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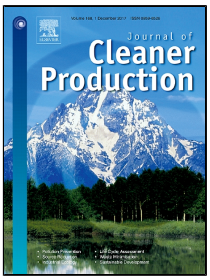

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Eleonora Annunziata, Tommaso Pucci, Marco Frey, Lorenzo Zanni

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The role of organizational capabilities in attaining corporate sustainability practices and economic performance: evidence from Italian wine industry

Eleonora Annunziata*, Institute of Management - Scuola Superiore Sant'Anna, Piazza Martiri della Libertà 24, 56127 Pisa, Italy, e-mail: e.annunziata@sssup.it, phone: (+39) 050 882782, fax: (+39) 050 883936

Tommaso Pucci, Dipartimento di Studi Aziendali e Giuridici, Università degli Studi di Siena, Piazza S. Francesco 8, 53100 Siena, Italy, e-mail: tommaso.pucci@unisi.it , phone: (+39) 0577 232659, fax: (+39) 0577 232675

Marco Frey, Institute of Management - Scuola Superiore Sant'Anna, Piazza Martiri della Libertà 24, 56127 Pisa, Italy, e-mail: frey@sssup.it, phone: (+39) 050 882782, fax: (+39) 050 883936

Lorenzo Zanni, Dipartimento di Studi Aziendali e Giuridici, Università degli Studi di Siena, Piazza S. Francesco 8, 53100 Siena, Italy, e-mail: lorenzo.zanni@unisi.it, phone: (+39) 0577 232659, fax: (+39) 0577 232675

* Corresponding author

Abstract

Corporate sustainability assigns firms the key role of integrating and pursuing economic, environmental and social goals. Thus, firms struggle to link corporate sustainability practices and organizational performance. These efforts require enabling factors, namely organizational capabilities, which have yet to be identified and studied. Applying a dynamic resource-based perspective, the present study aims to explore the role of three organizational capabilities for implementing proactive socio-environmental practices and related economic performance: collaboration with partners-suppliers, adoption of advanced technologies and product innovation. By estimation of a structural equation model with survey data from 357 firms in the Italian wine industry, the results indicate that collaboration with partners-suppliers and product innovation capability foster the implementation of proactive socio-environmental practices. Hence, the role of fostering corporate sustainability is not accidental but can be managed by taking different dimensions into account, namely motivation within the firm and interaction at organizational as well as systemic levels. In addition, the direct link between the proactive socio-environmental practices and economic performance, and their positive mediating effect on the capabilities identified and economic performance highlight the opportunity to trigger a virtuous circle to address corporate sustainability because organizations are involved at strategic and operational levels. These results provide important managerial implications. First, companies oriented towards sustainability should identify and develop specific capabilities rooted in the organization to implement practices that are a source of competitive advantage in a market increasingly conscious and attentive to sustainability issues, such as the wine industry. Second, the development of specific organizational capabilities can overcome some possible disadvantages associated with young and small-medium enterprises interested in implementing the concept of corporate sustainability.

Keywords: Corporate sustainability, Organizational capabilities, Mediating effect, Proactive socio-environmental practices, Economic performance, Wine industry.

- Specific organizational capabilities & practices for sustainability in wine sector
- Structural equation model with survey data from 357 Italian wineries
- Collaboration partners-suppliers & product innovation foster proactive sustainable practices
- Proactive sustainable practices positively affect economic performance
- Proactive sustainable practices mediate capabilities & economic performance

Wordcount: 8817

1. Introduction

It is currently widely accepted that firms play a key role in sustainable development, because as productive actors in the economy they contribute to 'the large system in which sustainability may or may not be achieved' (Jennings and Zandbergen, 1995). This key role of firms has led to develop the concept of corporate sustainability (Dyllick and Hockerts, 2002). Corporate sustainability requires firms to take their environmental and social impacts into account in concert with their economic objectives. In this context, it is crucial to know and analyse the initiatives and measures that help firms implement proactive socio-environmental practices (Rashid et al., 2014) and consequently improve their economic performance (Wagner, 2015). Some scholars have taken a resource-based view to understand how firms deal with corporate sustainability by focusing mainly on environmental dimension (Russo, 2003). These studies found that firms have different capabilities for developing proactive environmental practices (Russo and Fouts, 1997; Christmann, 2000; Darnall and Edwards, 2006). However, there is still a shortage of research examining how these capabilities affect the foundations upon which both social and environmental issues are concretely implemented and how related economic performance is achieved within corporate sustainability (Gelhard and von Delft, 2016; Hart and Dowell, 2011). In particular, it is worth investigating companies capabilities that "address rapidly changing environments" (Teece at al., 1997) as such challenges and pressures for the effective implementation of corporate sustainability.

Using a dynamic resource-based perspective (Helfat and Peteraf, 2003), the present study explores the antecedent role of three organizational capabilities, which are a fundamental part of company business strategy, especially strategic flexibility for addressing alternative courses of action in the implementation of proactive socio-environmental practices and their mediating role on economic performance: collaboration with partners-suppliers, adoption of advanced technologies and capacity for product innovation.

The study collected data from the Italian wine industry, because Italy is a top wine-producer in term of volume and has the greatest number of wineries (Gilinsky et al., 2015). The Italian wine industry can be characterized as follows: *"third worldwide for vineyard surface (642,000 hectares), second in the export of quality wines (around 22 million hl); in turnover (around € 10 billion) and in export value (around € 5 billion). It ranks first in quality wines produced in the past five years (around 45 million hl), in the number of wineries (384,000) and in the biodiversity of cultivated grapes (442)*" (Fortis and Sartori, 2016). In addition, Italian agriculture is a European frontrunners in recycling, industrial waste recovery and reducing the emissions of carbon dioxide (Fortis and Sartori, 2016).

The wine industry is an interesting research setting because its socio-environmental performance and related competitive advantage have not yet received as much attention for as industries often characterized as 'dirty' (e.g. chemical and mining industries). It has recently adopted various proactive sustainable practices that influence all its business functions and strategies (Santini et al., 2013). The wine industry faces a number of socio-environmental issues (Marshall et al., 2005; Atkin et al., 2012; Ene et al., 2013) and is influenced by consumer attitudes toward sustainable wine (Forbes et al., 2009; Pomarici and Vecchio, 2014; Bonn et al., 2016). Sustainable practices have already been implemented by many firms of major wine producing countries, such as Italy, France, Spain, and USA and can help to anticipate regulation and address social and environmental issues dimensions (Pullman et al., 2010; Szolnoki, 2013). The social practices regard external (consideration of new generations, support for local communities, etc.) and internal dimensions (improvement in working conditions for employees, developmental training, etc.) (Pullman et al., 2010; Szolnoki, 2013; Santini et al., 2013). The environmental practices also encompass external (water and energy conservation, land stewardship, etc.) and internal dimensions (use of renewable energy, recycling and reuse of organic and packaging materials, reduction of herbicides and pesticides, etc.) (Szolnoki, 2013; Pullman et al., 2010; Pomarici et al., 2015; Symbola and Coldiretti, 2016). Thus the wine industry is a changing business environment that is developing specific organizational capabilities that aim to achieve a clear set of tasks through organizational resources (Helfat and Peteraf, 2003).

The remainder of the paper is structured as follows. In section 2, we review literature on corporate sustainability and proactive socio-environmental practices, economic performance and their relationship to the above-mentioned organizational capabilities. Based on these theoretical considerations we propose seven hypotheses. Section 3 that describes the methods used to sample data and measure constructs. Section 4 reports descriptive statistics, measurement reliability, factor analysis, correlation coefficients between the constructs, discriminant validity, convergent validity, and the results of structural equation modelling. The findings are discussed in section 5 and section 6 concludes, describing implications and possible directions for future research.

2. Theoretical background and hypotheses

2.1 The relationship between corporate sustainability, proactive socio-environmental practices and organizational capabilities

The concept of corporate sustainability (Dyllick and Hockerts, 2002; Lozano, 2008) requires firms to interconnect and integrate economic, environmental and social concerns at different levels. Despite lack of agreement among scholars about a common definition, corporate sustainability "recognizes that corporate growth and profitability are important, [but] it also requires the corporation to pursue societal goals, specifically those relating to sustainable development – environmental protection, social justice and equity, and economic development" (Wilson, 2003). Therefore firms need to address societal objectives that are "inextricably, connected and internally interdependent" (Bansal, 2002). Processes towards the development of corporate sustainability faces different pressures and tensions (Hahn et al., 2015). First, stakeholders with different interests pressure firms to adopt proactive sustainable practices (Delmas, 2001; Henriques and Sadorsky, 1999; Sharma and Henriques, 2005; Darnall et al., 2010). Because of the wide variety of stakeholders and their sustainability needs, firms have to allocate their limited resources to the most urgent (Hart and Sharma, 2004; Escobar and Vredenburg, 2011). Second, firms need to integrate economic, environmental and social performance (Dyllick and Hockerts, 2002; Bansal, 2005) and transform

their efforts towards sustainability into competitive advantage (Lucas, 2010), product differentiation (Bonifant et al., 1995) and cost reductions (Christmann, 2000). Thus, proactive socio-environmental practices reflect various facets for implementing corporate sustainability in business practices, addressing internal and external sustainability issues, and reconciling company orientation with stakeholders' needs (Kassinis and Vafeas, 2006; Hart and Milstein, 2003; Spiller, 2000). These practices belong to categories that are independent of the kind of industry in which they are implemented, but are linked to major stakeholder groups, namely the community, environment, employees, customers, suppliers and shareholders (Spiller, 2000).

In this challenging context, a resource-based view of the firm (Barney, 1991) identifies organizational resources and capabilities as enablers to link corporate sustainability practices and organizational performance (Russo and Fout, 1997; Sharma and Vredenburg, 1998). Organizational capabilities consist in a firm's capacity to "perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result" (Helfat and Peteraf, 2003). These capabilities are based on tacit learning (Hart, 1995), which is difficult to identify and imitate by competitors (Teece, 1987) and is not traded in markets (Hart, 1995). They are path-dependent on specific actions and processes embedded within organizations (Teece et al., 1997). They span different functions and levels within an organization and can pursue multiple uses (Amit and Schoemaker, 1993).

These capabilities may be operational and dynamic according to their purpose and intended outcomes (Winter, 2003). It is therefore crucial to identify and examine organizational capabilities and their role in the implementation of corporate sustainability. The present study explores collaboration with partners-suppliers, adoption of advanced technologies and capacity for product innovation (Christmann, 2000; Hofmann et al. 2012), as organizational capabilities forming an essential part of company business strategy in many industries (including the wine industry). In particular, these capabilities represent the ability to redesign and adapt company operations in order to ensure the alignment with company sustainability-oriented strategy (Gelhard and von Delft, 2016).

2.2 Collaboration with partners-suppliers and proactive socio-environmental practices

Firms are increasingly facing the complexity of sustainability challenges through the collaboration with stakeholders along the value chain (Srivastava, 2007). Sharma and Verdenburg (1998) defined collaboration with stakeholders as "the ability to establish trust-based collaborative relationships with a wide variety of stakeholders". The literature does not identify the most effective category of stakeholders in the development of proactive sustainable practices (Alt et al., 2015). Some studies have found that the importance of different stakeholders varies according to the context (Rueda-Manzanares et al., 2008) and priority that managers give to stakeholder claims (Mitchell et al., 1997). Various authors consider the importance of primary stakeholders for proactive sustainable practices, in particular value chain participants such as strategic partners in the supply chain and suppliers (Henriques and Sadorsky, 1999; Hofmann et al., 2012). Collaboration with partners and suppliers therefore fosters the development of integrated practices that effectively tackle social and environmental issues (Azzone et al., 1997; Boyd et al., 2007) and can integrate internal and external resources for the implementation of proactive socio-environmental practices (Teece et al., 1997, Lee and Kim, 2011). Based on the above concepts, we argue that collaboration with partners-suppliers positively affects the implementation of proactive socio-environmental practices and implies the following hypothesis.

Hypothesis 1 (H1): The capacity to collaborate with partners-suppliers is positively associated with a firm's proactive socio-environmental practices.

2.3 Capacity for product innovation and proactive socio-environmental practices

Danneels (2002) identified product innovation as a mechanism that over time can yield organizational renewal of firm-level competences. New product development does not just support the expansion of a firm's portfolio of products, but also the development of internal knowledge and acquisition of external knowledge (Jiménez-Jiménez and Sanz-Valle, 2011). Moreover, the product innovation

process requires cultural patterns and communication systems that facilitate learning and knowledge acquisition in the firm (Cassiman and Veugelers, 2006).

In recent years, certain studies have identified the integration of social and environmental issues in product innovation by investigating the implementation of sustainable product innovation and enabling factors (Geffen and Rothernberg, 2000; Zhu and Sarkis, 2007; Verghese and Lewis, 2007). In particular, Chen (2008) highlighted the relationship with specific competences that a company should acquire or develop in order to carry out a process for sustainable product innovation. Sustainable product innovation therefore increases organizational maturity and provides strategic and economic viable novelty and competences that can foster actions to address the challenge of corporate sustainability. In line with the above statement, we assert that product innovation has a positive effect on the implementation of proactive socio-environmental practices and propose the following hypothesis.

Hypothesis 2 (H2): The capacity for product innovation is positively associated with a firm's proactive socio-environmental practices.

2.4 Adoption of advanced technologies and proactive socio-environmental practices

Advanced manufacturing technology is an important source of competitive advantage for firms through increased productivity, improved process efficiencies and greater flexibility with primary stakeholders such as suppliers and customers (Swink and Nair, 2007). Adoption of advanced manufacturing technology includes use of advanced technologies and integration of computer applications in production planning and process (Isa and Foong, 2005).

A number of studies show that advanced technologies make firms more able to adapt to changes in the demand for products (Zairi, 1993) and decrease costs associated with the reduction in inventory levels and cost outcomes waste (Heim and Peng, 2010). Another positive impact of advanced technologies is related to adoption of resource planning technologies, which improve coordination in

materials, labour and equipment use (Monk and Wagner, 2006). These benefits can support the implementation of proactive socio-environmental practices, because adopting advanced technologies requires organizational learning (e.g. worker training) and favours company evolution (Eisenhardt and Martin, 2000; Zollo and Winter, 2002). We therefore posit that advanced technologies positively affect the implementation of proactive socio-environmental practices and imply the following hypothesis.

Hypothesis 3 (H3): The capacity to adopt advanced technologies is positively associated with a firm's proactive socio-environmental practices.

2.5 Relationship between proactive socio-environmental practices and economic performance

Adoption of proactive socio-environmental practices reflects the actual efforts to implement corporate sustainability in order to tackle challenges related to the internal and external dimensions of companies and the need of major stakeholder groups (Spiller, 2000; Kassinis and Vafeas, 2006; Delmas and Montiel, 2009). Socio-environmental practices affecting the external dimension of companies consists in support for education and job training programmes, involvement in community projects, support of the local community, water and energy conservation, etc., whereas practices addressing the internal dimension include job security, recycling and reuse of organic and packaging materials, favouring local suppliers etc..

Integration of corporate sustainability practices yields environmental and social benefits, but whether it yields economic benefits is controversial (Wagner, 2015). Accordingly, various studies have investigated the relationship between corporate sustainability practices and economic performance (Hart and Dowell, 2011; Molina-Azorín et al., 2009; Russo and Fouts, 1997). Early empirical studies produced inconclusive results (Russo and Fouts, 1997; Hart and Ahuja, 1996; Baker and Sinkula, 2005), while later studies identified a positive impact of formal corporate environmental management systems on both environmental and economic performance alike (Barnett and Salomon, 2012;

Melnyk et al., 2003). Moreover, some recent studies confirm a positive relationship between corporate environmental practices and corporate financial performance by distinguishing internal (pollution prevention and clean technology) from external environmental practices (product stewardship and sustainability vision) (Miroshnychenko et al., 2017). It is therefore crucial to investigate the effect of a firm's measures to reduce (internal and external) environmental and social impacts on its economic performance. Based on the above discussion, we argue that the implementation of proactive socio-environmental practices positively affects a firm's economic performance and propose the following hypothesis.

Hypothesis 4 (H4): The adoption of proactive socio-environmental practices is positively associated with a firm's economic performance.

Some studies have highlighted that corporate sustainability helps firms obtain business benefits that can arise in different ways, but particularly by reducing their costs of doing business (Christmann, 2000; Weber, 2008). These findings encourage companies to implement proactive socio-environmental practices, triggering a virtuous circle between these practices and associated organizational capabilities. In fact, proactive socio-environmental practices create and deploy expertise that strengthens existing organizational capabilities (Russo, 2009). Since Plaza-Úbeda et al. (2009) identified additional conditions necessary in companies for sustainable improvements to materialize, we argue that a firm's proactive socio-environmental practices takes a positive mediating role in relationships between organizational capabilities (such as collaboration with partners-suppliers, adoption of advanced technologies and capacity for product innovation) and a firm's economic performance, and imply the following hypotheses.

Hypothesis 5 (H5): A firm's proactive socio-environmental practices positively mediate the relationship between the capability to collaborate with partners-suppliers and the firm's economic performance.

Hypothesis 6 (H6): A firm's proactive socio-environmental practices positively mediate the relationship between the capability for product innovation and the firm's economic performance.

Hypothesis 7 (H7): A firm's proactive socio-environmental practices positively mediate the relationship between the capability for adopting advanced technology product innovation and the firm's economic performance.

Figure 1 illustrates the overall theoretical model.

Insert Figure 1 here

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3. Methods

3.1 Sample and data collection

The proposed framework was tested in the wine industry, which while being a world business with a "hyper-competitive" trading environment, has not yet received as much attention for its socio-environmental performance as organizations operating in other manufacturing settings (Ene et al., 2013). This industry increasingly faces pressures to improve its socio-environmental performance and recently adopted several proactive sustainable practices, which can result in product innovation, pollution prevention, landscape protection, stewardship of natural resources, and so forth (Pullman et al., 2010; Marshall et al., 2005). The Italian wine industry is an interesting field of research, because Italy is the second largest wine producer with a world market share of 16.4% and a turnover of EUR 10.5 billion (Mediobanca, 2016). Moreover, Italian wine companies are integrating social and

environmental objectives into their strategy and every-day operations (Szolnoki, 2013; Gilinsky et al., 2015).

The study uses data collected from May 2015 to October 2015 by a questionnaire administered to 4599 Italian wineries, in collaboration with the Italian multimedia publishing group "Gambero Rosso" and the Italian network for the promotion of sustainable development in the wine industry "Forum for Environmental Sustainability of Wine". In order to reduce potential response bias, we used some procedural remedies. First, the questionnaire was tested and validated by a panel of experts: three wine managers particularly sensitive to environmental and social aspects of the business, and a journalist from the Gambero Rosso publishing group. Second, we guaranteed complete anonymity of respondents and pledged to provide an executive summary of the main findings on completion of the study. Third, we avoided use of ambiguous or unfamiliar terms, vague concepts and complicated syntax in order to make the questions simple, specific, and concise. We also avoided bipolar numerical scale values (e.g. -3 to 3) providing verbal labels for the midpoints of scales.

Chief executive officers (CEOs) were selected as informants. Each executive received a copy of the questionnaire via e-mail (or fax, upon request) and a cover letter describing the general purpose of the study. The number of firms responding to the request to complete the questionnaire was 357, resulting in an overall response rate of 7.8%, a redemption consistent with other research conducted on these issues (Atkin et al., 2012; Pullman et al., 2010). The respondents were small and medium firms that produce and bottle wine with their own label. Those located in northern Italy numbered 154 (43.1%), central Italy 110 (30.8%) and southern Italy 93 (26.05%). The 357 valid responses correspond to a random sample with 95% of confidence level and a sample error of 5%. Furthermore, the size of the sample is consistent with similar empirical research conducted on the same topic (Silverman et al., 2005; Pullman et al., 2010; Sinha et al., 2010; Cordano et al., 2010).

3.2 Measurement

Perceptual measures are commonly used in management and strategy-related studies especially when the variables investigated are hard to measure or not available (Sapienza et al. 1988). We have adapted most of the selected constructs from scales used by other scholars. All items were measured on a five-point Likert scale ranging from 1 ("not important/agree") to 5 ("the highest importance/agreement").

Economic Performance

Economic performance consisted in the component of competitiveness related to cost reduction that results from proactive socio-environmental activities. Respondents provided a self-assessment on seven items that enquired about the effect of sustainable management activities on different aspects related to cost advantage (Atkin et al., 2012; Christmann, 2000), namely reduction in regulatory fines (Corbett and Kirsch, 2001), cost of insuring against risks (Sharma, 2001), increased operational efficiencies (Sroufe, 2003; Acquaah, 2007) and effective resource management (Atkin et al., 2012). Since economic performance is determined by various factors, different dimensions were derived as latent variable in line with prior literature (Sharma 2001).

Proactive socio-environmental practices

Proactive socio-environmental practices were determined by assessing sixteen items related to initiatives and actions adopted by wineries in order to reduce their social and environmental impacts, such as improved worker health and morale, good community relationships, landscape protection, reduction of energy consumption, development of renewable energy sources, resource efficiency, organic or biodynamic farming and integrated pest/crop management (Seelos and Mair, 2005; Lankoski, 2008; Szolnoki, 2013). The survey asked the respondents to rate the importance of these activities in the firm's business, because there is a lack of independently verified data on the firms' socio-environmental practices of firms (Sharfman, 1996).

Collaboration with partners-suppliers

Collaboration with partners-suppliers was determined by evaluating five items regarding the selection and evaluation of strategic partners in the supply chain and suppliers' socio-environmental performance, raising awareness of partners and suppliers about sustainable development, continuous

dialogue with partners and suppliers, and collaborative relationships (Sharma and Verdenburg, 1998; Darnall et al., 2010).

Capacity for product innovation

Capacity for product innovation was defined by assessing four items related to actions of product innovation and differentiation with integration of the socio-environmental dimension in order to strengthen brand, build consumer loyalty, charge premium prices and identify emerging market opportunities and dynamism (Atkin et al., 2012; Acquaah, 2007; Lee and Miller, 1999; Homburg et al., 1999).

Adoption of advanced technologies

Adoption of advanced technologies was determined by evaluating five items regarding use of advanced technologies in the production process (Isa and Foong, 2005), integration of advanced technology orientation in product development (Zhou and Li, 2010; Gatignon and Xuereb, 1997), integration of advanced technology orientation in firm's strategy and operation (Sainio et al., 2012; Zhou and Li, 2010), and cooperation with universities and research institution for the implementation of advanced technologies in product development (Swink and Nair, 2007).

Control variables

In order to control for firm *size*, we used the natural logarithm of the number of employees in our analysis because the number of employees is likely to have a skewed distribution, and because a logarithmic transformation yields consistent results as suggested by previous studies (Agarwal, 1979; Darnall et al., 2010).

We also considered *age* of the wineries by using the natural logarithm of the number of years since the companies were established to linearize the relationship. Company age is an important control variable since it is linked to brand building programs (Beverland, 2006).

We controlled for *business model type* that can take new product development dimension, market management and organizational processes-oriented dimensions (Casprini et al., 2014). These three dimensions represent the firm's possible behaviour and the evolution of its behaviour in order to

create and capture value (Casprini et al., 2014), and also to tackle sustainability challenges (Boons et al., 2013).

We considered *export* since the more export-oriented the organization, the higher the benefits it may obtain from visible actions taken to implement sustainable development. Since Nakamura et al. (2001) argue that foreign customers are less able to monitor a firm's socio-environmental performance, export-oriented organizations should make an effort to implement and communicate their socio-environmental practices to customers. Moreover, international markets tend to consider the sustainability dimension to be increasingly crucial in the wine sector (Marshall et al., 2010).

We also considered whether or not firms used a *family governance*, i.e. were owned and managed by family members. Some studies showed that many family firms' decision-making processes are driven by something other than financial return alone (Gomez-Mejìa et al., 2007).

Finally, we considered firms' *communication expenditures* because firms build reputation through communication and transparency, inviting external stakeholders' scrutiny of their operations (Hart, 1995). Communication expenditures can therefore be a proxy of efforts to communicate "the social and environmental effects of organizations' actions to particular interest groups within society and to society at large" (Gray et al., 1996).

4. Results

4.1 Results of the Measurement Model

The descriptive statistics and correlation matrix of variables analysed in the study are shown in Table 1.

Insert Table 1 here

Since some of our constructs were adapted from earlier work, we re-validated the internal reliability, discriminant validity and convergent validity of the measures before testing the hypothesized model.

Table 2 describes the measures description and properties of all the constructs used in the study.

Insert Table 2 here

Internal reliability was examined by the Cronbach's α and the composite reliability (CR). All constructs had a Cronbach's α higher than 0.7. CR values varied between 0.74 and 0.90, and were all therefore above the usual threshold of 0.7, accepted in the literature (Bagozzi and Yi, 1998). Both indicators highlighted a high level of internal consistency for all the constructs. Items were factor-analysed using maximum likelihood estimation and varimax rotation. Standardized factor loadings varied between 0.50 and 0.90, all above the threshold of 0.5 suggested by the literature (Chin, 1988). Discriminant validity was examined using three techniques: the square root of the average variance extracted (AVE) (Fornell and Larcker, 1981), cross-loadings and confidence interval criterion (Anderson and Gerbing, 1988). First, AVE square roots for each construct were all higher than the correlation between the construct and each other (Fornell and Larcker, 1981) (Table 2). Second, the factor loadings were higher than cross-loadings. Last, the value of 1 was not included within the computed confidence interval for paired correlations among latent variables (Torkzadeh et al., 2003) (Table 1). These three results suggested that we have satisfactory discriminant validity.

Finally, the convergent validity was ensured by AVE values for each construct higher than 0.5, as accepted in the literature (Fornell and Larcker, 1981). This indicates satisfactory convergent validity of the measurements. These results indicate that the reliability and validity of the measurements in this study are acceptable. The variance inflation factor (VIF) was run to test for multicollinearity among the variables. The mean VIF of 1.53 was acceptable and in line with the cut-off value of 10.0 recommended in the literature (Kutner et al., 2004).

4.2 Results of the Structural Model

We used structural equation modelling to verify the hypotheses and applied STATA 14 software to obtain the empirical results. Table 3 shows the results of the path analysis on the hypothesized structural equation model. The goodness-of-fit test statistics of the model indicated good fit in line with all threshold values accepted in the literature (Hair et al. 2009): $\chi^2 = 1475.907$; $df(\chi^2) = 846$; $\chi^2/df = 1.745$; CFI = 0.919; TLI = 0.911; AIC = 33539.188; RMSEA = 0.046; p(RMSEA < 0.05) = 0.968; R^2 (*Socio-environmental practices*) = 0.483; R^2 (*Economic performance*) = 0.513.

Insert Table 3 here

SRMR is not reported because of missing values: two observations had missing data for some items. The results of path analysis do not present particular difference by including or excluding the two observations with missing values in some items.

The hypotheses were assessed jointly by the structural model (Figure 1). Based on Table 3, support was found for H1 and H2 that propose a positive relationship between the fulfilment of collaboration with partners-suppliers and capability for product innovation, and firm's proactive socio-environmental practices. It also emerged that H3 proposing a positive relationship between the adoption of advanced technologies and the firm's proactive socio-environmental practices, was not verified. H4, predicting that there is a positive relationship between socio-environmental practices and the firm's economic performance, received support. Figure 2 shows the effects of decomposition by organizational capabilities – proactive socio-environmental practices – economic performance paths as recommended by Preacher et al. (2006). It provides 95% bootstrap confidence intervals for these indirect effects. In particular, Figure 2 shows partial mediation between variables (Little et al., 2007): the mediation exists and is partial because both indirect and direct relationships between two out of three of the organizational capabilities analysed, i.e. collaboration with partners-suppliers and

product innovation capability, and the firm's economic performance were both significant. Collaboration with partners-suppliers and product innovation capability have a direct effect on the firm's economic performance but also a mediated effect because they foster development of proactive socio-environmental practices. The size of the mediated effect was particularly evident in the case of collaboration with partners-suppliers (indirect effect = 0.161 vs direct effect = 0.214) and weaker, albeit significant, for product innovation capacity (indirect effect = 0.037 vs direct effect = 0.347). The result seems plausible: "firms' commitment to eco-innovate does not differ substantially from other types of innovation activities" (Muscio et al., 2013, p. 344) and it is accepted that sustainable innovation is positively and directly associated with the economic performance of firms (Boons et al., 2013). Instead, collaboration with partners-suppliers not only directly improves the firm's economic performance but also indirectly increases the effectiveness of proactive socio-environmental practices (Alt et al., 2015). Accordingly, H5 and H6 proposing that firms' proactive socio-environmental practices mediate the positive relationship between fulfilment of collaboration with partners-suppliers and product innovation capacity, and firm's economic performance, were supported. With regard to the positive mediating effect of firm's proactive socio-environmental practices on the relationship between the adoption of advanced technology and firm's economic performance, H7 was not supported because direct and indirect relationships between the adoption of advanced technologies and firm's economic performance were not significant.

A firm's proactive socio-environmental practices and its economic performance also proved unaffected by firm size, firm age, implementation of the market management business model, family governance and communication expenditures. There were some negative effects of export orientation on firms' proactive socio-environmental practices and their economic performance. Moreover, adoption of socio-environmental practices was positively affected by an organizational processes-oriented business model.

Insert Figure 2 here

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5. Discussions

This study shows that some organizational capabilities such as collaboration with partners-suppliers and product innovation capability foster implementation of proactive socio-environmental practices. These organizational capabilities signal an organization's maturity, strategic and economic viable novelty and competences, and integrate internal and external resources for the implementation of proactive socio-environmental practices (Lee and Kim, 2011). Another organizational capability, namely adoption of advanced technologies, did not promote implementation of proactive socio-environmental practices. In fact, Hofmann et al. (2012) argued that: "not all sustainability practices require the adoption and support of advanced technologies". Thus advanced technologies can provide logistic support for the integration of social and environmental dimension in a firm's practices but do not sufficiently cover firm's motivational aspects that trigger the effective implementation of corporate sustainability or alleviate tensions that may arise from changes in current practices dictated by corporate sustainability. These findings show that existence of specific organizational capabilities assuming the role of antecedent in the implementation of proactive socio-environmental practices is not accidental phenomenon, but might results from a context with dominant collective cognition about firm's strategy, objectives and opportunities (organizational cognitive frame) on corporate sustainability (Grewatsch and Kleindiesnst, 2017). Moreover, implementation of corporate sustainability springs from the interaction between the embeddedness of individual and corporate decision-making in an organisational and systemic context (Hahn et al., 2015). Accordingly, firms activate a virtuous circle to address corporate sustainability through the interaction between proactive socio-environmental practices and organizational capabilities (Russo, 2009).

By supporting a positive relationship between proactive socio-environmental practices and a firm's economic performance, the study highlights the direct link between the implementation of corporate

sustainability and economic performance (Barnett and Salomon, 2012; Melnyk et al., 2003). The direct link can trigger a multiplier effect for the deployment of corporate sustainability, by avoiding self-limitation of efforts towards greater corporate sustainability, as shown by Wagner (2015). Moreover, implementation of proactive socio-environmental practices mediates the positive relationships between a firm's economic performance and its two organizational capabilities: collaboration with partners-suppliers and product innovation. These findings suggest that collaboration with partners-suppliers and product innovation capability not only affect a firm's economic performance directly, but also indirectly affect it positively via proactive socio-environmental practices. These capabilities have to foster the implementation and a continuous improvement of proactive socio-environmental practices in order to guarantee the firm's competitive advantage within changing business environments (Gelhard and von Delft, 2016).

The study also verifies the interaction of certain characteristics in the development of corporate sustainability. In particular, a widespread international dimension of a firm's markets proves to be insufficient for fostering the adoption of proactive socio-environmental practices associated with positive economic performance. Firms therefore have to associate their international market dimension with motivation within their own organization (Marshall et al., 2010) and should endeavour to pursue three seemingly conflicting sustainability dimensions (environmental, social and economic) simultaneously at organizational and systemic levels (Hahn et al., 2015). Moreover, firms with organizational processes-oriented business models support implementation of corporate sustainability because this business model guarantees coordination, learning, and reconfiguration of processes that improve the firm's efficiency in terms of "both technology applied to processes and transaction costs savings" (Casprini et al., 2014). Firms therefore address corporate sustainability as a dynamic process with alternative pathways that achieve more sustainable practices through organizational characteristics that can be transformed and used as a basis for new organizational forms.

This phenomenon is particularly evident in the wine industry that has been evolving rapidly, especially under the pressure of consumers' new attitudes toward sustainable wine (Forbes et al., 2009; Pomarici and Vecchio, 2014; Bonn et al., 2016). This changing context has prompted many wine businesses to adopt worldwide proactive sustainable practices, convinced that benefits (economic and in terms of products' quality) outweigh the related implementation costs (Pomarici et al., 2015). Italian wine companies, in particular, have focused *"[…] on land and the winemaking culture; staking not only on Italy' s broad biodiversity of vine varieties, but also on the use of increasingly efficient machinery with the aim of optimizing products use (pesticides and fertilizers) and water. Moreover, over the years, increasingly specialized professionals have emerged, and production has been going progressively organic*" (Fortis and Sartori, 2016).

The results of current research highlight that proactive social and environmental practices in the wine business are associated positively with economic performance, as some scholars have already suggested in the literature (Pullman et al., 2010; Atkin et al., 2012), but they extend previous studies on this topic by identifying some specific organizational capabilities as antecedents of such practices. In particular, orientation towards sustainability drives firms to develop capabilities (collaboration with partners-suppliers themselves oriented to sustainability and product innovation) that both of which foster adoption of socio-environmental practices and increase the economic performance.

6. Conclusions

This study contributes to the field of corporate sustainable management by applying a dynamic resource-based approach to analyse the drivers and role of proactive socio-environmental practices and their relationship with a firm's economic performance. The results demonstrate that certain but not all organizational capabilities, such as collaboration with partners-suppliers and product innovation capability, positively affect the implementation of corporate sustainability through proactive socio-environmental practices. Their role of fostering corporate sustainability is therefore not accidental but can be managed by taking different dimensions into account, such as motivation

within the firm and interaction at organizational and systemic levels. In addition, the study highlights the direct link between implementation of corporate sustainability and economic performance, and the positive mediating effect of proactive socio-environmental practices on organizational capabilities and economic performance.

In conclusion, the study confirms and provides empirical evidence of the crucial role of organizational capabilities in addressing "rapidly changing environments", such as how firms develop corporate sustainability. Investing resources in developing capabilities, such as collaboration with partners-suppliers and product innovation, helps foster implementation of corporate sustainability and consequently improves economic performance. Firms wishing to implement corporate sustainability should incorporate that concept into development of organizational capabilities that enable strategic flexibility in resource allocation and hence operational adaptation of structures and processes. Corporate sustainability results from a virtuous relationship between organizational capabilities that affect its strategic dimension and proactive socio-environmental practices that contribute to its operational dimension.

The study has important managerial implications. First, our results indicate that orientation towards sustainability, in some cases perceived as expensive by entrepreneurs (Pomarici et al., 2015), leads to development of capabilities rooted in the organization, which positively connect to the economic performance of firms, both directly and indirectly, in the latter case through implementation of proactive socio-environmental practices. In particular, through the capabilities of communicating and collaborating with partners-suppliers and of differentiating and innovating the products, wine companies can implement practices that are a source of competitive advantage in a market increasingly conscious and attentive to sustainability issues.

Second, the significant relationships identified do not depend on company size and age. This implies that the same reasoning can be applied to all small-medium enterprises in the industry regardless of the productive investment scale and experience accumulated in the business.

The decision to focus on one industry (the wine industry) is a limitation of the present research (future studies can focus on other industries and compare their results with those of this study), but also an interesting case, because the wine industry is characterized by many sustainable practices that can permeate all business functions and strategies (Santini et al., 2013). These practices affect a company's internal and external dimensions, addressing social and environmental issues such as consideration of upcoming generations, improvement of working conditions for employees, developmental training, cultivation principles and more efficient use of energy and resources.

The proposed variables and framework are easily applied, obviously with the appropriate precautions, to other industries: both traditional (agri-food sector, fashion, tourism, etc.) and with medium-high technological intensity (automotive, chemical, life sciences, etc.).

This study also has other limitations that offer opportunities for future research: it focused on Italian companies, whereas future research can focus on and compare companies of other countries. Questionnaire answers were based on self-evaluation by a single respondent (the CEO of respondent companies) which can cause internal validity problems, although we tried to minimize the risk of bias. Future studies can use data directly, examining practices and possibly performance. The data used in this study was cross-sectional, which only allowed us to analyse one specific organizational condition at a time. Although measurement scales with items that consider dynamic characteristics were used, longitudinal data is needed to truly examine the dynamics of organizational capabilities over time. Future studies can take a longitudinal approach to analyse any recursive relationships between the role of three capabilities (collaboration with partners-suppliers, adoption of advanced technologies and product innovation capacity), and implementation of socio-environmental practices for corporate sustainability, as well as their mediating effect on economic performance.

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Table 1 - Descriptive statistics, correlation and discriminant validity

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
[1]	Soc. Ec. Perf.	-	[0.41;0.56]	[0.47;0.61]	[0.26;0.45]	[0.42;0.57]	[0.31;0.48]	[0.25;0.43]	[0.30;0.48]	[0.07:0.27]	[-0.12;0.09]	[-0.01;0.20]	[-0.05;0.16]	[0.05;0.26]	[-0.17;0.04]	[-0.18;0.03]	[0.01;0.22]	[-0.17;0.04]
[2]	Suppl. Collab.	0.491	-	[0.39;0.55]	[0.51;0.65]	[0.49;0.63]	[0.25;0.43]	[0.31;0.48]	[0.44;0.59]	[0.27;0.45]	[-0.11;0.10]	[0.04;0.24]	[0.04;0.24]	[0.10;0.30]	[-0.07;0.14]	[-0.10;0.11]	[-0.08;0.12]	[-0.14;0.07]
[3]	Prod. Inn. Cap.	0.533	0.469	-	[0.34;0.51]	[0.23;0.42]	[0.13;0.33]	[0.21;0.40]	[0.23;0.42]	[0.18;0.37]	[-0.16;0.05]	[-0.04;0.17]	[0.17;0.36]	[0.10;0.30]	[-0.13;0.08]	[-0.13;0.08]	[-0.05;0.16]	[-0.17;0.04]
[4]	Adopt. Adv. Tech.	0.356	0.581	0.427	-	[0.31;0.48]	[0.22;0.41]	[0.12;0.32]	[0.36;0.53]	[0.13;0.33]	[-0.09;0.12]	[0.11;0.31]	[0.05;0.25]	[0.04;0.25]	[-0.07;0.14]	[-0.12;0.09]	[-0.07;0.14]	[-0.14;0.07]
[5]	Social Asp.	0.496	0.562	0.327	0.398	-	[0.32;0.49]	[0.43;0.58]	[0.49;0.63]	[0.25;0.43]	[-0.08;0.12]	[0.03;0.24]	[-0.05;0.16]	[-0.05;0.16]	[-0.09;0.12]	[-0.10;0.11]	[-0.05;0.16]	[-0.21;-0.01]
[6]	Energy	0.392	0.339	0.235	0.314	0.407	-	[0.29;0.47]	[0.46;0.61]	[0.26;0.44]	[-0.05;0.16]	[-0.02;0.19]	[-0.14;0.07]	[-0.02;0.18]	[-0.08;0.13]	[-0.15;0.06]	[-0.03;0.18]	[-0.15;0.06]
[7]	Territory	0.344	0.401	0.299	0.218	0.510	0.383		[0.35;0.52]	[0.41;0.57]	[-0.17;0.03]	[-0.13;0.08]	[-0.11;0.10]	[-0.02;0.18]	[-0.05;0.16]	[-0.12;0.09]	[-0.08;0.13]	[-0.12;0.09]
[8]	Resour. Eff.	0.390	0.518	0.327	0.451	0.563	0.538	0.439	-	[0.39;0.55]	[-0.10;0.11]	[-0.04;0.17]	[-0.02;0.19]	[0.01;0.21]	[-0.01;0.19]	[-0.07;0.14]	[-0.10;0.10]	[-0.17;0.04]
[9]	Sust. Agric.	0.169	0.358	0.276	0.234	0.342	0.354	0.493	0.478	-	[-0.18;0.02]	[-0.20;0.01]	[-0.04;0.17]	[0.01;0.22]	[-0.05;0.16]	[-0.01;0.20]	[-0.17;0.04]	[-0.15;0.06]
[10]	Age (LN)	-0.020	-0.009	-0.049	0.013	0.023	0.060	-0.069	0.010	-0.081	-	[0.30;0.47]	[-0.09;0.12]	[-0.23;-0.03]	[-0.07;0.14]	[-0.21;-0.01]	[-0.01;0.20]	[-0.08;0.13]
[11]	Size (LN)	0.099	0.142	0.068	0.214	0.134	0.090	-0.024	0.064	-0.096	0.389	-	[0.03;0.24]	[-0.19;0.02]	[-0.24;-0.03]	[-0.14;0.07]	[-0.04;0.16]	[-0.14;0.07]
[12]	Export	0.054	0.141	0.264	0.153	0.052	-0.040	-0.007	0.082	0.066	0.013	0.134	-	[-0.05;0.16]	[-0.09;0.12]	[-0.08;0.13]	[-0.08;0.13]	[-0.19;0.02]
[13]	Comm. Exp.	0.153	0.195	0.201	0.148	0.062	0.085	0.073	0.113	0.118	-0.127	-0.082	0.052	-	[-0.07;0.14]	[-0.22;-0.02]	[-0.03;0.18]	[-0.02;0.18]
[14]	Family Gov.	-0.060	0.037	-0.023	0.036	0.010	0.018	0.051	0.090	0.054	0.029	-0.137	0.013	0.031	-	[-0.09;0.12]	[-0.09;0.12]	[-0.16;0.05]
[15]	BM (OP)	-0.081	-0.001	-0.017	-0.013	0.009	-0.040	-0.014	0.039	0.096	-0.104	-0.039	0.021	-0.115	0.018	-	[-0.86;-0.79]	[-0.37;-0.18]
[16]	BM (MM)	0.119	0.025	0.056	0.033	0.059	0.070	0.030	-0.000	-0.066	0.094	0.061	0.027	0.072	0.012	-0.826	-	[-0.40;-0.21]
[17]	BM (NPD)	-0.066	-0.040	-0.067	-0.035	-0.116	-0.053	-0.027	-0.066	-0.050	0.015	-0.038	-0.081	0.072	-0.049	-0.278	-0.313	-
	Mean	3.461	3.197	3.838	3.257	3.727	3.846	4.556	3.535	3.823	3.285	2.156	0.941	0.081	0.874	0.423	0.482	0.095
	St. Dev.	0.841	0.924	0.851	0.920	0.798	0.958	0.560	0.951	0.951	0.942	1.085	0.236	0.074	0.332	0.495	0.500	0.294
	Min	1	1	1	1	1.200	1	2.333	1	1.333	0	0	0	0	0	0	0	0
	Max	5	5	5	5	5	5	5	5	5	4.754	6.052	1	0.600	1	1	1	1

Note: N = 357. Correlation coefficients greater than 0.104 in absolute value are statistically significant at 95%. Correlation coefficients greater than 0.137 in absolute value are statistically significant at 99%. Above the diagonal, the 95% confidence interval for the estimated factors correlations is provided.

Table 2: Measures Description and Properties

Measure and Source	Item Description*	Factor Loadings
Economic performance α = 0.89 CR = 0.90 AVE = 0.52 Acc. % of explained variance = 0.60	*To what extent do you think sustainability contributes to improving the following economic aspects of your firm?*	
	x1: Optimize the supply chain	0.74
	x2: Decrease the regulatory and/or legal risks	0.80
	x3: Make more efficient the operations	0.79
	x4: Make easier the access to sources of funding	0.53
	x5: Make lower the financial and/or operating risks	0.72
	x6: Make lower the costs and taxes	0.74
	x7: Make more efficient the use of resources	0.70
Collaboration with partners-suppliers α = 0.90 CR = 0.89 AVE = 0.62 Acc. % of explained variance = 0.71	*With reference to your supply chain upstream network, with what degree do you agree with the following statements?*	
	x8: We select and evaluate our partners and suppliers, also on the basis of criteria based on the concept of sustainability	0.70
	x9: We promote and raise awareness our partners and suppliers to implement "sustainability"	0.76
	x10: We discuss with our partners and suppliers on how to improve the "sustainability" of the activities linked to the established trade relations	0.88
	x11: We analyse together with our partners and suppliers, the objectives of "sustainability" we want to achieve	0.84
	x12: We develop with our partners and suppliers, new "sustainable" processes or technologies	0.75
Capacity for product innovation α = 0.87 CR = 0.87 AVE = 0.63 Acc. % of explained variance = 0.73	*To what extent do you think sustainability contributes to improving your capacity to differentiate your products/brands*	
	x13: Improve ability to enter new markets	0.86
	x14: Strengthen brand	0.87
	x15: Allow to justify a higher price (premium price) for our products	0.68
	x16: Increase consumer loyalty	0.74
Adoption of advanced technologies α = 0.85 CR = 0.86 AVE = 0.55 Acc. % of explained variance = 0.65	*With reference to your attitude to technology, to what extent do you agree with the following statements?*	
	x17: We use sustainable technologies within our processes of new product development	0.58
	x18: Our new products use/incorporate state of the art "sustainable" technologies	0.75
	x19: Technological innovations based on the results of "sustainability"-related scientific research are readily accepted within our organization	0.90
	x20: Technological innovations based on "sustainability" are readily accepted within our management plans/projects	0.89
	x21: We cooperate with Universities or Research Centers to develop "sustainable" new products	0.52

Table 2 (continue): Measures Description and Properties

Social aspects α = 0.83 CR = 0.84 AVE = 0.51 Acc. % of explained variance = 0.60	*With what level of importance each of the following items/activities helps to create value for your customer?* x22: Respect for future generations x23: Respect the safety and welfare of workers in the company and in the supply chain x24: Creating and maintaining employment levels x25: Initiatives for the protection and development of education, art/design and culture x26: Supporting social initiatives at local level (families, immigrants, poors)	 0.70 0.83 0.78 0.62 0.63
Energy α = 0.80 CR = 0.81 AVE = 0.68 Acc. % of explained variance = 0.83	*With what level of importance each of the following items/activities helps to create value for your customer?* x27: Reduction of energy use (electricity, water, gas, etc.) x28: Use of renewable energy sources covering more than 70% of the firm's energy requirements	 0.88 0.76
Territory α = 0.76 CR = 0.76 AVE = 0.52 Acc. % of explained variance = 0.68	*With what level of importance each of the following items/activities helps to create value for your customer?* x29: Protection of the landscape x30: Taste closely linked to the territory and guarantor of high typicality x31: Traceability of wines produced	 0.78 0.66 0.71
Resource efficiency α = 0.81 CR = 0.82 AVE = 0.60 Acc. % of explained variance = 0.73	*With what level of importance each of the following items/activities helps to create value for your customer?* x32: Re-use of production waste x33: Rationing water use and wastewater purification x34: Eco-friendly packaging	 0.73 0.69 0.89
Sustainable agriculture α = 0.79 CR = 0.74 AVE = 0.50 Acc. % of explained variance = 0.71	*With what level of importance each of the following items/activities helps to create value for your customer?* x35: Minimizing the use of fertilizers, herbicides, fungicides and synthetic pesticides x36: Application of the biodynamic cultivation principles x37: Application of the organic farming principles	 0.83 0.50 0.74
Socio-environmental practices α = 0.79 CR = 0.88 AVE = 0.60 Acc. % of explained variance = 0.56	2nd Order construct z1: Social aspects z2: Energy z3: Territory z4: Resource efficiency z5: Sustainable agriculture	 0.87 0.64 0.80 0.80 0.73

*Each item varies on 1-5 Likert scale where "1" indicates "not important/agree" and "5" means "the highest importance/agreement".

Table 3 - Structural model results

Paths	Overall model	
	Std. Coeff.	**S.E.**
Socio-environmental practices		
← **Age**	**0.024**	**(0.050)**
← **Size**	**-0.026**	**(0.052)**
← **Export**	**-0.084***	**(0.047)**
← **Comm. Exp.**	**-0.017**	**(0.047)**
← **Family governance**	**0.031**	**(0.046)**
← **BM (OP)**	**0.142***	**(0.081)**
← **BM (MM)**	**0.108**	**(0.081)**
← Collaboration with suppliers	**0.550*****	**(0.063)**
← Capacity for product innovation	**0.140****	**(0.061)**
← Adoption of advanced technologies	**0.081**	**(0.066)**
Economic performance		
← **Age**	**-0.030**	**(0.047)**
← **Size**	**0.045**	**(0.049)**
← **Export**	**-0.081***	**(0.044)**
← **Comm. Exp.**	**0.010**	**(0.044)**
← **Family governance**	**-0.061**	**(0.043)**
← **BM (OP)**	**-0.013**	**(0.077)**
← **BM (MM)**	**0.064**	**(0.076)**
← Collaboration with suppliers	**0.212*****	**(0.077)**
← Capacity for product innovation	**0.383*****	**(0.056)**
← Adoption of advanced technologies	**-0.050**	**(0.061)**
← Socio-environmental practices	**0.290*****	**(0.073)**

N = 357. * $p < 0.100$; ** $p < 0.050$; *** $p < 0.001$

Figure 1
The Conceptual Model of the Study

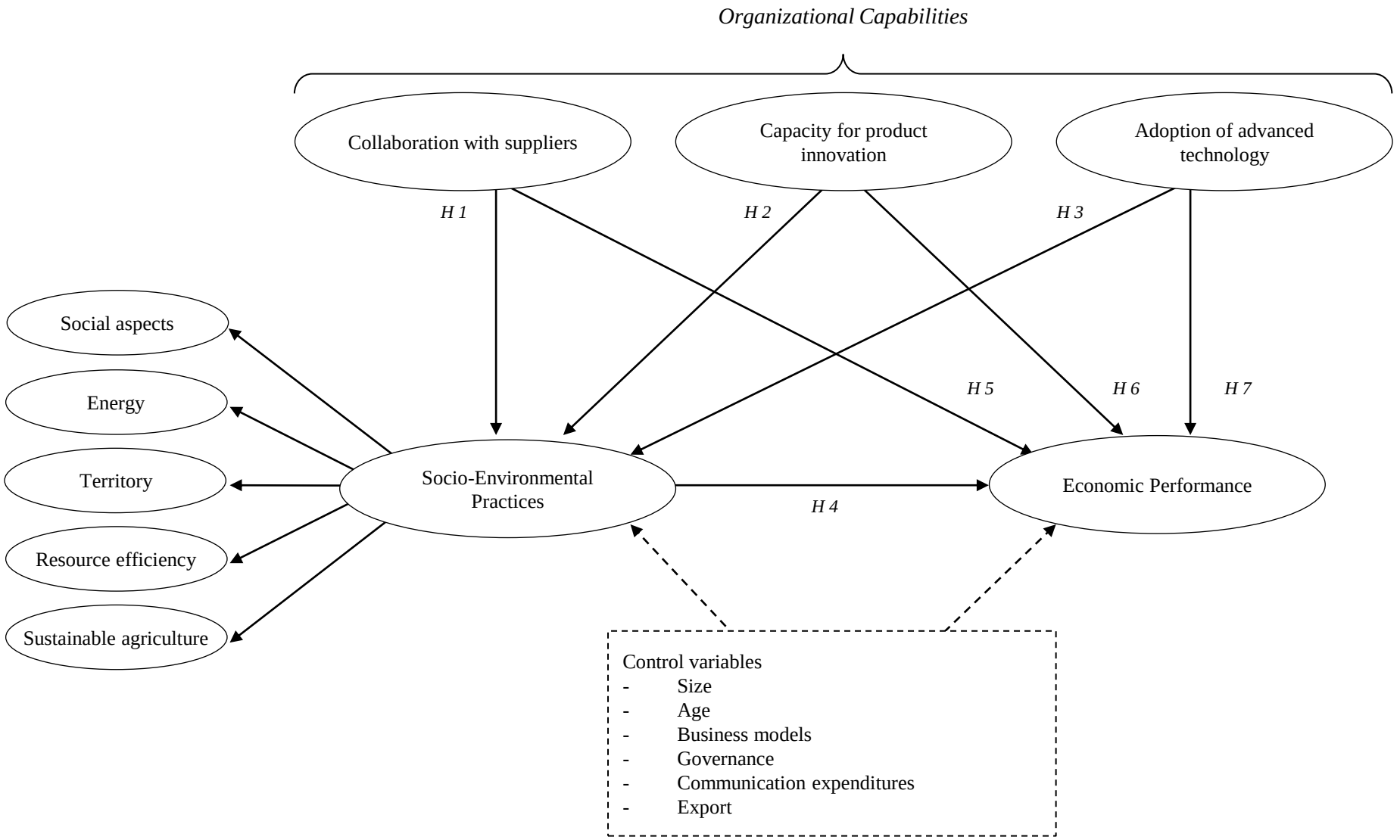
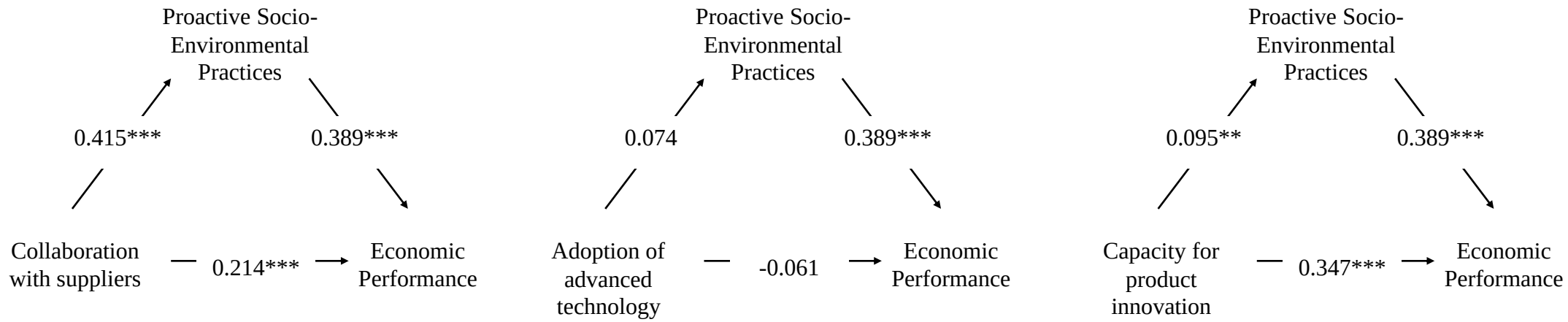


Figure 2
Effects Decomposition for Organizational Capabilities – Proactive Socio-Environmental Practices – Economic Performance indirect path



a) Indirect effect: 0.161****, SE = 0.047, 95% CI = 0.070 – 0.253

b) Indirect effect: 0.029, SE = 0.025, 95% CI = -0.020 – 0.077

c) Indirect effect: 0.037*, SE = 0.018, 95% CI = 0.001 – 0.073

Note: Number of firms is 357; Method of estimation is MLMV; Standardized regression slopes are reported; Statistical significance: *p < .1; **p < .05; ***p < .001; bias corrected confidence intervals achieved via bootstrap (5000 repetitions).