomez, 2007; Bartlett and Birkinshaw, 2003) in approving a positive connection from an entrepreneurial leadership to competitive advantage. However, this connection appeared to be weak, in fact relatively minor compared to other relationships in the study. Thus, although there is a competitive advantage as a mediator in exercising the influence of entrepreneurial leadership on business performance, this variable is not an excellent mediating factor.

5. Conclusion and limitations

This paper, firstly, emphasizes the positive, strong impact of entrepreneurial leadership on entrepreneurial orientation in the business context of IT SMEs. It is worth noting that entrepreneurial leadership are able to foster the performance of IT firms via critically organizational factors like team creativity, dynamic capabilities, and competitive advantage. Among that process, TIC also helps IT SMEs accomplish higher performance. Meanwhile, dynamic capabilities have a crucial part in linking the work of IT entrepreneurial leadership to the actual performance of firms. The mediating effects of team creativity and competitive advantage also emerge in IT operations, whereas that of entrepreneurial orientation is of little concern.

From the results of this study, some significant contributions can be derived. First, this study introduces a theoretical model involving the simultaneous attendance of entrepreneurial orientation, entrepreneurial leadership, TIC, team creativity, dynamic capabilities, competitive advantage, and business performance. Second, the findings from this study suggested an indirect impact on IT firms’ performance of entrepreneurial leadership, with a link between the two measures. Third, this study also provides an insightful exploration of how this impact occurs in the operation of IT firms. Four different mediating factors were employed to explain better the two relationships: entrepreneurial orientation – business performance and entrepreneurial leadership – business performance. Many practical implementations can be inferred from these findings for SMEs and startups operating in the IT sector. Entrepreneurial leadership is essential to raise the performance of firms. Yet, enhancing the measure can be challenging in reality. Thus, instead of developing excellent practices of entrepreneurial leadership and implementation of entrepreneurial orientation, IT firms can put more effort into creating a basis of TIC, team creativity, dynamic capabilities, and competitive advantage. Through these mediating factors, the effect of entrepreneurial leadership and orientation can be promoted, which ultimately generate higher performance.

However, the limitations of this study should also be concerned. The sample for this study is small and medium IT firms in QTSC, HCMC, Vietnam. The economic environment in HCMCs specifically or in Vietnam generally has some distinctive attributes, leading to some subjective data.
It can become an obstacle when applying these findings to a different environment, such as IT startups in other countries or even in other areas in Vietnam. The changes in a business context can have influences on the results of this study.

Furthermore, many performance's antecedent factors were not mentioned in the theoretical framework due to the limited scope of research. For example, some personal traits like achievement motivation (Poon et al., 2006) or internal control area (Ahmed, 1985) have been proven to be related to entrepreneurial orientation and business performance. Similarly, other factors can be involved in explaining the effects of entrepreneurial orientation and leadership on performance besides the current variables.

Based on the mentioned limitations, future research can address the path for investigation. The dimensions of study can be expanded, for example, to other sectors or other places. The addition or replacement of mediating factors can be conducted depending on the study context. For instance, TIC is especially associated with the high-tech industry. In further studies where technology is not a focus, TIC may become insignificant and can be ignored. Moreover, the current study can also be improved to create a more robust framework. Competitive advantage has been shown to obtain minor mediating effects for entrepreneurial leadership and performance. Yet, the competitive advantage still greatly contributes to the performance of a firm. Therefore, this variable can be placed elsewhere in the conceptual model as a mediating factor of entrepreneurial orientation and performance relationship.

Declarations

Author contribution statement

Phuong V. Nguyen: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Hien Thi Ngoc Huynh: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Long Nguyen Hai Lam: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Toan Bao Le: Analyzed and interpreted the data; Wrote the paper.

Nghi Hong Xuan Nguyen: Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

The authors do not have permission to share data.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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