



HAL
open science

Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy

Scuotto Veronica, Garcia-Perez Alexeis, Cillo Valentina, Giacosa Elisa

► **To cite this version:**

Scuotto Veronica, Garcia-Perez Alexeis, Cillo Valentina, Giacosa Elisa. Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy. *Journal of Business Research*, 2020, 119, pp.131 - 141. <10.1016/j.jbusres.2019.06.025>. <hal-03493052>

HAL Id: hal-03493052

<https://hal.science/hal-03493052v1>

Submitted on 15 Dec 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons CC BY-NC 4.0 - Attribution - Non-commercial use - International License

Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy

Scuotto Veronica^{1 2}, Garcia-Perez Alexeis³, Cillo Valentina⁴, Giacosa Elisa⁵

¹ Leonard de Vinci, Pole universitaire, Research center, 92 916 Paris La Défense, France.
veronica.scuotto@devinci.fr

² University of Turin Department of Management, Unione sovietica 218 Turin, IT

³ Research Centre for Business in Society, Coventry University, Priory Street, Coventry CV1 5FB, UK

⁴ Department of International Business Administration at The Link Campus University, Rome, IT

⁵ University of Turin Department of Management, Unione sovietica 218 Turin, IT

Do stakeholder capabilities promote sustainable business innovation in small and medium-sized enterprises? Evidence from Italy

Sustainable innovation and its management have become fundamental forces for change in business and society. Paradoxically, little attention has been given to how small and medium-sized enterprises (SMEs) manage sustainable innovation in the current knowledge-intensive context. By studying 80 SMEs from the high-tech manufacturing sector in Italy, this research has found that, when combined with stakeholder engagement, sustainable innovation management becomes a pivotal phenomenon for new and established SMEs. Stakeholders proved instrumental in generating the sense of environmental responsibility in SMEs. As a pioneer combination of stakeholder theory and innovation management theory, our research found that stakeholder-related capabilities, both tangible and intangible, influence the firm's orientation towards sustainable innovation, its environmental responsibility and related capabilities. Our research assists the sustainability, adaptation, innovation and growth orientation of SMEs in a knowledge-intensive environment by recommending that, in their relationship with stakeholders, SMEs become more open to co-create, share and reuse environmental knowledge.

Keywords: stakeholder-related capabilities, stakeholder theory, sustainable innovation orientation, SMEs, environmental responsibility, environmental capabilities

1. Introduction

For the last two decades, sustainable innovation has been considered a fundamental force for change in business and society (Larson, 2000). Growing economic and social challenges have emerged, accompanied by developments in information and communication technology (ICT) that have encouraged the study of sustainable innovation from multiple points of view (Bates et al., 2011). A basic assumption has been that the innovations provided by ICT are causing disruptive changes both socially and economically (Del Giudice, 2016; Caputo and Wallezký, 2017; Santoro et al., 2017; Scutto et al., 2017; Aquino et al., 2018).

Taking this scenario as a starting point, several studies analyse the extent to which it is possible to maximise the positive impact while reducing the risks associated with technological developments in order to better understand the factors that enable sustainable innovation (Del Giudice and Straub, 2011; Carayannis et al., 2017). A growing number of scholars are studying the involvement of stakeholders and the role they play in the strategic management of an organisation. Consistent with stakeholder theory (ST), interaction with both market and non-market players is shown to affect company performance (Freeman, 1984). As Werther and Chandler (2011) point out, stakeholder engagement affects the economic and social value of a firm in both the medium and long term. Relationships with stakeholders increase trust and social capital, thereby reducing transaction costs (Greenwood, 2007; Smyth et al., 2010; Greenwood et al., 2010). In this way, a firm's ability to manage its relationship with stakeholders for value creation, known as its stakeholder-related capability, acquires increasing relevance in the stakeholder theory debate (Jones and Wicks, 1999; Walsh, 2005; Freeman et al., 2010; Fernando and Lawrence, 2014; Jones et al., 2018). Stakeholder engagement allows organisations to acquire information from their stakeholders (Sharma, 2005), and this supports the development of individual and organisational knowledge (Nelson and Zadek, 2000; Katsoulakos and Katsoulacos, 2007). Firms can then use this knowledge to improve their operation and profitability.

As highlighted in the discussion about open innovation, firms are required to adopt a collaborative approach in which chain partners and even competitors work together to develop new products and processes quickly and effectively (Chesbrough et al., 2006; Santoro et al., 2018). To this end, firms should develop the necessary organisational and individual capabilities to explore and integrate external sources of information (Nonaka, 2007).

Stakeholder engagement can enhance an organisation's integrative capability (Senge, 2006) as well as its ability to accomplish knowledge retention and knowledge exploitation (Ayuso, et al., 2006; Chang, 2003; Macpherson et al., 2004). This means that firms can successfully complement their own internal resources through gaining access to the internal resources of connected actors. Organisations, particularly small and medium-sized enterprises (SMEs), are under increasing pressure to enhance their technical, organisational and social capabilities and to capitalise on dynamic factors such as innovation and competitiveness (Del Giudice et al., 2017; Scuotto et al., 2017a). For this reason, stakeholder-related capabilities could become not only a driver but also a precondition for SMEs to effectively promote growth when facing the dynamic conditions of the current business environment (Ale Ebrahim et al., 2010; Del Giudice et al., 2018). SMEs have particular potential to be enabled by interaction with their various stakeholders (Scuotto et al., 2017c). This interaction becomes an important source for the creation of inimitable value-generating resources and is referred to in the literature as an innovation network (Tidd et al., 2002; Gulati et al., 2000).

Against this background, this study develops a theoretical model that aims to analyse the extent to which stakeholder-related capabilities and engagement determine the sustainable innovation orientation of SMEs in a knowledge-intensive context. More specifically, this research extends the previous literature on sustainable innovation in three main areas.

First, while the role of stakeholder engagement in sustainability management is widely recognised (Bowen et al., 2001; Fichter and Sydow, 2002; Handfield et al., 2005; Payne et al., 2017), little attention has been given to how SMEs manage sustainable innovation in a knowledge-intensive context. Findings from studies on large firms cannot be applied to SMEs due to substantial differences in the way they respond to social and economic pressures. These responses depend on (a) the exposure of the SMEs to stakeholders' expectations and (b) their ability to respond. The reality is that SMEs are generally affected only indirectly by pressure from stakeholders. They usually lack the personal, financial and time resources to respond to stakeholders' demands (Roberts, 2003, p. 164). This is why research is needed to understand better the extent to which SMEs could use their stakeholder relations to improve their resources for cooperating with societal stakeholders and responding to their demands (Dietsche, 2009).

Second, this study intends to connect stakeholder theory with innovation management theory (IMT). The study will be pioneering in this area as there are very few studies that take into account the relationship between knowledge acquisition and knowledge exploitation (Chang, 2003; Wang et al., 2015; Weng and Huang, 2017; Santoro and Usai, 2018; Kogut and Zander, 1992; Blomqvist et al., 2004) or the effect that the management of relationships between an organisation and its stakeholders can have on value creation (Fernando and Lawrence, 2014). The combination of stakeholder engagement and innovation management is a pivotal phenomenon for both new and established small firms and has been known for several decades to be a vital component of socio-economic growth (Birch, 1979; Rothwell and Zegveld, 1982; Rothwell, 1989; Pera et al., 2016). Paradoxically, literature reporting on efforts to understand and operationally assist in the sustainability, adaptation, innovation or growth orientation of SMEs is still limited. The intention of

this research is therefore to explore, from an innovation management perspective, the role of stakeholder engagement in the entrepreneurial development of SMEs. Following the pivotal study by Ayuso, Rodríguez, García-Castro and Ariño (2011), our aim is to operationally assist the sustainability, adaptation, innovation and growth orientation of SMEs by studying the extent to which stakeholder-related capabilities and engagement determine their sustainable innovation orientation.

Finally, this study contributes to the main literature on orientation towards sustainable innovation as a combination of innovativeness, innovation capacity, and research and development (R&D) intensity (Ayuso et al., 2006, 2011; Hurley and Hult, 1998; Nejati et al., 2014). In addressing these questions, the paper starts by introducing the theoretical background to the research. In the next section, its hypotheses are presented. These are followed by a description of the methodology used for the collection and analysis of the data. To test our theoretical arguments, we analyse data collected from a dataset of 80 SMEs operating in the high-tech manufacturing sector, a knowledge intensive industry in Italy, by using the SEM methodology. Thereafter, the data analysis and its results are presented. The paper ends with a discussion of the research findings and their limitations and then concluding remarks.

2. Theoretical Background and Hypotheses

2.1. Sustainable business innovation

Innovation is a term used in many ways as determined by the context and the nature of the analyses. It can take several forms and be embedded, or it can result in products, production processes or management systems. The more 'macro' the approach (e.g. when used societally and culturally) the more varied and amorphous does the usage of the term become. West and Altink (1996) refer to the distinction in innovation made by Damanpour (1987) as being either technical or administrative. In most cases, innovation will be related either to R&D and consumer needs, to changes aimed at increasing productivity or to adaptation and the improvement of processes in managing people and organising work (Shingo, 1986). However, whether the innovation occurs in the technical systems of an organisation and is directly related to its primary work activity, or whether it appears in the social system of an organisation and affects the organisational structure and management of people (Damanpour, 1987, p. 677), every innovation enables entrepreneurs to exploit change as an opportunity (Drucker, 1985, p. 28). This is one of the reasons why, in recent years, an optimistic language has emerged where the terms innovation and entrepreneurship are often used interchangeably (Johnson, 2001).

More than just a concept, entrepreneurship is a process, a phenomenon that involves both the entrepreneur and essential entrepreneurial attitudes and behaviours (Lampkin and Dess, 1996; Clarysse and Morray, 2004). An entrepreneur is an individual who takes both agency and initiative, who assumes responsibility and ownership for making things happen, is both open to novelty and able to create it, who manages the risks attached to the process and perseveres when faced with difficulties (Norman and Slevin, 1993; Johnson, 2001). Entrepreneurial attitudes and behaviours include three key dimensions, defined as innovation, risk-taking and proactiveness (Zahra, 1991; 1993; Morris and Lewis, 1995; Lampkin and Dess, 1996; Balabanis and Katsikea, 2003; Johns and Mattsson, 2005). These are often expressed in attitudes such as creativity, motivation, accountability, the ability to see and realise opportunities and the capacity to tolerate ambiguity and uncertainty. Innovation in this context is defined by these authors as the seeking of creative, unusual

and novel solutions to problems and needs. Such a definition of innovation as a dimension of entrepreneurship shows how intertwined these concepts are.

Because the ability to innovate when combined with a proactive approach to entrepreneurship enables new ventures to survive and then to thrive, both concepts are often related to SMEs. However, there is enough evidence in the extant literature to argue that the size of the organisation does not determine its capacity to act entrepreneurially and to stimulate or foster innovation (Johnson, 2001). Provided entrepreneurial qualities exist within individuals at all levels of an organisation, the entrepreneurs will support and enhance the efforts of the leaders, dealing with changes in the current dynamic environment and with the challenges they pose for the business (Morris and Lewis, 1995).

Grossi (1990) pointed to the ability to adapt to changes in the environment as the key to organisational success. Thus, innovation in management systems, or business innovation, helps organisations to adapt their systems to new environmental conditions and to improve the way in which people are managed and work is organised (Martínez-Lorente et al., 1999). This study therefore deals with innovation in management thinking as motivated by changes in the external and internal environment, that is, in the business and among its stakeholders, and it seeks to illustrate the value that is added when all stakeholders grasp the concepts of entrepreneurship and innovation.

Another crucial factor driving organisational performance in the current context is knowledge intensity. Knowledge intensity is a multifaceted concept that depends on the type of organisation, the industry within which it operates, its innovation system, the knowledge and skills of the individuals that drive it (e.g. founders, managers and employees), its relationship with its stakeholders and the external business environment (Chen et al., 2012; McKelvey and Lassen, 2013). Knowledge intensity therefore brings an additional dimension to business innovation and entrepreneurship, and it covers measures and indicators such as investment in R&D and networking or human capital, depending on the operational model of the enterprise (Sallos et al., 2017). This collaboration between entrepreneurs and their external and internal stakeholders for the purpose of sharing knowledge and resources for innovation management (Faems et al., 2005), results in continuous, purposive inflows and outflows of knowledge that bring the dual advantages of accelerating internal innovation while expanding markets for the external use of the innovation. This process, defined by Chesbrough et al. (2006) as open innovation, relies on the engagement of stakeholders and their capabilities together with the processes of innovation and entrepreneurship existing within the firm. Open innovation requires firms to develop external links and to exploit opportunities to access innovative ideas from outside of the organisational boundaries. This allows them to access the knowledge of actors involved in the relationship (Almirall and Casadesu-Masanell, 2010). These dynamics represent connective capacity or the ability of the firm to maintain knowledge in relation to other firms. This ability includes elements of alliance and interpersonal skills (Kale and Singh, 2007; Cruz-González et al., 2014; 2015; Ferraris et al., 2017). The lack of these capacities could explain why firms perform more inbound than outbound activities (Chesbrough and Crowther, 2006). Research into the factors that enable sustainable innovation could also contribute to the literature on open innovation management (OIM).

2.2. Stakeholder-related capabilities and environmental capabilities

Stakeholders increasingly require firms to become more environmentally aware and socially responsible (Duker, 2014), and the scientific debate on environmental responsibility (ER) has grown

significantly in recent years. According to Mazurkiewicz (2016), ER refers to the commitment of firms to reduce their negative environmental impact. In order to effectively manage the environmental concerns of stakeholders and to achieve sustainable competitive advantage, firms should improve their environmental capabilities (EC) through their internal resources (Bae and Lee, 2014; Baranova, 2017; Girod, 2017; Caloghirou et al., 2004). The management of environmental resources during production processes allows firms to meet their stakeholders' expectations (Grant, 1991; Bowen et al., 2001; de Bakker and Nijhof, 2002; Strand and Freeman, 2015). Hence, environmental capability is closely related to internal and external collaboration and to the management of individual and organisational knowledge (Easterby-Smith and Prieto, 2008; Girod, 2017). Since ER is only possible if firms become aware of the environmental issues relating to their organisational management, stakeholder engagement takes on strategic importance in addressing environmental concerns (Elkington, 1997; Chan, 2010; Klassen and Vachon, 2012). Considering the importance of comprehensive value creation, recent developments in stakeholder theory highlight the relevance of interaction between corporations and their stakeholders to strategic management (Scherer and Palazzo, 2007; Freeman, 2009). In fact, such engagement supports firms in developing continuous relationships with relevant stakeholders and in fostering value creation (Baden, 2010; Smith et al., 2011).

As Arnstein (1969) points out, stakeholder engagement can function at different levels depending on the firm's commitment: a low level of involvement is based on passive interactions in which stakeholders only provide information; a high level of involvement is based on active interactions in which stakeholders initiate and co-design a process together with the firm. Several authors have attempted to analyse the role of stakeholder engagement in sustainability-oriented innovation. According to Ayuso et al. (2006; 2011), stakeholder engagement, as an organisational capability, is positively related to sustainability-oriented innovation. Therefore, to effectively engage stakeholders, firms should develop the capacity to deploy both tangible and intangible resources (Amit and Schoemaker, 1993; Grant, 1991; Teece et al., 2009; Inan and Bititci, 2015).

The study of organisational capabilities is not new, and these have been described in the literature as the coordinating mechanisms that enable the most efficient and competitive use of the firm's tangible and intangible assets (Day, 1994). Furthermore, these are found to generate innovations that are not limited to technological innovations but include those that improve business processes (Edvinsson and Sullivan, 1996; Riahi-Belkaoui, 2003; Kaplan and Norton, 2004; Del Giudice and Straub, 2011; Pironti et al., 2018). According to Sharma and Vredenburg (1998), stakeholder-related capabilities become, both directly and indirectly, a source of innovation and a driver to entrepreneurship within a firm.

The competitive advantage embedded within organisational capabilities stems from their elusive nature based on their social complexity and deep embeddedness in organisations (Winter, 1987; Hart, 1995; Teece, 2009). They are often invisible (Itami, 1987) and are based on tacit learning (Hart, 1995; Polanyi, 1962), which is acquired through knowledge exchange between internal and external stakeholders over time (Barney, 1991; Dierickx and Cool, 1989; Hart, 1995). Stakeholder-related capabilities are key to stakeholder theory studies. One of the main issues in stakeholder theory is the management of the relationships between an organisation and its stakeholders for purposes of value creation (Fernando and Lawrence, 2014). This defines the managerial aspect of the theory and its understanding of effective business management as creating as much value as possible from stakeholder-firm relationships (Freeman et al., 2010; Walsh 2005; Jones and Wicks, 1999). From the perspective of stakeholder theory, stakeholder capabilities can be defined as the stakeholders'

effective opportunities to undertake actions and activities with the firm through which they choose to engage in the value creation process (Garriga, 2014). The fact that stakeholder capabilities are directly related to a process of creating value that is of relevance to both the stakeholder and the firm points towards a firm–stakeholder alignment in at least one area, whether strategic or otherwise.

Another dimension of the firm–stakeholder relationship involves the role of fringe stakeholders who operate at the periphery of the traditional stakeholder networks but still remain a potentially valuable source of new capabilities and opportunities for the firm (Hart and Sharma, 2005). The concept of radical transactiveness—first introduced by Hart and Sharma (2005)—enables firms to acquire and integrate knowledge from their peripheral stakeholders (Maier et al., 2016; Fabricius and Currie, 2015; Nkoana et al., 2017; Gadenne et al., 2009). The term ‘transactive’ refers to the principle of influencing each other by means of a two-way stakeholder dialogue (Maier et al., 2016). In this way, stakeholders have a double function: they can influence and are influenced by firms (Freeman, 1984; Dawkins, 2015). Therefore, stakeholder dialogue holds the potential to ‘generate imagination and ideas about unmet needs, potential new products, and business innovations’ (Hart and Sharma, 2005, p. 10). This alignment helps individual stakeholders and their capabilities to play a significant role in the perception of both parties as being environmentally responsible. Moreover, when firms proactively address social and environmental issues in their business strategies, stakeholder related capabilities may emerge (Sharma and Vredenburg, 1998). On this basis the following hypothesis is proposed:

Hp1: Stakeholders’ capabilities in relation to environmental responsibility are positively related to the environmental capabilities of SMEs.

2.3. Sustainable innovation orientation

Sustainable innovation has been broadly defined in the literature as the capacity of an organisation to adopt new ideas and successfully implement these ideas in new products or processes with acceptable levels of resource consumption and waste generation (Bakshi and Fiksel, 2003; Anttonen et al., 2013; Boons and Lüdeke-Freund, 2013; Boons et al., 2013; Varadarajan and Kaul, 2017). In other words, sustainable innovation considers environmental and social issues as well as the needs of future generations (Nakata and Viswanathan, 2012; Ketata et al., 2015). Although a relatively new and still largely unexplored paradigm, sustainable innovation is considered a fundamental force for change in business and society (Larson, 2000). In fact, several innovations provided by ICTs are already affecting social and economic configurations (Wolpert, 2002; Assink, 2006; Del Giudice, 2016; Caputo and Wallezky, 2017; Santoro et al., 2017; Aquino et al., 2018). This means that they not only facilitate the achievement of competitive advantage for firms but also affect sustainable development. Among the multiple insights that address these challenges, a considerable number of contributions refer to factors that enable sustainable innovation.

Studies that analyse these enabling factors emphasise that innovation is driven by internal resources (Teece, 1987; Cohen and Levinthal, 1990; Conner and Prahalad, 1996; Eisenhardt and Martin, 2000; Bae and Lee, 2014). To achieve a sustainable competitive advantage, firms should turn environmental concerns into opportunities (Bae, 2017). To achieve this, firms should share their internal environmental capabilities with their stakeholders. This can enable them to achieve a sustainable competitive advantage in the market. As several researchers have pointed out,

collaboration with external parties benefits the innovation process, while a firm's philosophy of doing business in an environmentally and sustainable way will support its sustainability-oriented innovation (Kuckertz and Wagner, 2010; Ayuso et al., 2011; Roxas and Coetzer, 2012). To develop sustainability-oriented innovation, firms should balance stakeholders' interests and integrate their knowledge internally (Ayuso et al., 2006). This means that the ability to use, manage, share and capitalise on their knowledge can assist the firm in adapting to changes in the external environment and in improving their competitive advantage (Chen and Huang, 2009; Del Giudice et al., 2010; Huang et al., 2011; Ranga and Etzkowitz, 2013; Ferraris and Santoro, 2014; Del Giudice et al., 2016; Vrontis et al., 2016).

Authors such as Jorna (2017) highlight the importance of individuals' knowledge if sustainable innovation strategies are to succeed. This suggests that there are significant challenges in measuring the intensity of a firm's orientation towards sustainable innovation as it depends not only on the firm and its context but also on its relationship with its internal and external stakeholders, as well as on their individual tangible and intangible assets. However, the literature contains reports on initiatives that have measured the orientation towards sustainable innovation as being a combination of innovativeness, innovation capacity and R&D intensity (Ayuso et al., 2006, 2011; Hurley and Hult, 1998; Nejati et al., 2014). This covers a range of issues, from the evoking of new ideas to the ability to stimulate their creation and to bring such ideas to fruition. Ayuso et al. (2011) found that knowledge sourced from engagement with internal and external stakeholders contributes to a firm's sustainable innovation orientation. This becomes relevant in areas related to environmental protection, which often demand multiple disciplines and the engagement of stakeholders, and where studies are scant and too heterogeneous to allow for generalisations. However, there is a need for better understanding of the drivers of a firm's orientation towards sustainable innovation, particularly in relation to its environmental capabilities. We therefore hypothesise that:

Hp2: The environmental capabilities of SMEs are positively related to their orientation towards sustainable innovation.

2.4 Stakeholder capabilities in relation to environmental responsibility

Although they are not new, over the last decade, environmental and social responsibility have gained greater prominence across businesses and in society (Jamali, 2007; Reed, 2008; Lee et al., 2018; Renouard and Ezvan, 2018; Ruepert et al., 2017; Kalamas et al., 2014). The terms environmental responsibility and social responsibility have both been related to corporate social performance, a term defined by a number of scholars (e.g. Puncheva-Michelotti et al., 2018; Bhardwaj et al., 2018; Strand, 1983; Wartick and Cochran, 1985; Agle et al., 1999; Deniz-Deniz and De Saa-Perez, 2003; Orlitzky et al., 2003; Wood, 1991; Graves and Waddock, 1994). Corporate social performance refers both to *responsiveness* (i.e. internal organisational social adaptations) and *responses* (i.e. external organisational social adaptations).

Having a culture of proactive environmental responsibility is not only a source of competitive advantage for many firms but also a source of value for their stakeholders. A number of practitioners argue that by focusing on a process of value co-creation with a range of stakeholders, environmentally responsible firms will generate positive financial returns (Mehrpooya and Chowdhury, 2018; Aquilani et al., 2016; Albort-Morant et al., 2016). Such a process of the co-creation of value to be shared among different stakeholders and actors assumes that co-creatively

leveraging all stakeholder capabilities within a network of social, business, civic, and natural communities can lead to better states of governance, infrastructure development and sustainability, with 'win-win' outcomes and the expansion of wealth, welfare and well-being all round (Ramaswamy and Ozcan, 2014; Kazadi et al., 2016).

Since the practice of environmental responsibility reflects stakeholders' interests, the perception of environmental responsibility will depend simultaneously on the stakeholders' capabilities and sense of environmental responsibility (Williamson et al., 2006). An analysis of stakeholder perceptions could highlight their expectations and tensions. Hence, understanding perceptions could help firms to reduce conflict (Shackley and Deanwood, 2002; Amare, et al., 2017). This suggests that not only are the notions of environmental and social responsibility deeply intertwined but that they are also strongly related to the capabilities of the firm and its stakeholders (Montiel, 2008; Ommen et al., 2016). On this basis we hypothesise that:

Hp3: Stakeholders' capabilities in relation to environmental responsibility are positively related to a perception of environmental responsibility within SMEs.

2.5. Environmental responsibilities within the firm

Organisations are faced with a new context where advanced and active social and environmental management policies are required, which consider not only the traditional issues of quality, cost efficiency, marketing and ethics but also the issues of environmental risk and social responsibility (Ludevid, 2000).

Environmental and technological changes are transforming the competitive landscape, requiring firms to adopt an orientation that supports sustainable innovation. To achieve a sustainable competitive advantage, enterprises must embrace a sustainable innovation orientation by improving both the innovative and sustainable attributes of their products, processes and business models (Sharma and Vredenburg, 1998; Nidumolu et al., 2009; Spiller, 2000; Heffner and Sharif, 2008).

A key starting point is a debate on the processes that help organisations to be aware of their environmental impact and responsibilities (Rocha et al., 2007). Inclusion of stakeholders and the integration of their unique expectations (Seuring and Gold, 2013) is suggested as a critical factor in environmental responsibility. This is due to the fact that firms' attempts to show high levels of social and environmental responsibility lead them to look beyond the financial benefits of their products and services and to explicitly consider the environmental and social benefits (Morgan et al., 2015).

As firms have become more aware of limitations in natural resources and their own impact on the environment, their commitment to the environment has improved and is now perceived by many as an integral responsibility of individuals and organisations operating in all sectors (Bell, 2005). We argue that as awareness of the need for social and environmental responsibility increases, internal and external forces drive a gradual transformation of the traditional corporate culture to develop advanced social and environmental management strategies. On this basis we hypothesise that:

Hp4: A perception of environmental responsibility within SMEs is positively related to their orientation towards sustainable innovation.

2.6. Stakeholder related capabilities and the firm's orientation towards sustainable innovation

From the analysis in this section it seems plausible to infer some indirect correlation between stakeholder capabilities and the firm’s orientation towards sustainable innovation. A review of the extant literature suggests that there is a rationale for such an inference. Several scholars (Christmann and Taylor, 2002; Ottman et al., 2006) have found evidence that a significant number of firms are modifying their orientation towards sustainable innovation and adopting responsible corporate behaviour as a result of the increasing pressure that they are facing from their stakeholders, including governments and non-governmental organisations (NGOs). Ketata et al. (2015) refer to this as a pressure-driven facet of sustainable innovation, which complements the demand-driven facet whereby stakeholders increasingly demand products that have been produced in a sustainable way. This attitude to sustainability is related to efficient production processes, less resource and energy consumption, environmental stress reduction and improvement of health and safety conditions for employees, customers, the local community and society in general (Paramanathan et al., 2004).

While stakeholders—and most importantly, customers—support firms that are known for their sustainable development strategies or their reputation for sustainable conduct (Ayuso et al., 2006), they have been known to react with extreme aggressiveness, even boycotting certain products or services, if firms allegedly ‘mis-behave’ in this domain (Ketata et al., 2015).

As more firms find that product- and process-driven enhancements have a positive effect and that environmental initiatives contribute to a firm’s environmentally-friendly reputation, these in turn, create for them a competitive advantage since they constitute a substantial part of the perceived utility of a product or service (Gilley et al., 2000; Rindova et al., 2005). We therefore hypothesise that:

Hp5: Stakeholders’ capabilities towards environmental responsibility are positively related to an orientation towards sustainable innovation within SMEs.

Supporting this hypothesis could lead us to point out that knowledge sourced from engagement with internal and external stakeholders contributes to a firm’s environmental responsibility and, in turn, to its sustainable innovation orientation.

In sum, the hypotheses outlined in this section can be represented in the conceptual framework presented in figure 1.

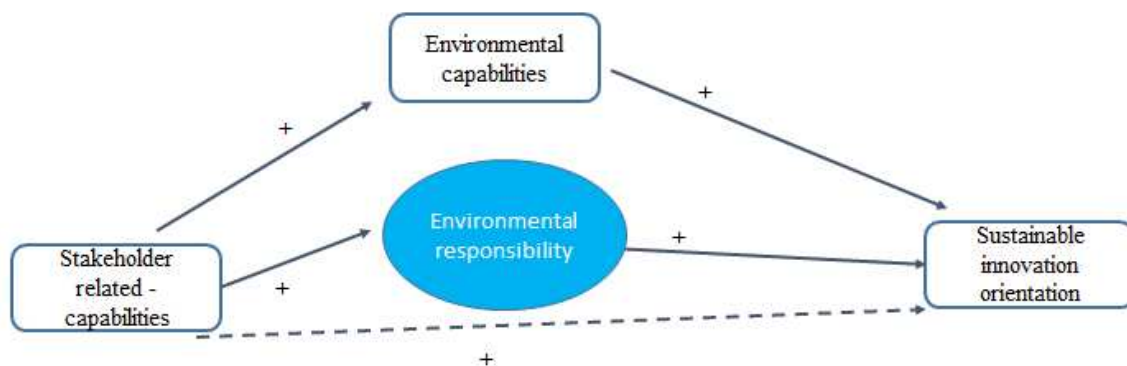


Figure 1. Research Model

3. Research Methodology

3.1. Data collection and sample

The research sample consisted of a number of organisations operating within the knowledge intensive industry in Italy. This was achieved by selecting organisations from the high-tech manufacturing sector, which is a knowledge intensive industry. This sector has gained in significance over the last decade due the potential impact of its products and services on the environmental and social issues driving the sustainability agenda. Over the last five years, the knowledge intensive activities in this sector have grown by 0.9 percent, but show an increase of 17 percentage points when compared with other European countries (Eurostat, 2016). A second reason for selecting this group for the data collection was that the study of these issues in the context of SMEs would bring added value to the research and practice communities. Given the innovative attitude of Italian SMEs, Italy's capacity for innovation is more advanced than most other countries, strengthening its research and innovation system. This has resulted in new public and private collaborations with external stakeholders. Furthermore, a regional sectoral specialisation has formed, which has prompted the introduction of new legal frameworks for innovative SMEs in order to facilitate their access to finance (European Commission, 2014). Thus, the authors sought to engage with small and medium-sized enterprises in conducting their research.

In line with the Italian classification of SMEs, this study started by adopting the European Commission's (2003) definition of SMEs, whereby these organisations are characterised as having 250 or less employees. However, taking into consideration the classification of SMEs beyond the European context, we sought to engage with organisations that had a maximum of 150 employees. By ensuring that all organisations involved would be classified as SMEs in countries both within and outside of Europe, we sought to improve the generalisability of our research findings and their validity in emerging economies such as Malaysia, where SMEs are defined by having up to 150 employees in the manufacturing sector and up to 50 in the service sector (SME Corp, 2012). These considerations led to the authors collecting their data from a sample of 80 Italian SMEs with fewer than 150 employees and operating in the high-tech manufacturing sector.

Data were collected using a questionnaire comprising 20 closed questions. The web-based survey was structured around the measures and items included in table 1, which were selected following a careful literature review. The survey was administered to individuals in senior positions within the organisations, defined either by their ownership or by their decision-making capabilities. These individuals were perceived to be the most suitable participants for this research due to the fact that they made all the critical decisions in the SMEs involved (Nejati et al., 2014). This is particularly relevant in Italy where SMEs have historically played a major role in the economy (Goodman et al., 2016). According to the OECD (2017), in Italy, SMEs contribute around 60% of the gross domestic product and employment.

The 20 closed questions were assessed using seven-point Likert-type scales, ranging from 1 (strongly disagree) to 7 (strongly agree). The questionnaire was developed in English and then translated into Italian by one of the authors who is a native Italian speaker together with an SME consultant to ensure a good understanding of the questionnaire from the participants' standpoint. Interaction between the author and consultant during the translation of the questions resulted in the questions being adapted to fit the culture and context of the industry while remaining aligned to the theoretical underpinnings of the research. This was followed by a third stage wherein the authors and consultant came to agreement on the final version of the questionnaire. Finally, the questionnaire was tested on a sample of 23 decision makers from local SMEs in order to avoid bias in

the data collection process. This small number was considered sufficient for a pilot test, which became a “dress rehearsal of the instrument with a small but relevant sample” (Lewis et al., 2005, p. 392). The results from the pilot test showed no particular bias, and the respondents had no difficulty in understanding the questionnaire and the individual items.

Table 1. *Measures and Items*

Measures	Items	Sources
Stakeholder related capabilities	Stakeholder perception Stakeholder integration Radical transactiveness	Litz, 1996; Sharma and Vredenburg, 1998; Hart and Sharma, 2004; Gadenne et al., 2009; Freeman, 1984.
Sustainable innovation orientation	Innovativeness Innovation capacity R&D intensity	Ayuso et al., 2006, 2011; Hurley and Hult, 1998; Nejati et al., 2014.
Environmental responsibility	Social responsibility Social responsiveness	Jamali, 2007; Spiller, 2000.
Environmental capabilities	Knowledge acquisition Knowledge exploitation Learning	Kogut and Zander, 1992; Grant, 1996; Blomqvist et al., 2004; Caloghirou et al. 2004; Chang, 2003; Macpherson et al. 2004; Weng and Huang, 2017; Wang et al., 2015; Santoro and Usai, 2018.

On validation of the questionnaire, it was sent to a population of 298 SMEs, from which 80 usable questionnaire responses were obtained. The questionnaire was sent with a cover letter in which the scope of the research was described and the required time for completing the questionnaire was stipulated. The cover letter also stated that the all the data provided by participants would remain anonymous and would be used only for the purposes of this research. The data was collected over a period of eight months. Towards the end of this period a reminder was sent to participants, resulting in 25 additional responses being received. The t-test did not indicate any difference between participants who replied after the first reminder (wave 1) and those who replied after the second reminder (wave 2).

3.2. Data analysis

The next step consisted of an assessment of the hypotheses, that is, an evaluation of the following correlations between constructs: stakeholder-related capabilities and environmental responsibility; stakeholder-related capabilities and environmental capabilities; stakeholder-related capabilities and sustainable innovation orientation, environmental capabilities and sustainable innovation orientation; and, environmental responsibility and sustainable innovation orientation as shown in Figure 1.

The correlations were assessed by using structural equation modelling (SEM). ‘SEM is a second-generation data analysis technique that enables researchers to answer interrelated research questions in a single, systematic and comprehensive analysis by modelling the relationships among multiple independent and dependent constructs simultaneously’ (Gefen et al., 2000; p. 3–4). A careful review of the literature informed our decision to classify each relevant construct as either a latent exogenous or endogenous variable.

Exogenous variable.

Stakeholder-related capabilities was defined as an exogenous variable and correlated to environmental responsibility, considered by Ayuso et al. (2006; 2011) as its antecedent. Stakeholder related-capabilities was defined as a combination of *stakeholder perception*, *stakeholder integration*, and *radical transactiveness* (Litz, 1996; Sharma and Vredenburg, 1998; Hart and Sharma, 2004; Gadenne et al., 2009; Freeman, 1984).

Endogenous variables.

Environmental responsibility, environmental capabilities, and sustainable innovation orientation were defined as endogenous variables.

Environmental responsibility was understood as a combination of *social responsibility* and *social responsiveness*, key drivers for any innovation process (Jamali, 2008; Spiller, 2000) that involves responsible activities that meet stakeholders' expectations (Fuller and Lewis, 2002).

Environmental capabilities, as a variable, embraced *knowledge acquisition* and *knowledge exploitation* (Chang, 2003; Macpherson et al. 2004; Weng, & Huang, 2017; Wang et al., 2015; Santoro and Usai, 2018). For instance, Kogut and Zander (1992) and Grant (1996) argue that knowledge and learning are key determinants in the creation of organisational capabilities (Darroch, 2005; Ayuso et al., 2011, p. 1401). This calls for the process of knowledge acquisition to be deployed within and across SMEs' boundaries, in line with reports in the extant literature (Blomqvist et al., 2004; Caloghirou et al., 2004).

On the basis of previous studies, sustainable innovation orientation is understood as the combined effect of *innovativeness*, *innovation capacity*, and *R&D intensity* (Ayuso et al., 2006, 2011; Hurley and Hult, 1998; Nejati et al., 2014; Hult, 1998; Nejati et al., 2014).

Our understanding of the hypotheses and the variables to be studied enabled an assessment of the 80 responses to the web-based survey by using SmartPLS (Ringle et al., 2005). We used a bootstrap technique to evaluate the correlations between the variables, and this allowed a simulation of a larger sample size by redrawing records already in the sample, and in this case, placing the drawn record back into the sampling pool to potentially be picked again (Nejati et al., 2014, p. 2032).

4. Results

As it emerged from the data analysis, stakeholder related capabilities were positively correlated to sustainable innovation orientation via environmental responsibility. However, the environmental capabilities of the organisation were not significantly correlated to the sustainable innovation orientation. Overall, the bootstrap technique shows a t-statistic of over 3.4 for the correlation between stakeholder capabilities and environmental responsibility and for environmental responsibility with sustainable innovation orientation. Additionally, the correlation between stakeholder capabilities and environmental capabilities was shown to be significant (t-static 3.8). Therefore, the Hp1: Stakeholders' capabilities towards environmental responsibility are positively related to the environmental capabilities of the organisation is supported. Hp3: Stakeholders' capabilities towards environmental responsibility are positively related to a perception of environmental responsibility within the organisation is supported. Hp4: A perception of environmental responsibility within the organisation is positively related to its orientation towards sustainable innovation is supported. Finally, Hp5: Stakeholders' capabilities towards environmental

responsibility are positively related to an orientation towards sustainable innovation within the organisation is supported.

Nevertheless, the correlation between environmental capabilities and sustainable innovation orientation was not significant (t-static 1.8). Hence, the Hp2: The environmental capabilities of the organisation are positively related to its orientation towards sustainable innovation was not supported (table 2 and figure 2).

Table 2. Path Analysis Results

Hypothesis	Path	t-statistics	p-value	Decision
Hp1	SRC → EC	3.4	***	Supported
Hp2	EC → SIO	1.8	0.309	Not supported
Hp3	SRC → ER	3.2	***	Supported
Hp4	ER → SIO	4.5	***	Supported
Hp5	SRC → SIO	2.8	***	Supported

Notes: *** Standardised regression coefficient is significant at the 0.001 level (two-tailed).

The path analysis is part of the structural model which is used to assess the correlation between the latent exogenous and endogenous variables (Chin and Newsted, 1999). Additionally, this model also measured the endogenous latent variables by R-squared. In this case, they were: 1. Environmental responsibility; 2. Environmental capabilities; 3. Sustainable innovation orientation (table 3).

Table 3. R²

	ER	EC	SIO
R ²	.56	.47	.75

Therefore, this model is accompanied by the measurement model, which analyses the correlation between each latent variable and the relative manifest variables. To assess this correlation, Cronbach's alpha technique was employed, and showed a positive reliability with the value of 0.81 (table 4). Following this assessment, the internal consistency or internal correlations are shown in table 5.

Table 4. Reliability

Reliability test		
Cronbach's Alpha	Cronbach's Alpha (Standardised Items)	Items
.81	.78	80

Table 5. *Internal consistency coefficients and correlations between measures and items*

		Cronbach's Alpha	(1)	(2)	(3)	(4)	(5)
(1)	SRC	0.81	1				
(2)	ER	0.79	0.825**	1			
(3)	EC	0.74	0.150**	0.009**	1		
(4)	SIO	0.78	0.538**	0.733**	0.194**	1	

** Significant at 0.01.

In sum, as mentioned, the results of all correlations are significant. In fact, as it emerged from the path analysis and as shown in the figure below, the values of all correlations are >2.0, except for the correlation between environmental capabilities and sustainable innovation orientation, which resulted in a value < 2.0, which therefore had no significance.

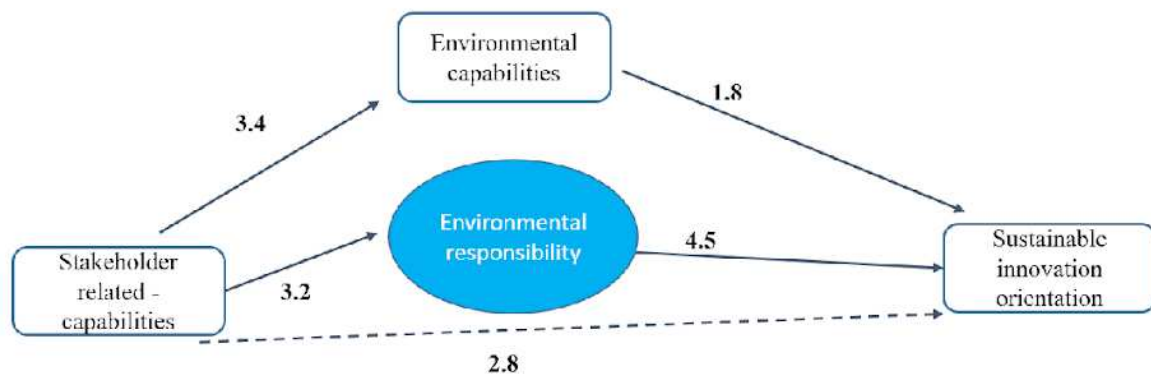


Figure 2. Research Model and SEM Results

5. Discussion

The current literature offers qualitative studies (Hockerts et al., 2009; Holmes and Smart, 2009; MacGregor and Fontrodona, 2008) and quantitative studies on corporate businesses (Ayuso et al., 2011). However, this analysis employs a quantitative study on SMEs.

From the findings, it emerged that the influence of stakeholders generates a sense of environmental responsibility. This result supports the *Hp1: Stakeholders' capabilities towards environmental responsibility are positively related to the environmental capabilities of SMEs*, and it is in line with the concept of stakeholder theory that states that the well-being of a firm relies on its propensity to satisfy shareholders' needs and expectations (Doma, 1999; Freeman, 1984). Firms seeking to engage with their stakeholders can capture their insights and embrace them within their organisational process (Ayuso et al., 2006). As declared by Fuller and Lewis (2002), SMEs depend on their stakeholders in their daily decision-making process.

The results of the non-significant Hp2: *The environmental capabilities of SMEs are positively related to their orientation towards sustainable innovation*, showed that SMEs do not employ any kind of sustainable practice due to their lack of resources and because they do not perceive any benefits to be derived from these practices (Nejati et al., 2014). They need more empirical evidence to convince them that being more environmentally responsible would improve their business performance (Roberts et al., 2006; Revell and Blackburn, 2007). Fieldwork (1995; 1998) shows that SMEs are not convinced that environmental practices enhance their business. This has resulted in their engaging less in acquiring environmental capabilities (Roberts et al., 2006). SMEs' owner-managers believe that their business impact on the environment is minimal and that it does not justify the cost of environmental practices (Tilley, 1999; Hillary, 2000; Drake et al., 2004; Pimenova and van der Vost, 2004; Revell and Blackburn, 2007; Bradfors and Fraser, 2008). This explains the unsupported hypothesis (i.e. Hp2), which shows that environmental capabilities are not significant and do not influence sustainable innovation orientation. It may be that, in Italy, SMEs still consider environmental practices to be peripheral to their business (Peter and Turner, 2004; Redmond et al., 2008). They will only embrace these practices if the business costs are reduced (Hillary, 2000; Revell and Blackburn, 2007).

The results supported the proposed Hp3: *Stakeholders' capabilities towards environmental responsibility are positively related to a perception of environmental responsibility within SMEs*. These results show that Italian SMEs are more prone to embed the environmental responsibility into their organisational culture if this is pushed from the outside. This emerged as a vivid sense of preserving for future generations (Ketata et al., 2015) and requiring a change in business and society (Larson, 2000). In these circumstances, SMEs tend to reduce the levels of their resource consumption and waste generation, creating a more efficient production process (Anttonen et al., 2013; Bakshi and Fiksel, 2003; Boons and Lüdeke-Freund, 2013; Boons et al., 2013). This new scenario is in line with the research design shown above (figure 2), where the role of stakeholder related-capabilities is highly significant to the process of sustainable innovation orientation.

This last statement enforces the positive correlation that emerged between environmental responsibility and sustainable innovation orientation, and also between stakeholder related-capabilities and sustainable innovation, as was suggested in the Hp4: *A perception of environmental responsibility within SMEs is positively related to their orientation towards sustainable innovation*, and in Hp5: *Stakeholders' capabilities towards environmental responsibility are positively related to an orientation towards sustainable innovation within SMEs*. From these results, the definition of sustainable innovation can be extended to include the concept of the environmental responsibilities of a firm and the stakeholders' capabilities. According to Duker, stakeholders are more conscious about how a firm treats the external environment and tend to promote businesses that are more environmentally friendly. Moving in this direction, firms are increasingly developing eco-sustainable projects. For instance, Italy was placed 7th in the 2017 Eco-innovation Index thanks to the adoption of innovative and sustainable approaches in its production processes (European Commission, 2017). This has enabled firms to meet stakeholders' expectations (Grant, 1991; Bowen et al., 2001; de Bakker and Nijhof, 2002; Strand and Freeman, 2015) and, in some cases, to improve the SMEs' environmental capabilities (EC) as internal resources (Bae and Lee, 2014; Baranova, 2017; Girod, 2017; Caloghirou et al. 2004). Moreover, these internal resources are not used in only one way, but they are combined with external resources in engaging with stakeholders and creating sustainable innovations (Ayuso et al., 2006; 2011). Nowadays, the concept of sustainable innovation is embedded within SMEs' philosophy (Kuckertz and Wagner, 2010; Ayuso et al., 2011; Roxas and Coetzer, 2012) and also influences stakeholders in their approach to business. As highlighted in the literature, a focus on environmental responsibility by stakeholders can enhance financial returns

(Mehrrouya and Chowdhury, 2018; Aquilani et al., 2016; Albort-Morant et al., 2016). This evokes a nexus of *responsiveness* (i.e. internal organisational social adaptation) and *responses* (i.e. external organisational social adaptation) in the new sustainable business environment.

6. Implications, Limitations and Further Research

Coming from the sustainable innovation management standpoint, our research has focused on the study of factors that influence an orientation towards sustainable innovation in a firm. We have studied the extent to which stakeholder-related capability and engagement determine the sustainable innovation orientation of SMEs in the knowledge-intensive context. In line with existing theories on sustainable innovation, we started by assuming that it is driven not only by factors within the firm and within its context but also by the relationship between the firm and its internal and external stakeholders. Ayuso et al. (2011) have claimed that stakeholder-related capabilities and engagement are relevant to the innovation process of firms. We support this, and we also add that this factor is important in the sustainable innovation orientation of SMEs, mediating through environmental responsibility and capabilities.

Conceptually, our research went on to suggest that stakeholder-related capabilities, both tangible and intangible, influence the environmental responsibility and related capabilities of the firm. We argue that these, in turn, influence the firm's orientation towards sustainable innovation. Our research therefore suggests that, in line with the findings of other context-specific research reported in the literature, organisations need to consider not only their own environmental responsibility but also that of relevant stakeholders when designing their business strategy. Additionally, we learned from the research participants that 'relevant stakeholders' is a term used to refer not only to customers, the government and non-government environmental lobby groups; current and potential employees, suppliers, competitors and many other entities, from the 'person on the street' to society in general, are also considered relevant stakeholders in the sustainable innovation management context. These findings, therefore, make it plausible for us to argue that our research has contributed to current efforts to understand the challenges in measuring the intensity of a firm's orientation towards sustainable innovation.

The nature of the data that support our findings is an additional strength of this research. The use of data collected from SMEs from the high-tech manufacturing sector in Italy brings together three complementary dimensions in our analysis, namely (1) the size of the organisations with their challenges and potential impact on socio-economic development; (2) the knowledge-intensive nature of the industry within which they operate; and (3) the cultural and socio-economic factors that define their context. The combination of these three elements means that our findings translate directly into recommendations for management practice on how to strengthen the sustainable orientation of a firm.

We deem that the environmental responsibility of an SME depends to a large extent on its own views and on the environmental capabilities of the owners, directors, employees, suppliers and other entities whose interests might be related to its success or failure. We therefore suggest that *sustainable conduct* should be considered as a criterion for stakeholder selection by SMEs as it is likely to have a direct effect on the organisation's reputation and thus, on its competitiveness. This is connected with a firm's sustainable innovation orientation in a knowledge-intensive setting, which in turn, influences its competitiveness. This resonates with the findings of Ayuso et al. (2011) and the application in contexts that require the engagement of multiple disciplines and stakeholders. We

therefore recommend that, in their relationship with stakeholders, SMEs are open to co-create, share and reuse environmental knowledge to increase competitiveness.

In addition to knowledge and its sharing, our research also highlights the importance of the co-creation of values to be shared between the firm and those entities whose interests are affected by its success or failure. Such a value co-creation process has previously been found to lead to benefits, which include improved sustainability governance (Ramaswamy and Ozcan, 2014). In turn, this results in increased competitiveness.

Finally, while our findings can be translated into management recommendations on how to strengthen the sustainable innovation orientation of an organisation, they are constrained by certain limitations derived from the nature of the origins of the data, that is, SMEs from the high-tech manufacturing sector in Italy. The following limitations are identified, which may in turn, provide opportunities for further research. First, our findings rely on the views of firms from a high-tech manufacturing sector, which is indicative of their engagement, to some extent, in innovation activities. Future research may be conducted to study sustainability orientation in organisations from a context characterised by a lesser degree of knowledge intensity. Second, our analysis is limited to Italy and therefore, to sustainable innovation in a specific societal, political and regulatory context. Our findings may not apply to other countries and therefore, we recommend a comparative study based on our findings. Finally, despite efforts to adopt a definition of SME that is representative of that adopted in other countries, our findings are related to organisations of a specific size, and this may, therefore, face similar challenges in terms of sustainable innovation strategies. We therefore recommend a comparative study that uses data from organisations with a wider range of sizes and from different industries and societal, political and regulatory contexts.

References

- Agle, B. R., Mitchell, R. K., & Sonnenfeld, J. A. (1999). Who matters to CEOs? An investigation of stakeholder attributes and salience. *Academy of Management Journal*, 42(5), 507-525.
- Albort-Morant, G., Leal-Millán, A., & Cepeda-Carrión, G. (2016). The antecedents of green innovation performance: A model of learning and capabilities. *Journal of Business Research*, 69(11), 4912-4917.
- Anttonen, M., Halme, M., Houtbeckers, E., & Nurkka, J. (2013). The other side of sustainable innovation: is there a demand for innovative services?. *Journal of cleaner production*, 45, 89-103.
- Amit, R., & Schoemaker P.J.H. (1993). Strategic assets and organizational Rent. *Strategic Management Journal*, 14, 33-46.
- Aquilani, B., Silvestri, C., cRuggieri, A. (2016). Sustainability, TQM and value co-creation processes: The role of critical success factors. *Sustainability*, 8(10), 995.
- Ayuso, S., Rodríguez, M.A. & Ricart, J.E. (2006). Using stakeholder dialogue as a source for new ideas: a dynamic capability underlying sustainable innovation, Corporate Governance. *The international Journal of Business in Society*, 6, (4), 475-90.
- Ayuso, S., Ángel Rodríguez, M., García-Castro, R., & Ángel Ariño, M. (2011). Does stakeholder engagement promote sustainable innovation orientation?. *Industrial Management & Data Systems*, 111(9), 1399-1417.

- Aragón-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of management review*, 28(1), 71-88.
- Australian Bureau of Statistics (ABS) (2002), Generosity of Australian Businesses, AGPS, Canberra.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage, *Journal of Management*, 17(1), 99-120.
- Balabanis, G.I. & Katsikea, E.S. (2003). Being an entrepreneurial exporter: does it pay?. *International Business Review*. 12, 233-252.
- Bhardwaj, P., Chatterjee, P., Demir, K. D., & Turut, O. (2018). When and how is corporate social responsibility profitable?. *Journal of Business Research*, 84, 206-219.
- Bell, G. G. (2005). Clusters, networks, and firm innovativeness. *Strategic Management Journal*, 26(3), 287–295.
- Blomqvist, K., Hara, V., Koivuniemi, J. & Aijo, T. (2004), Towards networked R&D management: the R&D approach of Sonera Corporation as an example, *R&D Management*, 34, (5), 591-603.
- Birch, J. (1989). Change, innovation, and job generation. *Journal of Labor Research*, 10(1), 33-39.
- Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9-19.
- Boons, F., Montalvo, C., Quist, J., & Wagner, M. (2013). Sustainable innovation, business models and economic performance: an overview. *Journal of Cleaner Production*, 45, 1-8.
- Bosch-Sijtsema, P., & Postma, T. J. B. M. (2004). A knowledge-based approach to innovation: An application for project-based firms. In *Proceedings of the European Conference on Organizational Knowledge, Learning and Capabilities (OKLC04)*, Innsbruck, Austria.
- Caloghirou, Y., Kastelli, I. & Tsakanikas, A. (2004), Internal capabilities and external knowledge sources: complements or substitutes for innovative performance?, *Technovation*, 24(1), 29-39.
- Chang, Y.C. (2003), Benefits of co-operation on innovative performance: evidence from integrated circuits and biotechnology firms in the UK and Taiwan, *R&D Management*, 33(4), 425-37.
- Chen, Y. Y., Yeh, S. P., & Huang, H. L. (2012). Does knowledge management "fit" matter to business performance?. *Journal of knowledge management*, 16(5), 671-687.
- Chin, W. W., & Newsted, P. R. (1999). Structural equation modeling analysis with small samples using partial least squares. *Statistical Strategies for Small Sample Research*, 2, 307-342.
- Christmann, P. & Taylor, G. (2002) Globalization and the environment: strategies for international voluntary environmental initiatives. *Academy of Management Executive*, 16, 3, 121–135.
- Clarysse, B., & Moray, N. (2004). A process study of entrepreneurial team formation: the case of a research-based spin-off. *Journal of Business Venturing* , 10(1), 55-79.
- Cruz-González, J., López-Sáez, P., Emilio Navas-Lopez, J., & Delgado-Verde, M. (2014). Directions of external knowledge search: investigating their different impact on firm performance in high-technology industries. *Journal of Knowledge Management*, 18(5), 847-866.
- Damanpour, F. (1987). The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors. *Journal of Management*, 13(4), 675-688.

- Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of knowledge management*, 9(3), 101-115.
- Del Giudice, M., & Straub, D. (2011). Editor's comments: IT and entrepreneurship: an on-again, off-again love affair or a marriage?. *MIS Quarterly*, 35(4), iii-viii
- Del Giudice, M., Scuotto, V., Garcia-Perez, A., & Petruzzelli, A. (2018). Shifting Wealth II in Chinese economy. The effect of the horizontal technology spillover for SMEs for international growth. *Technological Forecasting and Social Change*, 10.1016/j.techfore.2018.03.013
- Del Giudice, M., Khan, Z., De Silva, M., Scuotto, V., Caputo, F., & Carayannis, E. (2017). The microlevel actions undertaken by owner-managers in improving the sustainability practices of cultural and creative small and medium enterprises: A United Kingdom–Italy comparison. *Journal of Organizational Behavior*, 38(9), 1396-1414.
- Deniz-Deniz, M. C., & De Saa-Perez, P. (2003). A resource-based view of corporate responsiveness towards employees. *Academy of Management Journal*, 24(2), 299-319.
- Dezi, L., Pisano, P., Pironti, M., & Papa, A. (2018). Unpacking open innovation neighborhoods: le milieu of the lean smart city. *Management Decision*, 56(6), 1247-1270.
- Dierickx, I. & K. Cool (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35, 1504-1511.
- Dögl, C., & Behnam, M. (2015). Environmentally sustainable development through stakeholder engagement in developed and emerging countries. *Business Strategy and the Environment*, 24(6), 583-600.
- Edvinsson, L., & Sullivan, P. (1996). Developing a model for managing intellectual capital. *European management journal*, 14(4), 356-364.
- European Commission (2003), *Smes in Europe 2003*, Enterprise Publications, Luxembourg.
- Evangelista, F. (2005). Qualitative Insights into the International New Venture Creation Process. *Journal of International Entrepreneurship*, 3, 179-198.
- Fabricius, C., & Currie, B. (2015). Adaptive co-management. In *Adaptive management of social-ecological systems* (pp. 147-179). Springer, Dordrecht.
- Fernando, S., & Lawrence, S. (2014). A theoretical framework for CSR practices: integrating legitimacy theory, stakeholder theory and institutional theory. *Journal of Theoretical Accounting Research*, 10(1), 149-178.
- Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*, Pitman, Boston, MA.
- Gadenne, D.L., Kennedy, J. and McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics*, 84(1), 45-63.
- Garcia-Rodríguez, F. J. & Armas-Cruz, Y.M. (2007). Relation between social-environmental responsibility and performance in hotel firms. *International Journal of Hospitality Management*, 26(4), 824-839.
- Garriga, E. (2014). Beyond stakeholder utility function: Stakeholder capability in the value creation process. *Journal of Business Ethics*, 120(4), 489-507.

- Gefen, D., Straub, D., & Boudreau, M.C. (2000). Structural equation modeling and regression: guidelines for research practice. *Communications of the Association for Information Systems*, 1(1), 7.
- Go, J., & Pelozo, J. (2015). Intention Attributions as a Mediator Between Corporate Social Responsibility Initiatives and Stakeholder Perception. In Proceedings of the 2010 Academy of Marketing Science (AMS) Annual Conference (pp. 31-31). Springer, Cham.
- Grant, R.M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17, 109-22.
- Graves, S. B., & Waddock, S. A. (1994). Institutional owners and corporate social performance. *Academy of Management Journal*, 37(4), 1034-1046.
- Geissdoerfer, M., Bocken, N. M., & Hultink, E. J. (2016). Design thinking to enhance the sustainable business modelling process—A workshop based on a value mapping process. *Journal of Cleaner Production*, 135, 1218-1232.
- Gilley, K.M., Worrell, D.K., Davidson, W.N. III, & El-Jelly, A. (2000). Corporate environmental initiatives and anticipated firm performance: the differential effects of process-driven versus product-driven greening initiatives. *Journal of Management*, 26(6), 1199–1216.
- Goodman, E., Bamford, J., & Saynor, P. (Eds.). (2016). *Small firms and industrial districts in Italy*. Routledge.
- Grant, R.M. (1991). The Resource Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, 33(3), 114-135.
- Groundwork (1995). *Small firms and the environment*, A Groundwork Status Report, Groundwork, Birmingham.
- Groundwork (1998). *Small firms and the environment*, A Groundwork Status Report, Groundwork, Birmingham.
- Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic networks. *Strategic management journal*, 203-215.
- Hart, S. L. (1995). A natural-resource based view of the firm, *Academy of Management Review*, 20(4), 986-1014.
- Hart, S.L. and Sharma, S. (2005). Engaging fringe stakeholders for competitive imagination. *Academy of Management Executive*, 18(1), 6–18.
- Heffner, M., & Sharif, N. (2008). Knowledge fusion for technological innovation in organizations. *Journal of Knowledge Management*, 12(2), 79-93.
- Hillary, R. (2000), *Small and Medium-Sized Enterprises and the Environment*, Greenleaf Publishing, Sheffield.
- Hockerts, K., Morsing, M., Eder-Hansen, J., Krull, P., Midttun, A., Halme, M., Sweet, S., Davidsson, P., Sigurjónsson, T.O. & Nurmi, P. (2009), “CSR-driven innovation. Towards the social purpose business”, available at: www.csrinnovation.dk/graphics/Samfundsansvar.dk/csrinnovation/Dokumenter/csr-report_final.pdf (accessed 08 November 2017).

- Holmes, S. & Smart, P. (2009). Exploring open innovation practice in firm-nonprofit engagements: a corporate social responsibility perspective. *R&D Management*, 39(4), 394-409.
- Hurley, R.F. & Hult, G.T.M. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *Journal of Marketing*, 62(3), 42-54.
- Ibeh, K.I.N. (2004). Furthering export participation in less performing developing countries. *International Journal of Social Economics* 31:1/2, 94-110.
- Inan, G. G., & Bititci, U. S. (2015). Understanding organizational capabilities and dynamic capabilities in the context of micro enterprises: a research agenda. *Procedia-Social and Behavioral Sciences*, 210, 310-319.
- Itami, H. (1987). *Mobilizing Invisible Assets*. Harvard University Press, Cambridge, MA.
- Kalamas, M., Cleveland, M., & Laroche, M. (2014). Pro-environmental behaviors for thee but not for me: Green giants, green Gods, and external environmental locus of control. *Journal of Business Research*, 67(2), 12-22.
- Kaplan, R. S., & Norton, D. P. (2004). The strategy map: guide to aligning intangible assets. *Strategy & Leadership*, 32(5), 10-17.
- Kazadi, K., Lievens, A., & Mahr, D. (2016). Stakeholder co-creation during the innovation process: Identifying capabilities for knowledge creation among multiple stakeholders. *Journal of Business Research*, 69(2), 525-540.
- Ketata, I., Sofka, W., & Grimpe, C. (2015). The role of internal capabilities and firms' environment for sustainable innovation: evidence for Germany. *R&D Management*, 45(1), 60-75.
- Kogut, B. & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383-97.
- Koçak, A. & Edwards, V. (2005). Independence and co-operation among small businesses. *International Journal of Entrepreneurial Behaviour & Research*, 11(3), 186-200.
- Jamali, D. (2007). The case for strategic corporate social responsibility in developing countries. *Business and Society Review*, 112(1), 1-27.
- Johnson, D. (2001). What is innovation and entrepreneurship? Lessons for larger organisations. *Industrial and commercial training*, 33(4), 135-140.
- Johns, N. & Mattsson, J. (2005). Destination development through entrepreneurship: a comparison of two cases. *Tourism Management*, 26, 605-616.
- Jorna, R. (Ed.). (2017). *Sustainable innovation: The organisational, human and knowledge dimension*. Routledge.
- Larson, A. L. (2000). Sustainable innovation through an entrepreneurship lens. *Business strategy and the environment*, 9(5), 304.
- Lee, J. W., Kim, Y. M., & Kim, Y. E. (2018). Antecedents of adopting corporate environmental responsibility and green practices. *Journal of Business Ethics*, 148(2), 397-409.
- Leiponen, A. (2005). Organization of knowledge and innovation: the case of Finnish business services. *Industry and Innovation*, 12 (2), 185-203.

- Lewis, B.R., Templeton, G.F. and Byrd, T.A. (2005), "A methodology for construct development in MIS research", *European Journal of Information Systems*, 14(4), 388-400.
- Litz, R.A. (1996). A resource-based view of the socially responsible firm: stakeholder interdependence, ethical awareness, and issue responsiveness as strategic assets. *Journal of Business Ethics*, 15(12), 1355-563.
- Ludevid, M., 2000. *La Gestion Ambiental de la Empresa*. Ariel, Barcelona.
- Lumpkin, G., & Dess, G. G. (1996). Lumpkin, G.T.; Dess, G. G. (1996): Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.
- MacGregor, S.P. & Fontrodona, J. (2008). Exploring the fit between CSR and innovation, Working Paper WP-759, IESE Business School – Center for Business in Society, University of Navarra, Barcelona, July.
- Macpherson, A., Jones, O. and Zhang, M. (2004). Evolution or revolution? Dynamic capabilities in a knowledge-dependent firm. *R&D Management*, 34 (2), 161-77.
- Maier, M. A., Brem, A., & Kauke, M. (2016). Exploring the boundaries of corporate social responsibility and innovation: a conceptual framework of socio-political stakeholders and their integration into the innovation process. *International Journal of Innovation and Sustainable Development*, 10(3), 312-337.
- Martínez Lorente, A. R., Dewhurst, F., & Dale, B. G. (1999). TQM and business innovation. *European Journal of Innovation Management*, 2(1), 12-19.
- McKelvey, M., Lassen, A. (2013). *Managing Knowledge Intensive Entrepreneurship*, Edward Elgar: Cheltenham, UK.
- Mehrpouya, A., & Chowdhury, I. (2018). Re-Thinking the CSP-CFP Linkage: Analyzing the Mechanisms Involved in Translating Socially-Responsible Behavior to Financial Performance. In: *Advances in Strategic Management*, 39. Forthcoming.
- Mendoza, J. M. F., Sharmina, M., Gallego-Schmid, A., Heyes, G., & Azapagic, A. (2017). Integrating Backcasting and Eco-Design for the Circular Economy: The BECE Framework. *Journal of Industrial Ecology*, 21(3), 526-544.
- Moatari-Kazerouni, A., Hisarciklilar, O., Achiche, S., & Thomson, V. (2014). Impact of the business innovation strategy on new product development success measurement. In *Innovative Design and Manufacturing (ICiDM)*, Proceedings of the 2014 International Conference on (pp. 318-323). IEEE.
- Montiel, I. (2008). Corporate social responsibility and corporate sustainability: Separate pasts, common futures. *Organization & Environment*, 21(3), 245-269.
- Morgan, M. I., Hine, D. W., Bhullar, N., & Loi, N. M. (2015). Landholder adoption of low emission agricultural practices: A profiling approach. *Journal of Environmental Psychology*, 41, 35-44.
- Morris, M. H., & Lewis, P. S. (1995). The determinants of entrepreneurial activity: Implications for marketing. *European journal of marketing*, 29(7), 31-48.
- Naman, J. L., & Slevin, D. P. (1993). Entrepreneurship and the concept of fit: A model and empirical tests. *Strategic Management Journal*, 14137-153

- Nakata, C., & Viswanathan, M. (2012). From impactful research to sustainable innovations for subsistence marketplaces. *Journal of Business Research*, 65(12), 1655-1657.
- Nejati, M., Amran, A., & Hazlina Ahmad, N. (2014). Examining stakeholders' influence on environmental responsibility of micro, small and medium-sized enterprises and its outcomes. *Management Decision*, 52(10), 2021-2043.
- Nkoana, E. M., Waas, T., Verbruggen, A., Burman, C. J., & Hugé, J. (2017). Analytic framework for assessing participation processes and outcomes of climate change adaptation tools. *Environment, Development and Sustainability*, 19(5), 1731-1760.
- OECD (2017). Small, Medium, Strong. Trends in SMEs performance and business conditions. OECD publishing, Paris.
- Ommen, N. O., Blut, M., Backhaus, C., & Woisetschläger, D. M. (2016). Toward a better understanding of stakeholder participation in the service innovation process: More than one path to success. *Journal of Business Research*, 69(7), 2409-2416.
- Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24(3), 403-441.
- Ottman, J.A., Stafford, E.R., and Hartman, C.L. (2006). Avoiding green marketing myopia. *Environment*, 48, 5, 5-36.
- Paramanathan, S., Farrukh, C., Phaal, R., and Probert, D. (2004). Implementing industrial sustainability: the research issues in technology management. *R&D Management*, 34, 5, 527-537.
- Pera, R., Occhiocupo, N., & Clarke, J. (2016). Motives and resources for value co-creation in a multi-stakeholder ecosystem: A managerial perspective. *Journal of Business Research*, 69(10), 4033-4041.
- Pironti, M., Pisano, P., & Papa, A. (2018). Technology Resilience and the STORM Factory. *Symphonya. Emerging Issues in Management*, (2), 108-124.
- Polanyi, M. (1962). *Personal Knowledge: Towards a Post-critical Philosophy*. University of Chicago Press, Chicago, IL.
- Puncheva-Michelotti, P., Hudson, S., & Michelotti, M. (2018). The role of proximity to local and global citizens in stakeholders' moral recognition of corporate social responsibility. *Journal of Business Research*, 88, 234-244.
- Ramaswamy, V. & Ozcan, K. (2014). *The Co-Creation Paradigm*; Stanford University Press: Stanford, CA, USA, 2014.
- Redmond, J., Walker, E.A. and Wang, C. (2008). Issues for small businesses with waste management: resources or attitude?. *Journal of Environmental Management*, 88(2), 275-285
- Reed, A. M. (2008). *Human development and social power: Perspectives from South Asia*. New York: Routledge.
- Renouard, C. & Ezvan, C. (2018). Corporate social responsibility towards human development: A capabilities framework. *Business Ethics. A European Review*, 27(2), 144-155.
- Revell, A. and Blackburn, R.A. (2007). The business case for sustainability? An examination of small firms in the UK's construction and restaurant sectors. *Business Strategy and the Environment*, 16 (6), 404-420.

- Revell, A. and Rutherford, R. (2003). UK environmental policy and the small firm: Broadening the focus. *Business Strategy and Environment*, 12(1), 26-35.
- Riahi-Belkaoui, A. (2003). Intellectual capital and firm performance of US multinational firms: a study of the resource-based and stakeholder views. *Journal of Intellectual capital*, 4(2), 215-226.
- Rindova, V.P., Williamson, I.O., Petkova, A., and Sever, J.M. (2005). Being good or being known: an empirical examination of the dimensions, antecedents, and consequences of organizational reputation. *Academy of Management Journal*, 48, 6, 1033–1049.
- Ringle, C.M., Wende, S. and Will, S. (2005), SmartPLS 2.0 (M3) Beta, Hamburg, available at: www.smartpls.de
- Rodríguez, M.A., Ricart, J.E. and Sañchez, P. (2002). Sustainable development and the sustainability of competitive advantage: a dynamic and sustainable view of the firm. *Creativity and Innovation Management*, 11 (3), 135-46.
- Rothwell, R. (1989). Small firms, innovation and industrial change. *Small Business Economics*, 1, 51-64.
- Rothwell, R., Zegveld, W. (1982.) Innovation and the small and medium sized firm, University of Illinois at Urbana. Pinter: London, UK.
- Ruepert, A. M., Keizer, K., & Steg, L. (2017). The relationship between Corporate Environmental Responsibility, employees' biospheric values and pro-environmental behaviour at work. *Journal of Environmental Psychology*, 54, 65-78.
- Santoro, G., Bresciani, S., & Papa, A. (2018). Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*.
- Santoro, G., & Usai, A. (2018). Knowledge exploration and ICT knowledge exploitation through human resource management: A study of Italian firms. *Management Research Review*.
- Scuotto V, Del Giudice M, Della Peruta M, & Tarba S (2017a). The performance implications of leveraging internal innovation through social media networks: An empirical verification of the smart fashion industry. *Technological Forecasting and Social Change*, 120, 184-194.
- Scuotto V, Del Giudice M, Bresciani S, Meissner D (2017b). Knowledge Driven Preferences in Informal Inbound Open Innovation Modes: An Explorative view on Small to Medium Enterprises. *Journal of Knowledge Management*, 21, 640-655.
- Scuotto V, Caputo F, Del Giudice M, & Villasalero M (2017). A multiple buyer – supplier relationship in the context of SMEs' digital supply chain management. *PRODUCTION PLANNING & CONTROL*, 28, 1378-1388
- Sharma, S. & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategy Management Journal*, 19(8), 729-53.
- Shingo, S. (1986), Zero quality control: source inspection and the poka-yoke system, Productivity Press, Portland, Oregon.

- SME Corp (2012), Definition of SMEs, available at: www.smecorp.gov.my/v4/node/14 (accessed 02 December 2017).
- Spiller, R. (2000). Ethical business and investment: a model for business and society. *Journal of Business Ethics*, 27 (1/2), 149-160.
- Strand, R. (1983). A systems paradigm of organizational adaptations to the social environment. *Academy of Management Review*, 8(1), 90-96.
- Teece, D.J. (2009). *Strategic Management and Dynamic Capabilities*. Oxford University Press. New York.
- Tilley, F. (1999). The gap between the environmental attitudes and the environmental behaviour of small firms. *Business Strategy and the Environment*, 8 (4), 238-248.
- Varadarajan, R., & Kaul, R. (2017). Doing well by doing good innovations: alleviation of social problems in emerging markets through corporate social innovations. *Journal of Business Research*, 86, 225-233.
- Waligo, V. M., Clarke, J., & Hawkins, R. (2014). The leadership–stakeholder involvement capacity’ nexus in stakeholder management. *Journal of Business Research*, 67(7), 1342-1352.
- Walsh, J. P. (2005). Book review essay: Taking stock of stakeholder management.
- Wang, K., Clegg, S. R., Tang, C., & Fang, Y. (2015). Chapter eleven incremental innovation and knowledge exploitation in SMES: Learning and social facilitation. *From Knowledge Management to Learning Organisation to Innovation: The Way Ahead!*, 231.
- Wartick, S. L., & Cochran, P. L. (1985). The evolution of the corporate social performance model. *Academy of Management Review*, 10(4), 758-769.
- Weng, R. H., & Huang, C. Y. (2017). The impact of exploration and exploitation learning on organisational innovativeness among hospitals: an open innovation view. *Technology Analysis & Strategic Management*, 29(2), 119-132.
- West, M. A., & Altink, W. M. (1996). Innovation at work: Individual, group, organizational, and socio-historical perspectives. *European Journal of Work and Organizational Psychology*, 5(1), 3-11.
- Winter, S. (1987). Knowledge and competence as strategic assets, In D. Teece (ed.), *The Competitive Challenge*. Ballinger, Cambridge, MA, pp. 159-184.
- Wood, D. J. (1991). Corporate social performance revisited. *Academy of Management Review*, 16(4), 691-718.
- Zahra, S. A. (1991). Predictors and financial outcomes of corporate entrepreneurship: An exploratory study. *Journal of business venturing*, 6(4), 259-285.
- Zahra, S. A. (1993). Environment, corporate entrepreneurship, and financial performance: A taxonomic approach. *Journal of business venturing*, 8(4), 319-340.