Universitat Autònoma de Barcelona

THE RELATIONSHIPS BETWEEN STRATEGIC ORIENTATIONS, INNOVATION AND FIRM PERFORMANCE: A META-ANALYTICAL PATH ANALYSIS AND TEXT MINING APPLICATION

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Abstract

Successful organizations attain superior performance and sustainable presence in the markets in which they compete by providing a strong impetus for strategic directions that lead to the systematic delivery of high-impact innovations. Strategic orientation represents intangible resources and capabilities embedded into organizational culture. Particularly, market orientation (MO) entails a culture and behaviors in which customers, competitors and markets are the center of a firm's activity; entrepreneurial orientation (EO) involves the propensity to pursue new market opportunities; and learning orientation (LO) has to do with the inclination to create and use knowledge. A considerable research work has been conducted on the relationships between strategic orientations, innovation, and firm performance. Further, these relationships can be examined through their exhibition in key organizational narratives such as company´s annual reports. Thus, the objectives of this doctoral dissertation are, on the one hand, to meta-analytically synthesize the literature and assess the usefulness and validity of three theoretical hypothesized approaches with the purpose to unveil the true mediating nature of innovation, including the examination of *a priori* contingency factors such as firm size and industry sector. On the other hand, to identify the relevance of strategic orientations, innovation and firm performance in corporate narratives by extracting their co-occurrence patterns to better understand how these relationships are adopted, exhibited, and communicated to stakeholders in business practice. Drawing on a dataset consisted of 135 independent samples from 132 selected primary studies, 289 unique effect sizes and 33,063 observations, this dissertation conducts a meta-analytic path analysis integrating mediation and subgroup moderation analyses, applying MASEM's two-stage structural equation modeling approach (TSSEM). Further, based on Form 10-K annual reports of 48 firms within S&P 500's communication services and materials sectors, this dissertation conducts a co-occurrence network analysis to statistically and visually extract information from the text data. Results indicate that the holistic approach of the relationships between strategic orientations and firm performance, which assumes both the universal and intermediary approaches altogether probed its superiority. The nature of innovation is ultimately delved, playing a partial mediating role in the relationship between MO and LO, and firm performance. Likewise, innovation plays a full mediating role in the relationship between EO and firm performance. From a contingency

approach involving simultaneous moderated-mediating analysis, assessing the holistic approach as overall model, most of the relationships persisted regardless of contingency factors, such as firm size and industry sector. Most of the direct effects are not moderated, or which is the same, remained equal across subgroups, except for the effect of innovation on firm performance, which seems to be stronger for SMEs than for large firms. Firm size indeed moderates the relationship, whereas industry sector does not. From a co-occurrence network analysis, exploring the patterns of association between strategic orientations, innovation and firm performance in annual corporate reports, MO plays a central role in the associations, linking other orientations with innovation and firm performance. Unexpectedly, innovation is not closely associated with performance. Previous finding may indicate that innovative efforts and outcomes are not expected to be short-termed. Furthermore, three major co-occurrence patterns of association, or communities were identified, suggesting that: 1) companies place great emphasis in associating overall business results with the understanding of current and future customers' needs and with the anticipation and capitalization of market opportunities; 2) competition has a special emphasis in corporate narratives; and 3) companies exhibit the importance of synergies developed by the different functional areas working together to improve creativity and innovation processes and with shared learning expectations among individuals and teams. Limitations of the meta-analytic and text mining research approaches are discussed, and future research lines are suggested.

Keywords: *strategic orientation, market orientation, entrepreneurial orientation, learning orientation, innovation, firm performance, meta-analytic structural equations modeling, text mining*.

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CHAPTER 1: INTRODUCTION

1.1. Problem statement and research topics

Successful organizations attain superior performance and sustainable presence in the markets in which they compete, not as a result of luck but, rather, as a consequence of providing a strong impetus for strategic directions that lead to the development of a complex organizational culture, which, in turn, allows the systematic delivery of high-impact innovations (Gatignon et al., 2016).

Innovation plays a central role in both economic and management perspectives to explain economic development and competitive advantage, respectively. From an economic perspective, extant research literature centers on the forces that drive innovation, the factors that hinder it, and the effects of innovation on an industry, market or economy (OECD/Eurostat, 2018, p. 45).

On the other hand, from a management perspective, research is focused on how innovation can change a firm's position in the market and how to influence a firm's ability to undertake innovation activities, introduce innovations and generate innovation outcomes, as a critical source of competitive advantage in an increasingly changing environments (OECD/Eurostat, 2018; Crossan & Apaydin, 2010). It is well known the impact of innovation as a decisive factor for firm value, market and financial position (Rubera & Kirca, 2012) and for the long-term viability and competitive advantage (Baker & Sinkula, 2005; Geroski, 1995).

Innovation can be conceptualized in terms of the "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems" (Crossan & Apaydin, 2010, p. 1155). This research focuses, from a management perspective, on the role of innovation as a source of competitive advantage, to better understand how a firm's strategic orientations lead to superior firm performance.

Under the resource-based theory of the firm (RBT), the strategic orientation represents intangible market-based resources –assets or capabilities– (Hult & Ketchen, 2001; Kozlenkova et al., 2014, p. 10; Lonial & Carter, 2015) embedded into an organizational culture reflecting "the strategic directions implemented by a firm to create the proper behaviors for the

continuous superior performance of the business" (Gatignon & Xuereb, 1997, p. 78) and "the means by which firms choose to attempt to create a sustainable presence in the markets in which they compete" (Gnizy et al., 2014, p. 478). Further, strategic orientation reflects elements that influence the ability to develop and market innovations of a firm more effectively, and these innovation outcomes in turn lead to greater overall firm performance. In this sense, innovation capabilities and outcomes help explain the impact of a firm's orientation on performance (Gatignon et al., 2016).

Methodologically, strategic orientation is a higher order construct in nature, multidimensional and indicative of a culturally determined focus, specified by the adjective used (Cadogan, 2012; Ozkaya et al., 2015).

This concept has attracted widespread attention in the marketing, management and entrepreneurship literature over the past two decades (Deshpandé et al., 2012, p. 629; Hakala, 2011, p. 199), focusing mainly on three organizational orientations: market orientation (MO), entrepreneurial orientation (EO), and learning orientation (LO)[1].

Briefly, market orientation (MO) entails a culture and behaviors in which customers, competitors and markets are the center of a firm's activity (Deshpandé & Webster, 1989, p. 3; Gnizy et al., 2014, p. 480); entrepreneurial orientation (EO) involves the propensity to pursue new market opportunities (Lumpkin & Dess, 1996, p. 143; Covin & Slevin, 1991, p. 8); and learning orientation (LO) has to do with the inclination to create and use knowledge (Sinkula et al., 1997, p. 309).

As Gnizy et al. (2014, p. 480) commented, "these three orientations share a market-based outside in perspective, require and promote effective market-based learning to be actualized and reflect a proactive approach to addressing the market with the goal of developing

[1] According to Hult et al. (2004), the three strategic orientations –MO, EO, and LO– are the key antecedents to innovativeness, and most of the literature consider them as the dominant and critical (e.g., Lonial & Carter, 2015; Deutscher et al., 2016; Dutta et al., 2016; Kraft & Bausch, 2016). As noted by Kraft & Bausch (2016), market, learning, and entrepreneurial orientation reflect different resource investments, objectives, and guiding principles which might provide different stimuli for innovation (p. 5). Other orientations are developed in the literature –e.g., innovation orientation, technology orientation, customer orientation–, but their attention is considerably lower than these three aforementioned. Research effort is pointing to the development of more complex constructs based on the three strategic orientations analyzed in this dissertation. For example, Hult & Ketchen (2001), and Lonial & Carter (2015) conceived MO, EO, and LO as components of a higher-order factor, termed 'positional advantage,' which is closely related to performance. Gnizy et al. (2014) asserted the proactive learning culture (PLC) dynamic capability as a higher order construct built from first order constructs –MO, EO, and LO– which facilitate the development or reconfiguration of more tangible capabilities and behaviors. This kind of theory modeling treatment implies a greater interest from researchers to study these three strategic orientations and their effects –direct or indirect– on firm performance.

competitive advantage." MO covers the adaptive process relating to the competitive environment, whereas EO and LO encompass the processes of matching resources with the environment (Hakala, 2011). MO and EO can be considered as 'outside-in' processes and LO as 'inside-out' process (Kraft & Bausch, 2016; Saeed et al., 2015).

By definition, strategic orientations are linked to firm performance as its antecedents and important drivers (Hult et al., 2004). However, the nature of this relationship is not trivial.

Most of the studies on strategic orientation focused on the individual direct effects on firm performance, finding MO, EO and LO to positively influence performance separately, whereas a fewer research body jointly and in an interrelated perspective studied MO, EO, and LO effects on performance (Deutscher et al., 2016).

Research attention also focused on mediating mechanisms in the relationship between strategic orientation and firm performance (Hakala, 2011). It is plausible that the impact of strategic orientations on firm performance has been understated due to the fact that their effects may be indirect or, which is the same, there could exist other constructs that mediate the relation[2], such as innovation (e.g., Arunachalam et al., 2018; Baker & Sinkula, 2009; Gupta et al., 2017; Han et al., 1998; Langerak, 2003; Leal-Rodríguez & Albort-Morant, 2016; Matear et al., 2002; Noble et al., 2002; Zhou et al., 2005).

From a first-mover advantage (FMA) rationale, it is more notorious the role of innovation as a mediating mechanism linking strategic orientations –value creation– and firm performance –value appropriation– (e.g., Arunachalam et al., 2018).

The relationships between strategic orientation, innovation and firm performance are complex and not unconditional, but rather depend on the business context (Gatignon et al., 2016), which means that contingency factors may affect the strength of such relationships.

Past research established the notion that strategic orientations are multidimensional, interlinked, correlated, but distinct constructs (Baker & Sinkula, 2009; Hakala, 2011; Gnizy et al., 2014). Different orientations share similar characteristics, so the association between them

[2] Several intermediate mechanisms have been studied in the strategic orientations and firm performance relationship –e.g., marketing capabilities, organizational learning, strategy, management, acquisitive and experimental learning; among others– (Gupta et al., 2017; Gupta & Gupta, 2015). However, since innovation is generally considered as the key important antecedent to firm performance (Crossan & Apaydin, 2010; Damanpour et al., 2009), it was selected as the only mediating variable of interest. Methodological reasons can be adduced too, since innovation, as a mediator in the relationship, covered sufficient primary studies for meta-analytic purposes.

and firm performance might be stronger when they are considered collectively rather than in isolation (e.g., Hult & Ketchen, 2001; Mu & Di Benedetto, 2011; Cambra-Fierro et al., 2012). Moreover, it is well established that strategic orientations can exist and support each other at the same time in one organization (e.g., Leenders et al., 2016).

Firms possessing different strategic orientations may be better suited to succeed in various competitive environments (Noble et al., 2002, p. 36). When strategic orientations are operating synergistically[3], innovation could benefit from complementarity, which means that the effect of one orientation can increase the effectiveness and efficiency of other orientations and the combination of strategic orientations leads to superior performance (e.g., Baker & Sinkula, 2009; Mu & Di Benedetto, 2011; Gnizy & Shoham, 2014; Ho et al., 2015). Therefore, firms may find it more useful to adopt and combine multiple strategic orientations to develop a more complex corporate culture (Grinstein, 2008b).

1.2. Literature gap, objectives and research questions

Despite the growing existence of empirical research, little is known about the interrelationships between strategic orientations (Hakala, 2011; Grinstein, 2008b) and innovation linking strategic orientations with firm performance. Most of the literature focused on the impact of different individual orientations on performance (Hakala, 2011; Cadogan, 2012; Mu & Di Benedetto, 2011; Deutscher et al., 2016), and the differential effects of orientations on innovation remain unclear as research is fragmented and, in general, yields inconclusive results (Kraft & Bausch, 2016; Spanjol et al., 2012).

On the direct relationship of strategic orientation and firm performance, a stock of cumulative results has been developed including several meta-analytic efforts. However, and even though most studies confirmed and are consistent with resource-view expectations, "those results are subject to important methodological limitations, including not accounting for statistical artifacts –e.g., sampling error–, and not providing an estimate of how much resources influence performance" (Crook et al., 2008, p. 1142).

[3] According to Juga (1996, p. 51), the economic basis of synergy is related to how it can be possible for different businesses to add up to more than the sum of their parts. "Synergy results from the process of making better use of resources, including physical assets such as manufacturing facilities, and invisible assets such as a brand name, customer knowledge, technological expertise and corporate culture. It is when a firm exploits its unique resources that it achieves the synergy effect."

Since innovation is both a process and an outcome, the former clearly precedes the latter and should be separated to avoid circular arguments (Crossan & Apaydin, 2010). In general, primary studies connect innovation as a process with firm performance and bypass innovation outcomes altogether (e.g., Calantone et al., 2002; Hult & Ketchen, 2001). Most of the studies treated innovation –as an outcome– as a dependent variable and not as a mediator to performance (e.g., Grinstein, 2008a; Kraft & Bausch, 2016).

In this sense, researchers on innovation mainly focused "in comparing the relative effects of market-based resources on performance, but rather than focusing on firm performance, they tend to narrow the scope to radical or incremental innovation performance or new product success" (Kozlenkova et al., 2014, p. 10). Hence, it is still unclear whether the effects of strategic orientations on firm performance are entirely indirect, or which is the same, the effects are fully channelized by innovation, or the impact is direct. In this sense, the mediating role of innovation as an outcome –whether null, partial, or full– is still undisclosed. Mediation analysis is required to properly understand the relationships though in the context of strategic management and marketing (Boyd et al., 2012; Kozlenkova et al., 2014, p. 13).

Although relationships between strategic orientations, innovation and firm performance are contingent in nature and change as a function of context-related moderators (e.g., Gonzalez-Benito et al., 2015; Gupta & Batra, 2016; Grinstein, 2008a), research designed directly to compare whether the relationships persist or not due to firm characteristics is scarce and not conclusive. More studies integrating moderation and mediation in strategic management research are requested (Aguinis et al., 2017).

Entrepreneurship, marketing and management scholars claim for the need to quantitative synthesize and integrate the current state of knowledge by identifying and assessing different theoretical approaches linking strategic orientations and firm performance (Hakala, 2011). Mediating mechanisms as innovation have not attracted much attention in meta-analytic or systematic review studies, and it is suggested to implement path analysis to comment on the causal nature of relationships in a single investigation (Doyle & Armenakyan, 2014, p. 194; Montoya-Weiss & Calantone, 1994, p. 413).

Further research is needed in response to the criticism for ignoring the 'black box' of the mediating mechanisms through more complete theoretical explanations (Geroski, 1995; Baker & Sinkula, 2002).

On the other hand, aspects such as the complementarity and synergy of strategic orientations need for further research. While some commonalities "create difficulties for identifying effects specific to each type of orientation, the identification of complementarities among the various orientations is critical for examining their synergies" (Gatignon et al., 2016, p. 125). Exploring how the more successful firms adopt and balance various combinations of strategic orientations (Grinstein, 2008b) would shed light on these issues in business practice,

Since the strategic orientation topic is maturing and a considerable primary research work is conducted, the first objective of this doctoral dissertation is to quantitatively synthesize the available literature's data on the relationships between strategic orientations, innovation and firm performance in an integrative meta-analytic path analysis framework, allowing a mediation and moderation analysis.

Precisely, this dissertation aims to:

- Assess the usefulness and validity of the hypothesized theoretical approaches on the relationships between strategic orientations and firm performance to retain a superior theoretical structure for future research.
- Examine whether *a priori* contingency factors such as firm size (large vs. SME firms) and industry sector (manufacturing vs. service firms) modify the relationships between strategic orientations, innovation and firm performance on the superior model tested.

Likewise, as these relationships might be examined through their projection or exhibition in the key organizational narratives such as company's annual reports, the second objective of this dissertation is to conduct an exploratory data-driven text mining of corporate annual reports in order to:

- Explore the relationships between strategic orientations, innovation and firm performance by identifying their relevance and centrality and extracting their co-occurrence patterns to better understand how these constructs of interest are adopted, combined and balanced in business practice.

In this sense, this dissertation tackles the following research questions:

- Which competing model extracted from the literature on strategic orientations, innovation and firm performance fits better the meta-analytic data? Does innovation play a mediating role –whether null, full or partial– in the strategic orientations and firm performance relationship?
- Are there statistically significant differences across subgroups of studies or do the relationships persist regardless of contingency factors?
- To what extent firms adopt and exhibit their strategic orientation, innovation and firm performance? Which patterns of association between strategic orientations, innovation and firm performance are adopted by firms and how these patterns are exhibited in practice through annual reports?

1.3. Theoretical background: RBT and FMA

As Grant (1991, p. 133) asserted, "the key to strategy formulation is understanding the relationships between resources, capabilities, competitive advantage, and profitability; in particular, the understanding of the mechanisms through which positional advantage can be sustained over time" (Grant, 1991, p. 133). This ultimately leads to superior performance, which is at the center of strategic management (Venkatraman & Ramanujam, 1986, p. 802). Recent empirical evidence confirms that strategic resources and capabilities are those that influence more decisively on firm performance; this idea is widely accepted in the overall strategic management and marketing literature (Crook et al., 2008; Leiblein, 2011; Kozlenkova et al., 2014).

Under the resource-based theory (RBT) of the firm, strategic orientations are important organizational resources –assets and capabilities– that together contribute to sustainable competitive advantage and superior firm performance (e.g., Barney, 1991; Hult & Ketchen, 2001; Zhou et al., 2005; Lonial & Carter, 2015). Resources refer to inputs into organizational processes. Following Kozlenkova et al. (2014, p. 3), for a resource to be strategic need to meet certain criteria: it is valuable, such that it exploits opportunities or neutralizes threats in a firm's environment; rare when competitors are not able to exploit the same resource in the same way; and difficult to imitate or substitute, when the resource avoid competitor to keep at parity since it is substantially costly to obtain or develop for competing firms (Barney, 1991). Also, a firm must be "organized to exploit the full competitive potential of its resources and capabilities" (Barney and Hesterly 2012, p. 94).

Capabilities refer to the firm's resources, which represent "an organizationally embedded non-transferable firm-specific resource whose purpose is to improve the productivity of other resources possessed by the firm" (Makadok, 2001, p. 389). Capabilities enable a firm to deploy its other resources more efficiently and therefore enhance the productivity of those resources. Thus, capabilities are special types of resources whose purpose is to improve the productivity of other resources possessed by the firm (Makadok, 2001).

According to Kozlenkova et al. (2014, p. 10), strategic orientations can be considered as market-based resources or capabilities critical to firm performance, and essential for marketing activities such as building relationships and developing new products. Within the RBT framework[4], strategic orientations have two key characteristics: 1) intangibility and 2) complementarity.

First, as intangible resources, strategic orientations cover an enhanced set of skills deeply ingrained into the everyday routines of an organization which are difficult to imitate by competitors (Zhou et al. 2005). Thus, organizations possessing and deploying strategic orientations should have sustained competitive advantages over competitors that lack such resources (Barney, 1991). In this sense, strategic orientations offer great potential to develop into competitive advantage and superior firm performance.

In this line, RBT can explain the direct effect of strategic orientations on overall firm performance and on innovation, and the direct effect of innovation on firm performance[5]. Following Katsikeas et al. (2016), operational and organizational performance outcomes of an organization result from the possession and deployment of a firms' marketing resources –such as strategic orientations– and/or program-related activities –e.g., new product development–. Strategic orientations impact directly and/or indirectly such performance outcomes, since firm performance can be viewed as the composite of several aspects such as customer mindset and behavior, customer-level, product-market, accounting and financial outputs.

As Crook et al. (2008, p. 1144) noted, "Perhaps because competitive advantages are difficult to measure (Ketchen et al., 2007), many researchers have sought to empirically link

[4] According to Kozlenkova et al. (2014, p. 3) y Leiblein (2011), the term resource-based theory (RBT) is more appropriated to use rather than resource-based view (RBV) since RBV has evolved into a theory. Also, the VRIO –valuable, rare, imperfectly imitable and organizational– resources framework is more appropriated to use rather than the earlier VRIN version.

[5] At a broad level, firm performance can be differentiated as operational performance and organizational performance. The latter relates to the firm as a whole, whereas the former is associated with specific functional areas within the firm –i.e., product-market performance– (Venkatraman & Ramanujam, 1986; Combs et al., 2005; Katsikeas et al., 2016).

strategic resources and performance (Barney & Arikan, 2001). The assumption is that if strategic resources and performance are related, then a competitive advantage must exist."

However, RBT does not fully explain the complex path sequence through which value is created and captured by the firm. In this sense, the first-mover advantage (FMA) (Kerin et al., 1992) arises as a theoretical perspective that complements RBT, allowing to better understand how strategic orientations are translated into superior and sustainable firm performance through innovation –e.g., product and service innovations– (Poudel et al., 2012).

First-movers –innovator firms– produce a competitive advantage in a two-fold way: 1) by generating abnormal positive profits due to monopoly rents, since the introduction of new products or services earlier than competitors allows to enjoy higher pricing power until competitors enter the market; and 2) defining consumer attitudes and expectations in a new market, since earlier introduction of innovations than competitors may lead to the generation of a customer base so as to have time to shape the expectations of the customer base and thus consolidating –or gaining– a longer-term edge over late mover rivals (Lumpkin & Dess, 1996; Ho et al., 2015; Poudel et al., 2012; Arunachalam et al., 2018, p. 749). Following Arunachalam et al. (2018), the mediated impact of innovation will be positive as long as (a) value is created and (b) the firm captures most of the created value.

RBT is a rich, contingency-driven theory (Ketchen et al., 2007), and the relationships between strategic orientations, innovation and firm performance are contingent upon several context-related factors. Among others, firm size and industry sector are considered as contingency factors believed to influence structure-innovation relationships. These represent commonly cited and important contingency factors in organizational studies, especially in studies of organizational innovation (Damanpour, 1996)[6].

On one hand, within the RBT, SMEs and larger organizations seem to differ mainly regarding 1) their own characteristics and 2) resource deployment: larger firms have advantages such as economies of scope, bargaining power with suppliers and distributors (Raju et al., 2011, p. 1320), capacity to spread the risk of failure and absorb costs of innovation and more financial and human resources to market the innovation (Damanpour, 2010; Camisón-Zornoza et al., 2004). However, and despite of those advantages and slack resources, SMEs

[6] As Damanpour (1996) noted, the inclusion of both contingency moderators –firm size and industry sector– was made also for methodological convenience reasons, "because meta-analysis methods are used for model testing, availability of past empirical results also affected the inclusion of contingency factors."

often achieve to bundle, integrate and deploy resources strategically and effectively, in order to be more innovative, to have more customer contact, to be more flexible and adaptable to environment (Raju et al., 2011; Damanpour, 2010).

On the other hand, manufacturing and service firms, are likely to differ in terms of the nature of the outputs: contrary to manufacturing, in service firms the outputs are intangible, produced, delivered, and consumed simultaneously. Also, services are perishable, heterogeneous and not storable (Agarwal et al., 2015). The interaction between customer and producer in service firms is more complex and must be complete for the delivery of the service. Difference in nature are also related to demand cycles: "manufacturing of durable goods is a highly cyclical industry, whereas services are more stable, partly because services cannot be stored" (Frösén et al., 2016, p. 93). Furthermore, it is stated that innovation follows different trajectories among both industries: in the manufacturing sector it follows a technological trajectory, whereas in the service sector it does not; innovation in manufacturing is more product technical-oriented involving high degree of expenditure in R&D activities around product and technology, whereas in services the customer relationships and human capital capabilities are more significant. Therefore, differences in adopting and generating innovations are established across both types of industries (Damanpour et al., 2009).

From a first-mover advantage (FMA) perspective, SMEs must be pioneers in innovation in order to achieve a competitive advantage before more powerful rivals appear. For the large, established firm with financial resources and strong production, marketing, and distribution capabilities, the risks of pioneering are greater in terms of reputation and brands protection, requiring more developed markets to exploit its complementary resources effectively (Grant, 2010, p. 308).

Chapters 2 and 3 of this dissertation draw on hypothesized theoretical model following the next structure: universal approach –in line with RBT– [strategic orientations (resources/capabilities) → firm performance (sustainable superior performance)]; intermediary and holistic approaches –in line with a mixed RBT and FMA– following a structure such as: [strategic orientations (resources/capabilities) → innovation (competitive advantage) → firm performance (sustainable superior performance)].

Second, strategic orientations are complementary. RBT explains how strategic orientations combine to create a competitive advantage for a firm under the notion of bundling

resources. Individual strategic orientations are necessary, but insufficient, conditions for business success (Hult & Ketchen, 2001). Collectively such orientations can increase the effectiveness and efficiency of other orientations and the combination of strategic orientations leads to superior performance (e.g., Baker & Sinkula, 2009; Mu & Di Benedetto, 2011; Gnizy & Shoham, 2014; Ho et al., 2015).

Chapter 4 of this dissertation is in line with the RBT's resource complementary characteristic. Patterns of interest on the adoption and combination of multiple strategic orientations to develop a more complex corporate culture can be elucidated in business practice.

1.4. Research approach and methods

Meta-analytic structural equation modeling (MASEM), –a combination of meta-analysis (MA) and structural equation modeling (SEM)–, is the investigation of associations among a group of variables suggested by a theoretical model on accumulated empirical findings (Cheung, 2015b; Jak, 2015; Bergh et al., 2016; Landis, 2013). MASEM analysis generally consists of two stages: in the first stage, the correlation matrices extracted from primary studies are combined to form a pooled correlation matrix, while in the second stage, a structural equation model, such as a path model or factor analytic model, is fitted to the pooled correlation matrix (Cheung, 2015b; Cheung, 2019a).

MASEM allows researchers to test the explanatory value of a theorized model against one or more competing models that cannot be carried out by meta-analysis alone (Bergh et al., 2016, Tarka, 2018) demonstrating the superiority of one type of process or mechanism model over another (Grewal et al., 2018).

Within the MASEM framework, two main approaches have been developed to conduct meta-analysis: univariate-r (Viswesvaran & Ones, 1995) and multivariate-r methods, such as two-stage meta-analytic structural equation modeling (TSSEM) (Cheung & Chan, 2005; Cheung, 2014; Cheung, 2015b).

Recent empirical evidence demonstrated the superiority of the TSSEM approach over the univariate-r (e.g., Tang & Cheung, 2016), in terms of handling the dependency between correlation coefficients (Jak & Cheung, forthcoming) and handling missing correlations data (Lv & Maeda, 2019). Several empirical studies have applied MASEM in the fields of

management, entrepreneurship and marketing[7] to test theoretical models. Particularly, some researches included the test of models which incorporated strategic orientations[8]. An increase in the number of studies is expected, as further research is suggested using this kind of methodology (e.g., Bergh et al., 2016; Grewal et al., 2018).

Mediation analysis implies the examination of underlying mechanisms and processes that connect antecedents and outcomes, being this critical for advancing strategic management theory and practice (Aguinis et al., 2017). Path analysis is a well-known special case of SEM and it is considered appropriate to test mediation (Boyd et al., 2012). Path models allow to hypothesize the relationships of observed variables and how these variables affect others. It is regarded as a powerful analytical tool to test 'causal' models with observational data[9] (Cheung, 2019a).

Moderation analysis represents the idea that the magnitude or direction of the effect of an outcome variable's antecedent depends on contingency factors, whereas mediation points to the presence of an intervening variable or mechanism that transmits the effect of an antecedent variable on an outcome (Aguinis et al., 2017). Subgroup moderation analysis within a contingency approach involves splitting the sample into groups based on the level of the contextual variable and the application of significance tests of the correlation coefficients to indicate differences between groups (Edwards & Lambert, 2007; Boyd et al., 2012).

[7] Studies using MASEM are related to topics such as international business (Tang & Cheung, 2016); strategic leadership (Bergh et al., 2016); individual innovation (Baer et al., 2015); CEO compensation and succession (van Essen et al., 2015; Schepker et al., 2017); radical and incremental innovation (Chang, et al., 2014); transformational leadership and creativity (Koh et al., 2019; Horstmeier et al., 2017; Kraft & Bausch, 2016); entrepreneurial intention (Haus et al., 2013; Schlaegel & Koenig, 2014); ordinary and dynamic capabilities (Karna et al., 2016); entry mode determination (Tang, 2013); sales performance (Verbeke et al., 2010), meaningful work (Allan et al., 2019); family control (van Essen et al., 2015; Carney et al., 2015); purchasing and supply management (Foerstl et al., 2016), international entrepreneurship (Schwens et al., 2017).

[8] For instance, Miao et al. (2017) analyzed the relationship between human and social capital and firm performance suggesting that EO plays a role as partial mediator in the relationship. Similarly, Rosenbusch et al. (2013) found that EO plays a full mediating role between a firm's task environment and performance. On the other hand, Chang et al. (2014) studied the differential mediating effects of innovation on market orientation-performance relationship, suggesting that MO directly and indirectly impacts on performance through radical and incremental innovation, and through new product performance. Finally, Kraft & Bausch (2016) examined the relationship between transformational leadership and innovation, finding that MO and LO play a partial mediating role between transformational leadership and exploitative innovation, whereas EO does not mediate the relationship; also LO and EO play a partial mediating role between transformational leadership and exploratory innovation, and whereas EO does not mediate the relationship.

[9] Landis (2013) pointed out that "researchers using MASEM to test causal models should exercise caution when drawing inferences about model fit. Unless all data come from primary studies that permit causal inferences –experimental designs–, MASEM results should be interpreted only as evidence that is consistent with the specified structure" (p. 260). In this sense, it is necessary to note and highlight that the nature of the results does not allow to strictly infer causal relationships, only provide high-level assessment for theory testing and for retain a structure that empirically fits the cumulated data well. Therefore, the term 'effect' is used only as a matter of convenience (Aguinis et al., 2017). Also, the expression ''true' causal effects' only may be used to note that the causal structure of the model is correctly specified (Edwards & Lambert, 2007). As noted by Landis (2013), the estimates from the MA provided strong evidence regarding the bivariate relations of focal variables, and the SEM results suggest the potential viability of the tested causal model. Results must be appropriately tempered and considered somewhat exploratory.

One possible way to meta-analytically conduct mediation and moderation analysis is through MASEM's two-stage SEM approach (TSSEM) (Cheung & Chan, 2005; Jak, 2015; Cheung, 2015b). Assessing the usefulness and validity of one hypothesized model extracted from the vast literature involves the analysis of direct and indirect effects of strategic orientations on firm performance to delve into the 'true' mediating nature of innovation. On the other hand, evaluating whether *a priori* contingency factors modify the aforementioned effects or not simultaneously requires the analysis of differences between groups of interest (Boyd et al., 2012).

Through the implementation of a meta-analytic path model it is possible to fit or test structural equation models for relations among several variables from multiple samples using zero-order correlations available in primary studies. The use of path modeling allows one to explore intermediate mechanisms in relationships by taking into account both direct and indirect effects (Cheung, 2015b; Boyd et al., 2012; Aguinis et al., 2017).

Drawing on a dataset consisted of 135 independent samples from 132 selected primary studies, 289 unique effect sizes and 33,063 observations, this research conducts a meta-analytic path analysis applying TSSEM approach (Cheung & Chan, 2005; Cheung, 2014; Cheung, 2015b; Jak, 2015) using R package metaSEM (Cheung, 2015a), and following Bergh et al.'s (2016) and Grewal et al.'s (2018) steps and recommendations.

Complementing the meta-analytic approach, text mining, defined as "the discovery and extraction of interesting, non-trivial knowledge from free or unstructured text" (Kobayashi et al., 2018, p. 4), is a possible way to produce knowledge derived from textual patterns and relationships, and can be used to reveal facts, trends, or constructs (Kobayashi et al., 2018; Delen & Crossland, 2008).

Co-occurrence network analysis, a text content analysis –and therefore text mining technique–, provides a graphical visualization of the relationship between strategic orientations, innovation and firm performance extracted from texts, allowing for the discovery and visualization of co-occurrence association patterns. Since concepts having similar appearance patterns are directly linked to one another, it is easier to identify the groups of concepts that represent main topics in texts using a co-occurrence network (Higuchi, 2016).

Based on Form 10-K annual reports of 48 firms within S&P 500's communication services and materials sectors, this research conducts a co-occurrence network analysis using

text analysis software KH Coder (Higuchi, 2016) to statistically and visually extract information from the text data.

1.5. Contributions of the research

Integrating accumulated knowledge implies to quantitatively synthesize the available literature's data, since the results yielded from previous studies on the analyzed relationships are inconclusive –conflicting or contradictory findings, lack of empirical examination or incongruence in the strength of mediating effects sizes–, and fragmented –focusing only in one orientation, or one link [i.e., MO and innovation] or one type of size of firms [i.e., SMEs], or industry sector [i.e., services]–. This dissertation addresses the call for further development of underlying mechanisms –mediation and moderation– (e.g. Boyd et al., 2012; Aguinis et al., 2017) and the exploration of multiple strategic orientations' association patterns observed in business practice (Grinstein, 2008b).

Contributions of this dissertation are four-fold: First, conducting a meta-analytic path analysis provides a more comprehensive understanding of the relationship between strategic orientations, innovation and firm performance in a chain-of-effects perspective avoiding circular arguments. This dissertation assesses the validity and utility of the three-hypothesized approaches –universalistic, intermediary and holistic– to identify which theoretical approaches are more or less important to consider for further research demonstrating the superiority of one mechanism model over another (Grewal et al., 2018) for the sake of the advance in the explanatory and predictive adequacy of theories (Bergh et al., 2016).

Second, implementing a mediation analysis for addressing questions related to how strategic orientations impact on firm performance allows researchers to acknowledge the 'true' causal relationships, being critical for this to link strategic orientations, innovation and firm performance separately in a chain-of-effects perspective. Calculating the effects of the relations involved on the superior hypothesized approach allows to determine the 'true' links between them, and the null, full or partial mediating nature of innovation in order to retain an empirical structure for future research. Examining the 'black box' of the relationship between strategic orientations and firm performance is of high relevance for both —theory and practice— as it provides deeper insights on the differential effects of the strategic orientations "which are among the most relevant to innovation and reflect different philosophies, values, cultures and behaviors" (Kraft & Bausch, 2016, p. 2).

Third, implementing a contingency approach helps provide more methodological precision leading to important and useful insights for theory and practice. In addition, combining mediation and moderation provides benefits from greater use in theory building and testing (Boyd et al., 2012; Aguinis et al., 2017). As contingency approach through moderated-mediation subgroup analysis pays attention to situational exigencies depending on firms' competitive settings (Gupta & Batra, 2016), determining whether the relationship between strategic orientations, innovation, and firm performance changes as a function of *a priori* categorical contingency factors, such as firm size and industry sector is relevant for both practitioners and academics. Thus, it is possible for managers to improve their decision-making process more accurately by acknowledging their own firm's characteristics and context, focusing on the strategic traits which better encourage their innovation outcomes to attain a superior performance.

Fourth, setting a data-driven text mining approach applying a co-occurrence network analysis combining co-occurrence analysis –for the identification of strategic orientations' associations– with network analysis –for patterns extraction– provides a statistical, graphical and intuitive visualization of structural information on firms' strategies in real business contexts. This kind of text mining techniques allows to gain a more sophisticated understanding of the interplay between those constructs of interest moving beyond examining constructs from an excessive aggregated manner –as in the MASEM approach–, which does not allow to clearly appreciate how strategic orientations –as market-based resources– are multidimensional in nature and exhibit the characteristic of resource complementarity. Based on the disaggregated view, the text mining application –co-occurrence network analysis– visually allows to understand how strategic orientations are associated and adopted in a real business context –S&P500 companies–. Most of the studies employing text analysis in organizational research are CATA-based (Kobayashi et al., 2018); so far, no study on strategic orientation further applied text mining, beyond construct measurement and validation, to dynamically explore associations of strategic orientations adopted by firms, and how orientations shape patterns of association with innovation and firm performance in practice.

1.6. Content and layout of the dissertation

This doctoral dissertation is structured in five chapters as follows: the first chapter introduced the research topics, gaps, approaches and questions, objectives and overall contributions of the research (see Figure 1).

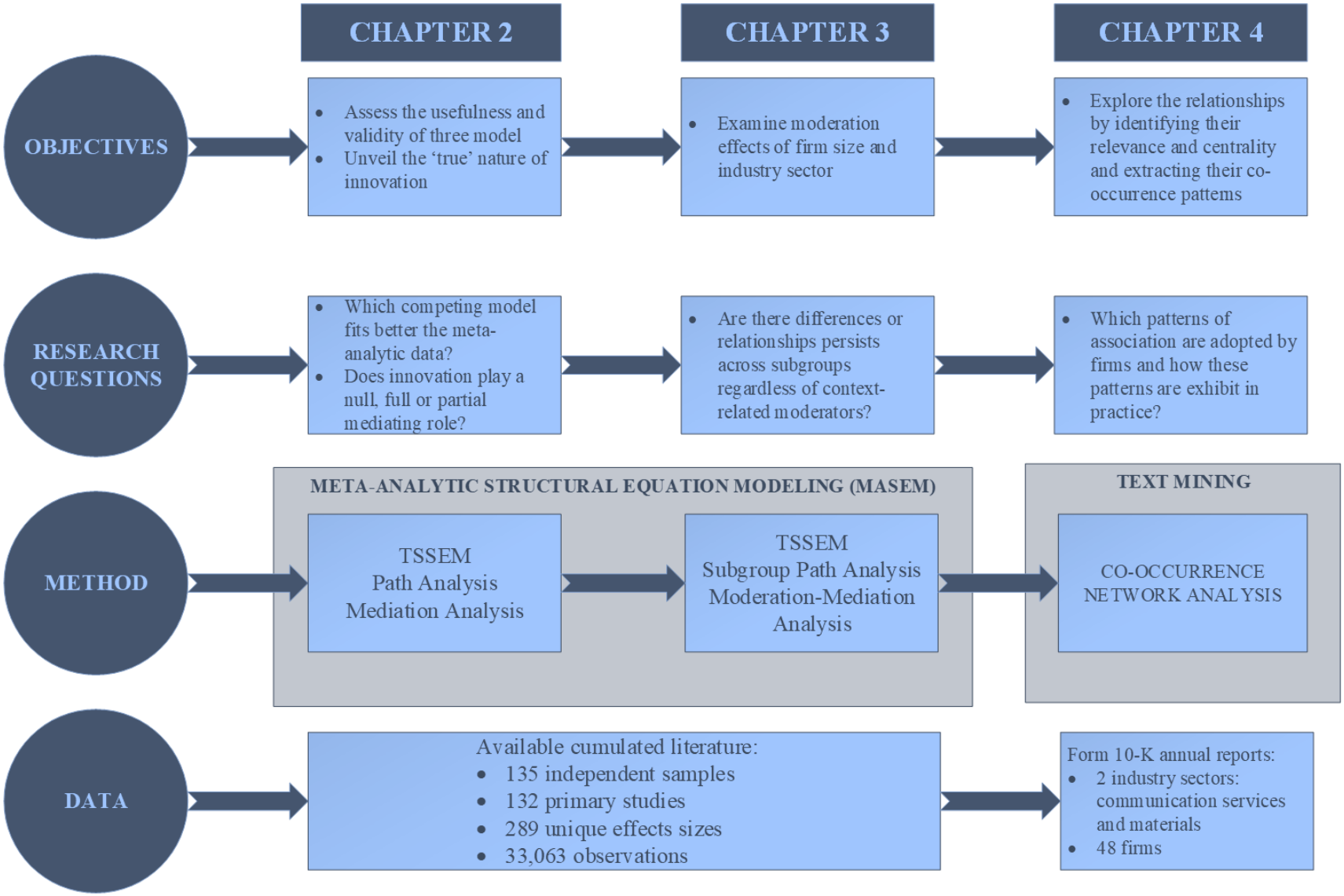
The second chapter presents and assesses three theoretical approaches assumed in past research in the strategic orientations, innovation and firm performance relationships: 1) the universalistic approach which implies that the strategic orientations exert only direct effects on firm performance; 2) the intermediary approach which implies that strategic orientations complementarily and jointly exert only indirect effects on firm performance through innovation as full mediator; 3) the holistic approach which implies that strategic orientations complementarily and jointly exert simultaneous direct and indirect effect on firm performance through innovation as partial mediator. The chapter quantitatively synthesizes the available literature's data in a meta-analytic path analysis framework using two-stage structural equation modeling (TSSEM), to assess their usefulness and validity to retain a superior theoretical structure for future research and to delve into the 'true' role of innovation.

The third chapter examines the role of contingency factors such as firm size –large vs. SME firms– and industry sector –manufacturing vs. service firms– in the relationships between strategic orientations and firm performance, mediated by innovation. The holistic approach is selected as the overall model to test hypotheses regarding to differences or persistence of direct and indirect effects among subgroups of interest, and to test moderating effects on the mediating role of innovation. Assuming a contingency approach, this chapter meta-analytically integrates moderation and mediation analysis through subgroup path analysis using MASEM's two-stage structural equation modeling.

The fourth chapter explores the relationships between strategic orientations, innovation and firm performance by identifying their relevance and centrality and extracting their co-occurrence patterns, in order to better understand how these constructs of interest are adopted, combined and balanced in business practice. Assuming a text mining approach through co-occurrence network analysis, this chapter extracts information from the text data statistically and visually. As a result, a network map of combination patterns is obtained, delving into the interplay among them in a graphical manner.

Finally, the fifth chapter reports the main findings and discussion, limitations of the dissertation, the managerial implications, and future lines of research.

Figure 1. Layout of the dissertation



CHAPTER 2: THE RELATIONSHIP BETWEEN STRATEGIC ORIENTATIONS, INNOVATION, AND FIRM PERFORMANCE: A META-ANALYTIC ASSESSMENT OF THEORETICAL MODELS

2.1. Introduction

The concept of strategic orientation has attracted widespread attention in the marketing, management and entrepreneurship literature over the past two decades (Hakala, 2011; Deshpandé et al., 2012), focusing mainly in three orientations: market orientation (MO), entrepreneurial orientation (EO), and learning orientation (LO), where MO entails a culture and behaviors which consider customers as the center of a firm's activity (Gatignon et al., 2016; Gnizy et al., 2014); EO involves the propensity to pursue new market opportunities (Lumpkin & Dess, 1996; Covin & Slevin, 1991); and LO has to do with the inclination to develop knowledge in the firm (Grinstein, 2008b).

By definition, strategic orientations are linked to firm performance as its antecedents and important drivers (Hult et al., 2004). However, the nature of this relationship is not trivial.

Most of the studies on strategic orientation focused on their individual direct effects on firm performance, finding MO, EO and LO to positively influence performance separately, whereas a fewer research body jointly and in an interrelated perspective studied MO, EO, and LO effects on performance (Deutscher et al., 2016). Likewise, it was stated that synergy of complementary orientations is potentially more efficient and effective creating sustainable competitive advantages than that of any single orientation operating independently (Hakala, 2011; Grinstein, 2008b; Mu & Di Benedetto, 2011).

Alternatively, several studies captured the strategic orientation and firm performance relationship through mediating mechanisms (Hakala, 2011). It is plausible that the impact of strategic orientations on firm performance has been understated due to the fact that their effects may be indirect or, which is the same, there could exists other constructs that mediate the relation (e.g., Arunachalam et al., 2018; Baker & Sinkula, 2009; Han et al., 1998; Langerak, 2003; Leal-Rodríguez & Albort-Morant, 2016; Matear et al., 2002; Zhou et al., 2005).

Firm innovativeness can be conceptualized in terms of a firm's innovation outcomes which refers to the "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and

markets; development of new methods of production; and establishment of new management systems" (Crossan & Apaydin, 2010, p. 1155). From a first-mover advantage rationale, innovation can be established as a mediating mechanism linking organizational culture capabilities –in this case, strategic orientations– and firm performance. It is well known the role of innovation as a critical factor for firm value, market and financial position (Rubera & Kirca, 2012) and for the long-term viability and competitive advantage (Baker & Sinkula, 2005; Geroski, 1995).

Marketing, entrepreneurship, and management scholars claim for the need to quantitative synthesize and integrate the current state of knowledge by identifying and assessing different theoretical approaches linking strategic orientations and firm performance (Hakala, 2011).

2.2. Hypothesis development

Under the resource-based theory (RBT) of the firm, strategic orientations are important organizational capabilities that together contribute to sustainable advantage and superior firm performance (e.g., Hult & Ketchen, 2001; Zhou et al., 2005; Lonial & Carter, 2015). However, RBT does not explain the complex path sequence through which strategic orientations translate into financial outcomes (Poudel et al., 2012).

In this sense, the first-mover advantage (FMA) (Kerin et al., 1992) arises as a theoretical perspective that complements RBT, allowing to better understand how strategic orientations as firm's organizational cultural capabilities (e.g., MO, EO and LO) are translated into superior performance through innovation (e.g., product, process, and organizational innovations). First-mover firms produce a competitive advantage by generating abnormal positive profits due to monopoly rents and bys defining consumer attitudes in a new market (Poudel et al., 2012; Arunachalam et al., 2018; Kumar et al., 2011).

This research draws on hypothesized theoretical model following the next structure: universal approach –in line with RBT– [strategic orientations (resources/capabilities) → firm performance (sustainable superior performance)]; intermediary and holistic approaches –in line with a mixed RBT and FMA– following a structure such as: [strategic orientations (resources/capabilities) → innovation (competitive advantage) → firm performance (sustainable superior performance)].

Some analytic approaches in the vast research literature, depicted as theoretical models, have been assumed to determine the effect of strategic orientations on firm performance. This dissertation identifies three different theoretical approaches assumed in past research[10]:

1) The universalistic approach, which implies that the strategic orientations exert independent and parallel direct effects on firm performance;
2) The intermediary approach, which implies that strategic orientations complementarily and jointly exert indirect effects on firm performance through innovation as full mediator in the relationship;
3) The holistic approach, which implies that strategic orientations complementarily and jointly exert simultaneous direct and indirect effect on firm performance through innovation as partial mediator: MO and LO exert direct and indirect effects whereas EO exerts only indirect effects.

2.2.1. Universalistic approach: direct effects of strategic orientations on firm performance

2.2.1.1.Firm Performance

Firm performance refers to "the economic outcomes resulting from the interplay among an organization's attributes, actions, and environment" (Combs, Crook, & Shook 2005, p. 262) capturing the underlying manifestations of how well a firm is effectively satisfying its stated goals (Bergh et al., 2016; Combs et al., 2005). At a broad level, firm performance can be differentiated as operational performance and organizational performance. The latter relates to the firm as a whole, whereas the former is associated with specific functional areas within the firm –i.e., product-market performance– (Venkatraman & Ramanujam, 1986; Combs et al., 2005; Katsikeas et al., 2016).

2.2.1.2.Market Orientation

Market orientation (MO) is considered as the extent to which a firm implements the marketing concept (Kohli & Jaworski, 1990). MO entails a culture and behaviors that are consistent with the rooted conception that customers constitute the center of a firm's activity (Gatignon et al., 2016; Gnizy et al., 2014). MO, from the cultural approach, is defined in terms

[10] Table 3 –Codification of the meta-analysis variables– and Table 15 –code rule of the constructs of interest– show a comprehensive definition and operationalization of the variables involved in the meta-analytic and text mining procedures of this dissertation, for a better understanding of the theoretical underpinning of the hypothesized models.

of the culture that effectively and efficiently creates value for customers through understanding customers' needs and wants –*customer orientation*–; understanding rivals' strengths and weaknesses and how they are satisfying customers' needs and wants –*competitor orientation*– ; and the firm-wide use of the organization's resources –*inter-functional coordination*– (Narver & Slater, 1990, p. 21; Hult & Ketchen, 2005). MO, from the behavioral approach, is also viewed as the set of firm-level market-information processing behaviors focused on "the organization-wide *generation of market intelligence* pertaining to current and future customer needs, *dissemination of the intelligence* across departments, and organization-wide *responsiveness* to it" (Kohli & Jaworski 1990, p. 6).

2.2.1.3.Market Orientation and Firm Performance

Market-oriented firms boost their performance by responding to fluctuating customer needs with solutions that are superior to rivals' offerings (Ellis, 2006; Narver & Slater, 1990; Kohli & Jaworski, 1990), providing a customer-oriented focus or reshaping an organization's culture for developing superior value for customers (Liao et al., 2011). Most of the empirical research confirmed the universal nature of the link between MO and performance (e.g., Chang et al., 2014; Doyle & Armenakyan, 2014; Ellis, 2006; Kirca et al., 2005; Liao et al., 2011; Rodríguez-Cano et al., 2004; Shoham et al., 2005; Verhoef et al., 2011), suggesting that the positive effect of MO on performance is no longer in doubt (Grinstein, 2008a).

2.2.1.4.Entrepreneurial Orientation

Entrepreneurial orientation (EO) captures the specifically entrepreneurial aspects of firms' strategies that lead to new entry in order to pursue new market opportunities (Covin & Slevin, 1991; Lumpkin & Dess, 1996, p. 136). EO focuses on the generation of new ideas and creative processes that eventually result in new products or services –*innovativeness*–; the willingness to support projects with possibilities of calculated failure –*risk taking*–; the early action against future contingencies and the forecasting of the actions of competitors by the introduction of new products and services ahead of the competition, acting in anticipation of future demand –*proactivity*– (Covin & Slevin, 1989; Miller, 1983). EO is complemented by the freedom of individuals and teams to develop and implement new ideas –*autonomy*–; and the defiant attitude towards competitors –*competitive aggressiveness*– (Lumpkin & Dess, 1996; 2001).

2.2.1.5.Entrepreneurial Orientation and Firm Performance

Entrepreneurial-oriented firms lead to higher performance in the long-term responding to the shortening of product and business model life cycles by taking advantage of emerging opportunities and regularly renewing themselves through new growth trajectories (Covin & Lumpkin, 2011; Wiklund, 1999). Entrepreneurship changes an organization's relationship with the environment by reallocating resources through product and market development. Empirical studies largely confirmed the EO and firm performance positive relationship (Rauch et al., 2009; Wang, 2008; Wiklund, 1999; Wiklund & Shepherd, 2005; Zahra & Covin, 1995).

2.2.1.6.Learning Orientation

Learning orientation (LO) is considered as the set of organizational key values that influence the propensity of the firm to learn by generating, processing and using market information and new knowledge (Sinkula et al., 1997; Calantone et al., 2002). LO is related to the promotion of a culture of learning, reasoning and assessment of the causes and effects of actions implemented –*learning commitment*–; the willingness to critically evaluate the organization's operational routine and to accept new ideas –*open-mindedness*–; the dynamics that guide the organization towards learning together –*shared vision*– (Baker & Sinkula, 1999a); and the collective beliefs or behavioral routines related to the spread of learning among the organization –*intra-organizational knowledge sharing*– (Calantone et al., 2002).

2.2.1.7.Learning Orientation and Firm Performance

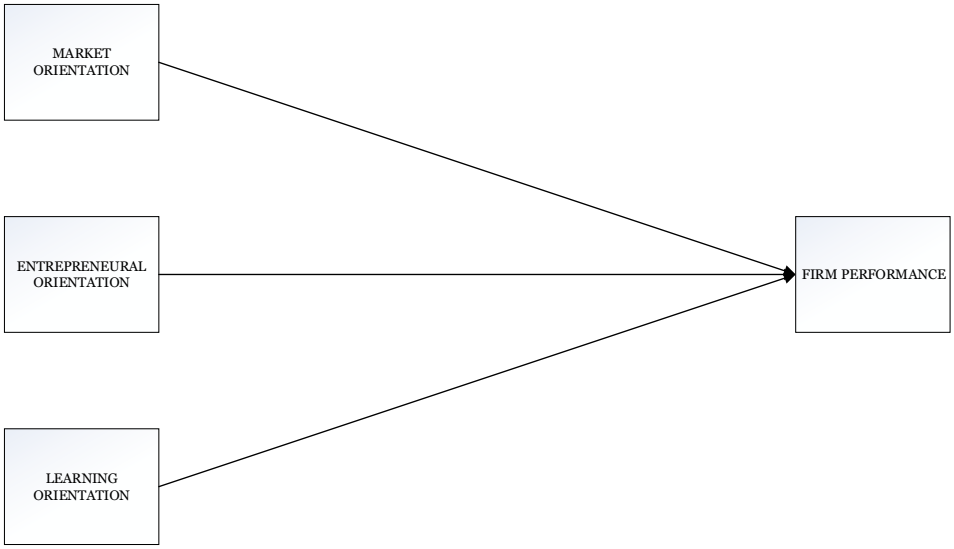
Learning-oriented firms achieve superior performance by better tailoring their operational capabilities with the demands of the external environment beyond only a market focus, foreseeing environmental and market changes and making adjustments, which implies systematically challenging the fundamental operating philosophies, mental models and theories in use throughout a generative learning mindset (Gnizy et al., 2014; Baker & Sinkula, 1999a, p. 412; Calantone et al., 2002). Empirical findings support that LO has a significant positive impact on performance (e.g., Slater & Narver, 1995; Baker & Sinkula, 1999a,b; Liu et al., 2002; Calantone et al., 2002; Farrell & Oczkowski, 2008; Wang, 2008).

As noted previously, most of the research literature on strategic orientation focused on the direct effect of each particular orientation on firm performance, finding MO, EO and LO to positively influence firm performance separately (Deutscher et al., 2016; Hakala, 2011),

denoting the universal nature of the link between strategic orientations and firm performance (see Table 1).

This perspective of the strategic orientation and firm performance relationship can be labeled as the universalistic approach based on the assumption that strategic orientations are 'best practices prescription' (Deshpandé et al., 2012, p. 630) valid for every firm in a given situation, since their impact is positive and direct on firm performance creating superior value. This approach is depicted as a model (see Figure 2).

Figure 2. Universalistic approach hypothesized model: direct effects of strategic orientations on overall firm performance



2.2.2. Intermediary approach: indirect effects from complementary and jointly strategic orientations on firm performance through innovation as full mediator

2.2.2.1.Innovation –as an outcome– linking strategic orientations and firm performance

Innovation is regarded as a critical factor for firm value, market and financial position (Rubera & Kirca, 2012) and for the long-term viability and competitive advantage (Baker & Sinkula, 2005; Geroski, 1995). Firm innovativeness can be conceptualized in terms of a firm's innovation outcomes which refers to the "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems" (Crossan & Apaydin, 2010).

Table 1. Summary of findings of meta-analytic and systematic reviews relating to the relationship between strategic orientations and performance

STUDY	STRATEGIC ORIENTATION	PERFORMANCE	FINDINGS
Cadogan (2012)	MO, EO, LO	INTERNATIONAL PERFORMANCE	The relationship between MO, EO, LO, and international performance may be non-linear.
Doyle & Armenakyan (2014)	MO	ORGANIZATIONAL PERFORMANCE	MO has at least a medium-level effect on organizational performance.
Ellis (2006)	MO	PERFORMANCE	The relationship between MO and performance is positive.
Gupta, Atav, & Dutta (2017)	MO	PERFORMANCE	64% of MO studies focused on performance as the dependent variable. Of these, 33 studies investigated specific performance.
Hakala (2011)	MO, EO, LO	PERFORMANCE	MO, EO, and LO are positively connected to the performance of a firm.
Kirca, Jayachandran, & Bearden (2005)	MO	ORGANIZATIONAL PERFORMANCE	MO has a positive impact on organizational performance.
Langerak (2003)	MO	BUSINESS PERFORMANCE	There exists a positive relationship between market orientation and performance; compelling evidence exists that market orientation leads to positive business performance (through i.e., innovation).
Liao, Chang, Wu, & Katrichis (2011)	MO	PERFORMANCE	MO directly impacts on performance. Only two published articles out of the 38 found no significant relationship between MO and performance, and two others found a weak relationship.
Noble, Sinha, & Kumar (2002)	MO	FINANCIAL PERFORMANCE	Innovativeness weakly and negatively mediate the relationship between private label brand and ROS.
Rauch, Wiklund, Lumpkin, & Frese (2009)	EO	PERFORMANCE	The relationship between EO and performance is strongly positive.
Rodriguez Cano, Carrillat, & Jaramillo (2004)	MO	BUSINESS PERFORMANCE	The relationship between MO and performance is positive.
Rosenbusch, Rauch, & Bausch (2013)	EO	PERFORMANCE	The relationship between EO and performance is positive.
Shoham, Rose, & Kropp (2005)	MO	PERFORMANCE	The MO-to-performance link is significant and robust.
Vieira (2010)	MO	GLOBAL PERFORMANCE	The relationship between MO and global performance is strongly positive.
Zolfaghari, Rialp, & Nowiński (2013)	EO	INTERNATIONAL PERFORMANCE	The relationship between EO and international performance is positive.

Likewise, innovation as an outcome refers to the consequences of innovation activities or the outputs of the innovation process including the aspect of exploitation and answering questions about 'what' or 'what kind' of innovation (Crossan & Apaydin, 2010).

Innovation is associated with competitive advantage (e.g., Hunt & Morgan, 1996; Geroski, 1995; Chandy & Tellis, 1998), and it is stated that the impact of strategic orientations on firm performance may be indirect and that innovation mediates the relation (e.g., Baker & Sinkula, 2009; Leal-Rodríguez & Albort-Morant, 2016; Aruchalanam et al., 2018). Innovation serves as a key transmitting factor –not the only one– explaining how and why the relationship occur in a causal chain-of-effects.

As Gupta et al. (2017, p. 12) reported, innovation is frequently used to explain the causal processes linking MO with its outcomes –37 studies testing mediating effects–. Findings varied from not supported to highly supported. Causal processes have been also studied linking EO with performance, including innovation as a mediator in the relationship (Wales et al., 2013); however, most of the research have been conducted using performance as a direct outcome variable, which is the accepted convention (Arunachalam, et al., 2018). Evidence of mediating effects of innovation is also found between LO and performance (e.g. Baker & Sinkula, 1999b; Nybakk, 2012). Literature is inconsistent in term of whether innovation plays a partial or full mediation role in this relationship (Nybakk, 2012).

2.2.2.2.Innovation and Firm Performance

Innovation is generally linked as a driver to firm performance (see Table 2). It is stated that innovation capability is the most important determinant of firm performance (Crossan & Apaydin, 2010). According to Rubera & Kirca (2012), the positive relationship between innovation and performance is due to the profit extraction in a temporary quasi-monopoly position which enables a firm to gain 'above-the-normal' rents. In this line, there is sufficient meta-analytic evidence of a positive relationship between innovation and firm performance (e.g., Bowen et al., 2010; Calantone et al., 2010; Camisón-Zornoza et al., 2004; Chang et al., 2014; Damanpour, 1991; Evanschitzky et al., 2012; Kemp et al., 2003; Kock, 2007; Montoya-Weiss & Calantone, 1994; Rubera & Kirca, 2012; Saeed et al., 2015; Sattler, 2011; Szymanski et al., 2007; Vincent et al., 2005).

2.2.2.3.MO and Innovation

MO is a basis for innovation (Akman & Yilmaz, 2008; Jaworski & Kohli, 1993). As Baker & Sinkula (2009, p. 449) pointed out, "Market-oriented firms are more likely to be first to market with new generations of products and services, and they are more likely to engage in brand and line extensions to new target markets." The competitive advantage from having a MO may be greater for the first –early– adopters in the industry in terms of sales and profit through the outcomes of innovation –e.g., product or service innovation– (Kumar et al., 2011).

Still, the link between MO and innovation might be ambiguous. As Chang et al. (2014, p. 237) suggested, MO hinders the firms' ability to develop radical innovation, which is known as 'the tyranny of the served market.' Alternatively, MO seeks to understand and satisfy customers' latent needs, not just their expressed needs (e.g., Kohli & Jaworski, 1990; Slater & Narver, 1995). Therefore, MO can provide firms with opportunities to detect problems that customers are not typically able to articulate but that could be addressed by radical innovation. Nevertheless, MO might not be sufficient to identify latent customer needs that are necessary to develop radical innovations (Kraft & Bausch, 2016; Zhou et al., 2005). However, MO can facilitate at least incremental innovation. The direct effect of MO on innovation is well documented. Particularly, there is a clear and consistent link between MO and technical and administrative innovation (e.g. Han et al., 1998); MO and product/service innovation (e.g., Atuahene-Gima, 1995; Boso et al., 2013; Cheng & Krumwiede, 2012; Langerak et al., 2004, 2007; Liu, 2011; Liu & Chen, 2015; Paladino, 2008; Vázquez et al., 2001); MO and radical innovation (e.g., Augusto & Coelho, 2009; Chang et al., 2014; Li et al., 2008a; Lukas & Ferrell, 2000; Spanjol et al., 2012; Zhou et al., 2005); MO and new product development (e.g., Calantone et al., 2003; Frishammar & Horte, 2007; Im & Workman, 2004); and MO and innovation outcomes (Leal-Rodríguez & Albort-Morant, 2016).

2.2.2.4.EO and Innovation

As Crossan & Apaydin (2010, p. 1177) asserted, "Entrepreneurship and innovation are intrinsically related as both involve the processes of discovery, evaluation, and exploitation of opportunities –entrepreneurship– and novelties –innovation–." EO and innovation can be clearly linked with each other due to the fact that the essential outcome of EO is the start of a new business, firm's entry into new or established markets or the introduction of new products into existing markets (Zhou et al., 2005; Lumpkin & Dess, 1996). Thereby, the greater the

introduction of innovative products, the greater the competitive advantage of the firm, and the more difficulties the firm's competitors will face in developing effective responses (Wernerfelt, 1984). There is a consistent link between EO and product, process, and administrative innovations (Alegre & Chiva, 2013; Covin & Miles, 1999; Ireland & Webb, 2007), and EO and breakthrough innovations (Lumpkin & Dess, 1996; Zhou et al., 2005; Avlonitis & Salavou, 2007; Renko et al., 2009).

2.2.2.5.LO and Innovation

LO is closely related to innovation and is thought to be as an important antecedent (e.g., Calantone et al., 2002; Nybakk, 2012). LO defines the innovation process itself (Baker & Sinkula, 1999b; Keskin, 2006) by scanning the external environment for new technological paradigms, in terms of 'think outside the box'. Learning-oriented firms are more likely to use technology and less likely to miss the opportunities, leading to the development of breakthrough products, services, and technologies, and the exploration of new markets (Farrell, 2000; Slater & Narver, 1995; Calantone et al., 2002). Support for the link between LO and product, process, and business systems is provided (e.g., Nybakk, 2012; Spanjol et al., 2012), LO and radical innovation (e.g., Sheng & Chien, 2016; Salavou, 2005), and LO and new product success (e.g., Baker & Sinkula, 1999a).

2.2.2.6.Complementarities

Few existing studies simultaneously and in a complementary perspective analyzed MO, EO, and LO effects on performance and investigated sequential mediator relationships (Deutscher et al., 2016). Strategic orientations can exist and support each other at the same time in one organization (Leenders et al., 2016). Organizations combining several orientations perform better than those focusing on a single orientation (Hakala, 2011). The intermediary approach is based on the idea that no single strategic orientation alone is sufficient to generate superior performance and this kind of analyses provides only an incomplete picture of performance (Atuahene-Gima & Ko, 2001; Bhuian et al., 2005; Wang, 2008).

Given that strategic orientations are correlated, but distinct constructs (Baker & Sinkula, 2009), the association between them and performance might be stronger when they are considered collectively rather than in isolation (e.g., Calantone et al., 2002; Mu & Di Benedetto, 2011; Cambra-Fierro et al., 2012).

Table 2. Summary of findings of primary studies relating to the mediating role of innovation between strategic orientations and performance

STUDY	STRATEGIC ORIENTATION	INNOVATION	PERFORMANCE	FINDINGS
Agarwal, Erramilli, & Dev (2003)	MO	INNOVATION	OBJECTIVE PERFORMANCE; JUDGMENTAL PERFORMANCE	Innovation partially mediates the relationship between market orientation and judgmental performance. MO is insignificantly related to objective performance in the presence of innovation. MO is positively and significantly related to judgmental performance in the presence of innovation, which is also positively and significantly related to judgmental performance.
Alarcón del Amo, Gómez, Llonch, & Rialp (2014)	MO, EO, LO	INNOVATION SUCCESS	BUSINESS PERFORMANCE	Innovation success fully mediates the relationship between EO and business performance. MO is positively and significantly related to business performance
Alegre & Chiva (2013)	EO	INNOVATION PERFORMANCE	FIRM PERFORMANCE	Innovation performance fully mediates the relationship between EO and business performance.
Baker & Sinkula (2009)	MO, EO	INNOVATION SUCCESS	PROFITABILITY	Innovation success fully mediates the relationship between EO and profitability. MO is positively and significantly related to profitability.
Baker & Sinkula (1999)	MO, LO	PRODUCT INNOVATION	ORGANIZATIONAL PERFORMANCE	Product innovation fully mediates the relationship between MO and organizational performance and partially mediates the relationship between LO and organizational performance
Chang, Franke, Butler, Musgrove, & Ellinger (2014)	MO	RADICAL INNOVATION; INCREMENTAL INNOVATION	FIRM PERFORMANCE	Radical and incremental innovation partially mediate the relationship between MO and firm performance
Han, Kim, & Srivastava (1998)	MO	ORGANIZATIONAL INNOVATION	ORGANIZATIONAL PERFORMANCE	Organizational innovation fully mediates the relationship between MO and organizational performance.
Jiménez-Jimenez, Sanz Valle, & Hernandez-Espallardo (2008)	MO	INNOVATION	FIRM PERFORMANCE	Organizational innovation fully mediates the relationship between MO and firm performance.
Kocak, Carsrud, & Oflazoglu (2017)	MO, EO	RADICAL INNOVATION	FIRM PERFORMANCE	Radical innovation partially mediates the relationship between proactive MO and firm performance; radical innovation mediates the relationship between EO and firm performance.
Lages, Silva, & Styles (2009)	LO	PRODUCT INNOVATION	ECONOMIC PERFORMANCE	Product innovation fully mediates the relationship between PMO and firm performance.
Langerak, Hultink, & Robben (2007)	MO	NEW PRODUCT PERFORMANCE	ORGANIZATIONAL PERFORMANCE	New product performance fully mediates the relationship between MO and organizational performance.
Leal-Rodríguez, & Albort-Morant (2016)	MO	INNOVATION OUTCOMES	BUSINESS PERFORMANCE	Innovation outcomes fully mediate the relationship between MO and business performance.
Ledwith & O'Dwyer (2009)	MO	NEW PRODUCT PERFORMANCE	ORGANIZATIONAL PERFORMANCE	New product performance fully mediates the relationship between MO and organizational performance.

STUDY	STRATEGIC ORIENTATION	INNOVATION	PERFORMANCE	FINDINGS
Martínez Serna, Vega Martínez, & Vega Martínez (2016)	LO	INNOVATION	FIRM PERFORMANCE	Innovation fully mediates the relationship between LO and firm performance.
Matear, Osborne, Garrett, & Gray, (2002)	MO	INNOVATION	FIRM PERFORMANCE	Organizational innovation partially mediates the relationship between MO and organizational performance.
Mavondo, Chimhanzi, & Stewart (2005)	MO, LO	INNOVATION	ORGANIZATIONAL PERFORMANCE	Innovation mediates the relationship between market orientation and a) marketing effectiveness and b) operating efficiency. For financial performance there is not a significant direct effect from innovation. MO fully mediate the relationship between LO and Innovation.
Maydeu-Olivares & Lado (2003)	MO	INNOVATION DEGREE; INNOVATION PERFORMANCE	ECONOMIC PERFORMANCE	Innovation degree and innovation performance each taken separately fully mediate the relationship between MO and economic performance.
Medina & Rufín (2009)	MO	INNOVATION	FIRM PERFORMANCE	Innovation does not mediate (null mediation) the relationship between MO and firm performance. MO has no effect on innovation.
Noble, Sinha, & Kumar (2002)	MO	INNOVATIVENESS	ROS; ROA	Innovativeness weakly and negatively mediate the relationship between private label brand and ROS.
Nguyen, Yu, Melewar, & Gupta (2016)	MO, LO	BRAND INNOVATION	MARKET PERFORMANCE	Brand innovation fully mediates the relationship between LO and market performance; brand innovation fully mediates the relationship between MO and market performance.
Nybakk (2012)	LO	FIRM INNOVATIVENESS	FINANCIAL PERFORMANCE	Firm innovativeness fully mediates the relationship between LO and financial performance.
O'Cass, & Weerawardena (2009)	EO	INNOVATION INTENSITY	FIRM PERFORMANCE	Innovation intensity partially mediates the relationship between International EO and firm performance.
Olavarrieta & Friedmann (2008)	MO	ORGANIZATIONAL INNOVATIVENESS	NEW PRODUCT PERFORMANCE; FIRM PERFORMANCE	Organizational innovativeness partially mediates the relationship between MO and a) new product performance and b) firm performance.
Ozkaya, Droge, Hult, Calantone, & Ozkaya (2015)	MO	MARKET-BASED INNOVATIONS	FIRM PERFORMANCE	Market-based innovations partially mediates the relationship between customer knowledge competence and firm performance; Market-based innovations fully mediates the relationship between competitor knowledge competence and firm performance. Customer and competitor orientations have direct effects on customer and competitor knowledge competences, therefore, both customer and competitor orientations enhanced market-based innovations indirectly, but only competitor orientation affected market-based innovations directly.
Prifti & Alimehmeti (2017)	MO	INNOVATION	FIRM PERFORMANCE	Innovation partially mediates the relationship between MO and firm performance. MO is developed as a chain of effects from intelligence generation to intelligence dissemination and to responsiveness.

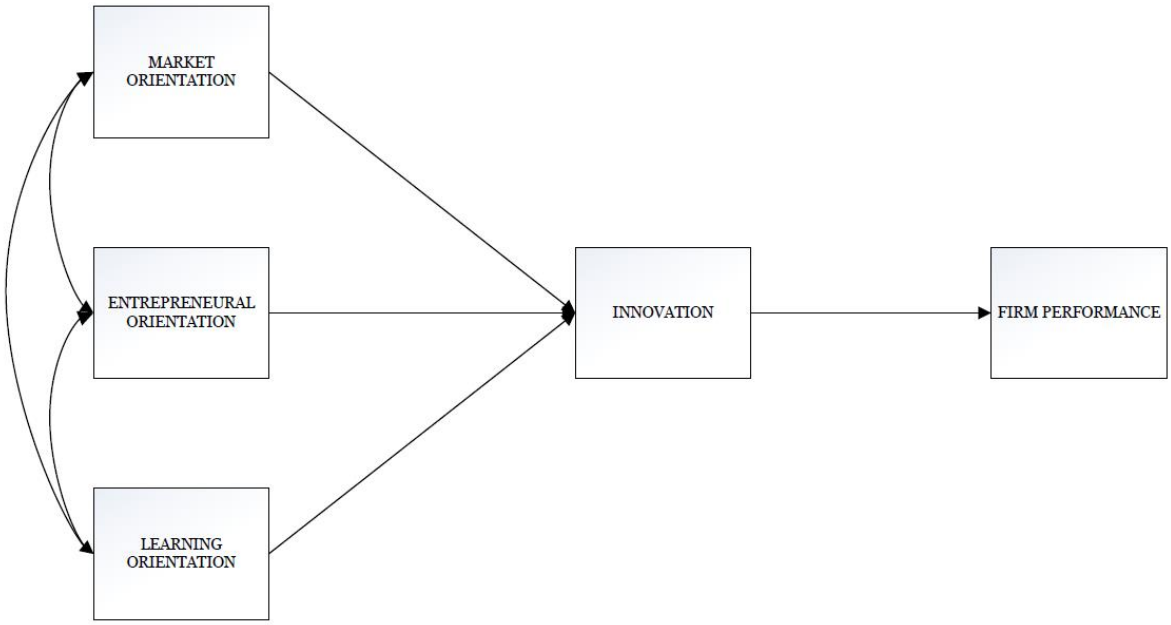
STUDY	STRATEGIC ORIENTATION	INNOVATION	PERFORMANCE	FINDINGS
Reid & Brady (2012)	MO	NPD PROGRAM SUCCESS	FIRM PERFORMANCE	NPD program success fully mediates the relationship between MO and firm performance. The indirect influence of MO is weak but significant.
Sandvik & Sandvik (2003)	MO	PRODUCT INNOVATIVENESS	BUSINESS PERFORMANCE	Product innovativeness fully mediates the relationship between MO and business performance. Relating to product innovativeness, only use of new-to-the-market products has a positive effect on business performance.
Tajeddini (2011)	MO, LO	NSD PERFORMANCE	BUSINESS PERFORMANCE	NSD performance partially mediates the relationship between MO and LO with business performance.
Thoumrungroje & Racela (2013)	MO, EO	PRODUCT INNOVATION	NEW PRODUCT PERFORMANCE; BUSINESS PERFORMANCE	Product innovation partially mediates the relationship between the interaction effect of customer orientation and EO and a) new product performance and b) business performance. Product innovation fully mediates the relationship between EO and a) new product performance and b) business performance.
Vázquez, Santos, & Álvarez (2001).	MO	INNOVATION RATE; NEW PRODUCT INNOVATIVENESS	COMPANY PERFORMANCE	Innovation rate fully mediates the relationship between MO and company performance. New product innovativeness partially mediates the relationship between MO and company performance.
Zehir & Wujiabudula (2016)	LO	PRODUCT INNOVATION	FIRM PERFORMANCE	Product innovation partially mediates the relationship between LO and firm performance.
Zhou, Yim, & Tse (2005)	MO, EO	BREAKTHROUGH INNOVATION	PRODUCT PERFORMANCE; FIRM PERFORMANCE	Breakthrough innovation fully mediates the relationship of MO and EO with a) product performance and b) firm performance.

When strategic orientations are operating synergistically, innovation could benefit from complementarity, which means that the effect of one orientation can increase the effectiveness and efficiency of other orientations and the combination of strategic orientations leads to superior performance (e.g., Mu & Di Benedetto, 2011; Gnizy & Shoham, 2014; Ho et al., 2015); or conversely, due to the overlapping of shared domains could dissipate their effects on innovation and firm performance (Baker & Sinkula, 2009).

The empirical research consistently demonstrates synergistic effects of MO (e.g., Baker & Sinkula, 1999a), EO (e.g., Hong et al., 2013; Li et al., 2008b), and LO (e.g., Baker & Sinkula, 1999a) on innovation and firm performance.

This intermediary approach concentrates on the complementary effects of strategic orientations on innovation rather than their potential impact on firm performance. This approach assumes a more comprehensive focus than the universal approach adding the complexity of the operating interplay between each strategic orientation to the relationship with firm performance and including innovation as a full mediator in the relationship in a simultaneous and chain of effects setting. This approach is depicted as a model (see Figure 3).

Figure 3. Intermediary approach hypothesized model: joint and indirect effects of strategic orientations on firm performance and the full mediating role of innovation



2.2.3. Holistic approach: simultaneous direct and indirect effects of joint interrelated strategic orientations on firm performance through innovation as partial mediator

2.2.3.1.Simultaneity

Previous approaches assume only direct effects of strategic orientations on firm performance –universalistic approach– or indirect effects through innovation as an antecedent of firm performance –intermediary approach–. However, by adding more complexity to the relationships between strategic orientations and firm performance it is possible to obtain a more comprehensive view to capture the 'true' links and to unveil the mediating role of innovation.

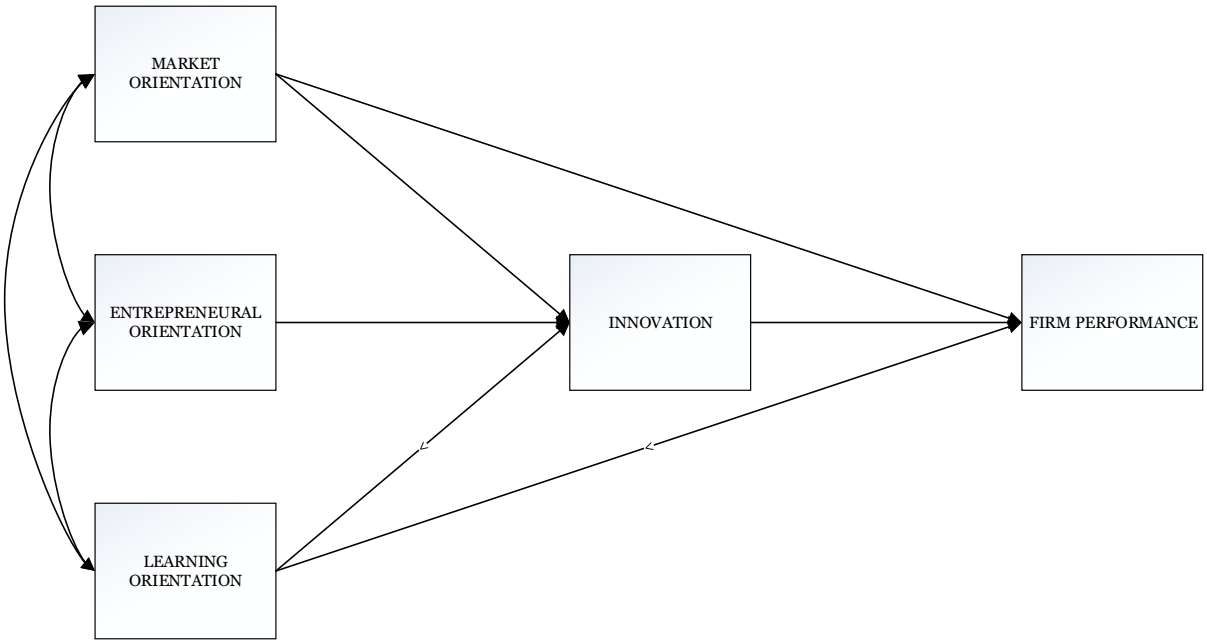
In this sense, in broad terms, MO and LO impact directly on firm performance: MO by achieving the objective of customer satisfaction, and LO by fitting operational capabilities with external environment demands through generative learning. However, in relation to the direct effect of EO on firm performance, in the holistic theoretical approach, this link is only indirect since most empirical research found a direct effect of EO on performance only when EO is studied separately, but not in the presence of innovation and MO (Baker & Sinkula, 2009). It is well established in the literature that the strategic activities implied by an EO, such as developing new products, have firm performance consequences (Rauch et al., 2009).

According to Arunachalam et al. (2018, p. 445), "EO provides the intent and direction for entrepreneurial activities of the firm, while innovation provides tangible value created by the firm that allows it to seek rent from its customers. The mediated impact will be positive as long as (a) value is created and (b) the firm captures most of the created value." This is consistent with Baker & Sinkula (2009), who stated: "A strong EO leads to the pursuit of new opportunity, which can lead to profitability, but only if it is realized through innovation success."

Therefore, it is reasonable to establish that the effect of EO on firm performance is fully channelized by innovation, from a first-mover rationale and as stipulated in the intermediary approach. Innovation captures the interplay effects of strategic orientations from a first-mover advantage rationale, although strategic orientations still impact directly on firm performance simultaneously. Here, innovation plays a partial mediating role due to the simultaneous direct effects from strategic orientation on firm performance and indirect effects trough innovation.

This perspective can be named as the holistic approach, which implies both direct and indirect effects of strategic orientations on firm performance and innovation plays a partial mediating role. This approach is depicted as a model (see Figure 4).

Figure 4. Holistic approach hypothesized model: joint direct and indirect effects of strategic orientations on innovation and on firm performance, and innovation plays a partial mediating role in the relationship



One of these three competing approaches can be considered superior against the others and must be retained for further research. The superior approach must fit adequately the cumulated empirical research data and delve into the 'true' role of innovation as a mediator in the strategic orientations and firm performance relationship.

Past research enables to formulate the research hypothesis which encompasses the universalistic, intermediary and holistic approaches of the strategic orientation and firm performance relationship, including the null, full or partial mediating role of innovation.

H1. The holistic approach is the superior theoretical approach compared against the universalistic and intermediary approaches.

2.3. Method

Meta-analytic structural equation modeling (MASEM) –a combination of meta-analysis (MA) and structural equation modeling (SEM)– is the investigation of associations among a group of variables suggested by a theoretical model on accumulated empirical findings

(Cheung, 2015b; Jak, 2015; Bergh et al., 2016; Landis, 2013). MASEM allows researchers to test the explanatory value of a theorized model against one or more competing models that cannot be carried out by meta-analysis alone (Bergh et al., 2016) demonstrating the superiority of one type of process or mechanism model over another (Grewal et al., 2018).

Path analysis is a well-known special case of SEM and one of the most popular applications of path analysis is mediation analysis. It is considered as an important analytical tool in testing and estimating causal relationships among observed variables (Cheung, 2015b).

A meta-analytic path analysis consists of the collection, extraction and combination of the available empirical research data in order to provide insight into the intermediate mechanisms in a chain of relationships, comparing hypotheses or models against one another to determine the explanatory and predictive adequacy of theories (Bergh et al., 2016). Through the implementation of a meta-analytic two-stage structural equation path model approach it is possible to fit or test structural equation models for relations among several variables from multiple samples' correlation or covariance matrices for those variables. The use of path modeling allows one to explore intermediate mechanisms in relationships by taking into account both direct and indirect effects (Cheung, 2015b).

This chapter conducts a meta-analytic path analysis applying MASEM's correlation-based two-stage structural equation modeling approach (TSSEM) (Cheung & Chan, 2005; Cheung, 2015b; Jak, 2015). This approach is superior to the traditional univariate methods in that it (a) utilizes the total sample size –rather than taking the arithmetic or harmonic mean– for all studies, (b) handles missing data appropriately, and (c) integrates meta-analysis and structural equation modeling procedures within a unified framework (Hong et al., 2017).

Meta-analytic path analyses were conducted using R package metaSEM (Cheung, 2015a), and following Bergh et al.'s (2016) and Grewal et al.'s (2018) steps and recommendations. Also, Cooper et al.'s (2009), Card's (2011), Landis' (2013), and Cheung & Vijayakumar's (2016) procedures were taken into account as main references.

2.3.1. Identification of eligible studies and inclusion criteria

This chapter focuses on the concept of strategic orientation and its relationship with innovation and firm performance in order to quantitative synthesize the cumulated literature through meta-analytic path analysis in TSSEM's correlation-based approach, determining which competing model –universalistic, intermediary or holistic– fits better the meta-analytic

data and whether innovation plays a null, full or partial mediating role in the strategic orientations and firm performance relationship.

The dominant form of effects sizes used are observed correlation coefficients reported in primary studies (Sheng et al., 2016; Cheung, 2015b).

The sampling frame consisted of all available empirical –not theoretical– firm-level studies published in marketing, entrepreneurial and management journals from 1990 to January 2018.

The search of primary studies was conducted using three major bibliometric databases (e.g., Web of Knowledge, Scopus and Google Scholar) and search engines, for instance, ResearchGate, Academia.edu, and Mendeley. ABI Inform, Business Premier, JSTOR, and the Web of Science electronic abstracting services were also used. The basic search started using keywords as "market* orientation," "entrepreneur* orientation," "learning orientation," "?innovat*," "?performance." A first quest using Google Scholar's academic search engine yielded 1,115 results approximately (see Figure 5).

Also, a manually search on the article's references lists and on systematic literature reviews articles was implemented to improve the identification process and to avoid publication bias.

A debugging process was implemented checking for the consistence of primary studies with the definitions of strategic orientations, innovation and performance related to the theoretical background. Books and proceedings papers were excluded due to their high possibility of being published as research articles and for avoiding duplicated studies. Exclusion criteria of primary studies is also related to reviews of empirical research, meta-analyses and studies that analyzed only direct effects from strategic orientation to performance without including innovation.

Likewise, studies that connected innovation as a capability or process with firm performance and bypassed innovation outcomes altogether were excluded[11]. 840 identified studies accomplished the basic search criteria.

[11] Several classic, seminal and commonly cited articles were excluded since innovation was treated as a composite variable which bypassed the innovation process and outputs altogether (see Table 3, Footnote 8). Exemplar studies excluded according to this criterion were e.g., Calantone et al. (2002); Hult & Ketchen (2001); Rhee et al. (2010); Keskin (2006); Menguc (2006); among others.

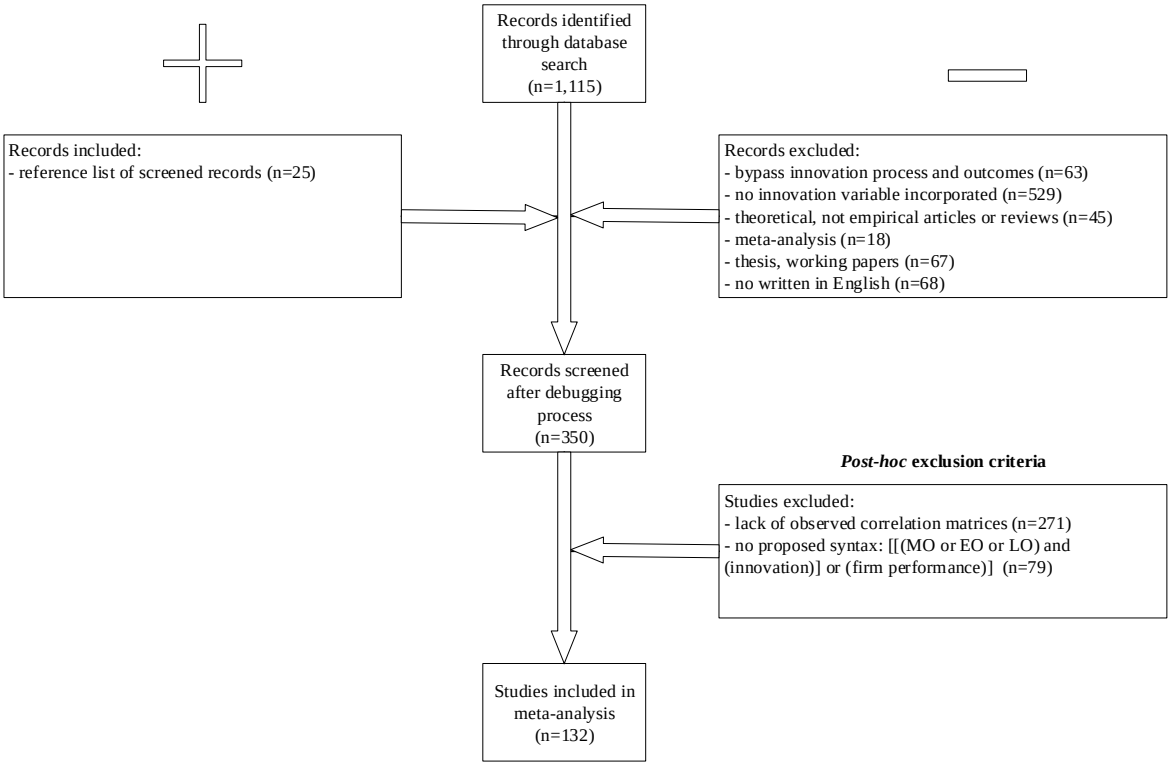
Particularly, to ensure a narrowed focus and appropriateness for meta-analytic purposes such studies must have examined the relationships between the effects of strategic orientations on innovation –as an outcome– and/or on firm performance through this proposed syntax as:

[[(MO *or* EO *or* LO) *and* (innovation)] *or* (firm performance)]

Studies which did not follow the above structure were excluded[12]. A fundamental *post hoc* exclusion criteria was implemented, related to the reporting of observed correlation coefficients matrices in the primary studies.

Unfortunately, many studies were excluded due to the lack of reporting correlation matrices or only partial correlation matrices[13], problem noted by e.g., Shook et al. (2004) and Boyd et al. (2012). Annex 1 exhibits the results of the inclusion process.

Figure 5. PRISMA flow diagram describing the procedures of report selection for inclusion in the meta-analysis.



Source: Adapted from Moher et al. (2015).

[12] An important amount of studies was excluded since the variable of innovation was not incorporated in analyses. Representative studies not included were e.g., Lonial & Carter (2015); Deutscher et al. (2016); Gnizy et al. (2014); Dutta et al. (2016); among others.

[13] Some studies not reporting correlation matrices are e.g., Han et al. (1998); Matear et al. (2002); Moreno & Casillas (2008); Laforet (2008); Ho et al. (2015); Gonzalez-Benito et al. (2009); Poudel et al. (2012); Nuñez-Pomar et al. (2016); Atuahene-Gima (1996); among others.

2.3.2. Coding process

A coding form was developed including basic information from primary studies such as title, authors, year, journal, operationalization of the variables, and samples used in each study. The coding process was developed by a single author, which guaranteed the same search terms and inclusion criteria, according to Sheng et al. (2016) and Landis (2013). The selection criteria mentioned above was implemented to accomplish appropriateness and relevance to this research. Table 3 summarizes the definitions, operationalization and coding scheme of variables used in the meta-analysis.

The raw material data for meta-analytic procedures consisted in the (r) observed correlations extracted from primary studies. Correlation coefficients are the common effect size in observational studies (Cheung & Vijayakumar, 2016).

A pairwise deletion was applied to pool correlations of different studies following Sheng et al.'s (2016) suggestion. Consequently, to the pairwise deletion, the pooled correlation matrix resulted in many empty cells or missing values causing a non-positive definite matrix, problem solved through a weighted asymptotic covariance matrix as suggested by Cheung (2015b) and Sheng et al. (2016). For cases where strategic orientations were reported as first-order constructs, the correlations were average aggregated on the pooled data set matrix contributing with only one composite effect size from each single study, following Hunter & Schmidt's (2004), Bergh et al.'s (2016) and Calantone et al.'s (2010) suggestions.

For multiple correlations presented related to innovation and performance constructs within the same study, it was used the one coefficient that best represents the correlation between the constructs and the theoretical background, in a convergent and reductionist meta-analytic approach (López-López et al., 2018; Hunter & Schmidt, 2004, p. 490). There were not applied artifacts and related statistical corrections on the correlation matrices because substantive model conclusions are generally unaffected by these kind of procedures (Michel et al., 2011).

The final dataset consisted of 135 independent samples from 132 selected primary studies, obtaining 289 unique effect sizes based on a sample of 33,063 observations (see Annexes 1 and 2).

2.3.3. Meta-analytic and structural equation modeling fitting procedure for path analysis

This research applies a correlation-based random-effects model in two-stage structural equation modeling (TSSEM) approach (Cheung & Chan, 2005). In Stage 1 it was possible to implement a model with fixed effects assuming that the population correlation matrices are homogeneous, but this assumption may not be realistic in applied research (Cheung, 2015b). Random-effects approach is usually more appropriate to analyze the data (Cheung et al., 2012), allowing studies to have their own population effect sizes. Further, the missing values in the pooled correlation matrices represent a problem for applying fix-effects modeling (Sheng et al., 2016), because often not all correlations between the research variables are available, due to the fact that the vast majority of primary studies did not analyze all the constructs involved in the meta-analytic procedures.

In the stage 1, random-effects modeling was applied (Cheung & Cheung, 2016), the between-studies variance and the pooled correlation matrix were estimated as weighted averaged correlation coefficients (Jak, 2015; Jak & Cheung, 2018). Correlation matrices of the samples were combined to estimate a common or average correlation matrix.

In the Stage 2 the structural equation models were fitted using a weighted least squares (WLS) estimation procedure. Inputs of the procedure were the pooled correlation matrix obtained in Stage 1 and the asymptotic sampling covariance matrix (Cheung, 2015b; Cheung & Chan, 2005). Such focal structural equation models were related to the direct and indirect effects between the constructs of interest in the research. Analyses also involved the test of parameters as well as measures of model fit. Likelihood-based confidence intervals were used for significance testing, which is better than using standard error-based confidence intervals, for example when testing indirect effects (Cheung, 2015b).

Stage 1 was essentially the traditional bivariate meta-analysis of correlation matrices, whereas Stage 2 involved fitting structural equation models on the pooled correlation matrix generated. Results of Stage 2 made possible to evaluate whether the theorized models fitted the meta-analytic data or not. To evaluate model fit, commonly used fit indices were used. The conventional rules of thumb of goodness of fit measures allowed to reject or not the exactness or proximity of a model.

Table 3. Codification of the meta-analysis variables

CONSTRUCT	DEFINITION AND OPERATIONALIZATION	CODING SCHEME
Market Orientation	The culture that effectively and efficiently creates value for customers (Narver & Slater, 1990) and the set of activities, processes and behaviors derived from the implementation of the marketing concept (Kohli and Jaworski, 1990). MO is operationalized on Kohli & Jaworski's (1990) 'MARKOR', and Narver & Slater's (1990) 'MKTOR' scales, exemplifying both conceptual and empirical distinctiveness (Slater & Narver, 1995; Hult et al., 2005) but closely related (Gonzalez-Benito & Gonzalez-Benito, 2005). Several derivations of the original scales were included.	• MKTOR (Narver & Slater, 1990) • MARKOR (Kohli, Jaworski, & Kumar, 1993) • MORTN (Deshpandé and Farley's, 1998) • Proactive MO (Narver, Slater, & MacLachlan, 2000; Atuahene-Gima, Slater & Olson, 2005) • Internal MO (Gounaris, 2006; Sanchez-Hernandez & Miranda, 2011; Fang et al., 2014) • Market orientation (Matsuno et al., 2002)
Entrepreneurial Orientation	The specifically entrepreneurial aspects of firms' strategies to enact their organizational purpose, sustain its vision, and create competitive advantage involving the intentions, actions, processes, practices, and decision-making activities that lead to new entry (Rauch et al., 2009; Lumpkin & Dess, 1996; Hakala, 2011; Covin & Slevin 1989; Hult et al., 2004; Wiklund, 1999; Wiklund and Shepherd, 2005). EO is operationalized on Lumpkin & Dess' (1996) five components scale and more domain-focused, that is, it specifies where to look for EO, and Miller's (1983) and Covin & Slevin's (1989) three components scale and more phenomenon-focused, that is, it specifies what EO looks like (Covin & Wales, 2012, p. 5).	• Entrepreneurial posture (Covin and Slevin, 1989) • Entrepreneurial proclivity (Matsuno et al., 2002) • Entrepreneurship (Naman & Slevin, 1993) • Entrepreneurship orientation (Hong et al., 2013) • Corporate Entrepreneurship (Zahra & Covin, 1995; Chen et al., 2014) • Entrepreneurial orientation (Lumpkin & Dess, 1996; Nasution & Mavondo, 2008; Alegre & Chiva, 2013)
Learning Orientation	The key values that influences the propensity of the firm to learn by generating, processing and using market information and new knowledge in order to gain competitive advantage (Sinkula et al., 1997; Calantone et al., 2002). LO is operationalized on Sinkula's et al. (1997) and Calantone et al's. (2002) scales and more managerial view of learning organization (Bell, Whitwell & Lukas, 2002, p. 77)[14].	• Learning Orientation (Sinkula et al., 1997; Baker & Sinkula, 1999; Calantone et al., 2002; Liu et al., 2002; Narver & Slater, 1995; Atuahene-Gima et al., 2005) • Organizational learning orientation (Nguyen et al., 2016; Paladino, 2007; Mu & Di Benedetto, 2011),
Innovation[15]	Innovation (as an outcome) refers to the consequences of innovation activities or the outputs of innovation process including the aspect of exploitation,answering questions about 'what' or 'what kind' of innovation (Crossan & Apauyin, 2010). Innovation outcomes represent the a) revenue generation potential of firm's innovativeness because they refer to actual new products that are available in the marketplace (Rubera & Kirca, 2012) and b) the degree of success or fulfillment	• Breakthrough innovation (Atuahene-Gima, 2005; Chandy and Tellis, 1998) • Organizational Innovation (Hurley & Hult, 1998, Mavondo et al., 2005; Song & Xie, 2000; Zahra, 1996) • Innovation Rate (Vázquez, Santos-Vijande, & Álvarez, 2001) • New Product Novelty (Im & Workman, 2004)

[14] Although commonly research on organizational learning has conceptualized LO in a process-view –knowledge acquisition, information distribution and information interpretation and organizational memory– (Slater and Narver, 1995; Zhou et al., 2005), LO is not operationalized as a process in this dissertation, but as a firm propensity to learn.

[15] Some cautions about this construct must be advised. Given that innovation is both a process and an outcome, the former clearly precedes the latter and should be separated to avoid circular arguments (Crossan & Apauyin, 2010). In one hand, both innovativeness and innovation are two closely related but different concepts (Woodside, 2005; Menguc, 2006). More specifically, firm innovativeness is understood as the cultural organization's inclination to engage in innovative behavior and captures the firm-level orientation toward innovation (Hurley & Hult, 1998; Hult & Ketchen, 2001, Calantone et al., 2002; Rubera & Kirca, 2012). It is important to note that innovativeness to some degree, is similar to entrepreneurial orientation but it does not require new market entry and it does not reflect an innovation output (Hult et al., 2004; Lumpkin & Dess, 1996; Liao et al., 2011). Innovation outcomes are also different from innovation capacity (e.g., Hurley & Hult, 1998; Prajogo & Ahmed, 2006) or innovation capability (e.g., Akman & Yilmaz, 2008). Ultimately, innovation is an ex post facto construct that reflect firm's innovation capacity/capability.

CONSTRUCT	DEFINITION AND OPERATIONALIZATION	CODING SCHEME
	attained by firms in achieving goals related to new products or services (e.g., Henard & Szymanski, 2001; Montoya-Weiss & Calantone, 1994; Baker & Sinkula, 2009; Gatignon & Xuereb, 1997; Im & Workman, 2004). Innovation as an outcome includes dimensions such as: *reference* which is related to the newness of innovation –new to the firm, to the market it serves, or to the industry–; the magnitude of innovation whether it is radical or incremental; *form* of innovation whether it is a product, service, process, or business model innovation; and *type* of innovation including administrative and technical (Crossan & Apaydin, 2010). Number, rate and speed of innovations are also considered as innovation outcomes because both represent the quantity and cycle time of innovations (Damanpour, 2009).	• New To The World Products (Lukas & Ferrell, 2000) • Number of New Services (Mu & Di Benedetto, 2011; Storey, & Hughes, 2013) • Radical innovation (Avlonitis, 2001; Cheng, & Krumwiede, 2012) • Tech-Based Innovation (Zhou, Yim, & Tse, 2005) • Innovation Success (Baker & Sinkula (1999, 2009; Akman & Yilmaz, 2008) • Innovation Performance (Pelham & Wilson, 1996; Wang & Ahmed, 2004; Zhou & Li, 2008; Bharadwaj & Menon, 2000) • New Product Performance (Atuahene-Gima & Ko, 2001) • New Product Program Performance (Narver & Slater, 1990; Griffin & Page, 1993; Calantone & Garcia, 2003) • Product Effectiveness (Alegre & Chiva, 2013).
Firm Performance	Firm performance refers to "the economic outcomes resulting from the interplay among an organization's attributes, actions, and environment" (Combs, Crook, & Shook 2005, p. 262) capturing the underlying manifestations of how well a firm is effectively satisfying its stated goals (Bergh et al., 2016; Combs et al., 2005). At a broad level, firm performance can be differentiated as operational performance and organizational performance. The latter relates to the firm as a whole, whereas the former is associated with specific functional areas within the firm –i.e., product-market performance– (Venkatraman & Ramanujam, 1986; Combs et al., 2005; Katsikeas et al., 2016).	• Profitability (Alegre & Chiva, 2013; Baker & Sinkula, 2009) • Financial performance (Chen et al., 2012; Cheng & Huizingh, 2014; Cheng & Krumwiede, 2012 • Firm performance (Ozkaya et al., 2015; Paladino, 2008; Zhou et al., 2005) • Market effectiveness (Brettel et al., 2012) • Economic performance (Lages et al., 2009) • Organizational performance (Baker & Sinkula, 1999; Langerak et al., 2007) • Business performance (Leal-Rodríguez & Albort-Morant, 2016; Alarcón del Amo et al., 2014) • Sales growth (Sandvik & Sandvik, 2003)

When a model was not rejected, it can be said that the model fitted the data. It is important to note that in that case the parameter estimates could be interpreted. If a model does not fit the data, the parameter estimates should not be interpreted because they will be wrong.

Through the analysis of direct and indirect effects of strategic orientations on firm performance it was possible to determine the mediating nature of innovation, whether null, full or partial by testing their significance.

If the direct effects were not statistically significant the relationships were said to be fully mediated; otherwise, the relationships were said to be at least partially mediated (Jak, 2015; Jak & Cheung, 2018).

2.4. Results

2.4.1. TSSEM Stage 1 outcomes: pooled correlation matrix of meta-analytic bivariate correlations

Table 4 summarizes the traditional meta-analytic bivariate correlation matrix among the three strategic orientations, innovation and performance with their associated average correlations coefficient estimation (effect sizes), intervals at 95% confidence, number of studies and sample sizes obtained from TSSEM Stage 1.

The results indicate that the three strategic orientations –MO, EO, LO– and innovation, and organizational performance are statistically significant associated.

The Q statistic on testing the homogeneity of the correlation matrix is $Q_{(279)}=2154.08$, $p<.01$, which indicates that the null hypothesis on the homogeneity of correlation matrices is rejected. The correlations exhibited high levels of between-study variation in all cases according to the I^2 statistic –varying from 0.74 to 0.92–, which implies the adequacy of using the random-effects approach instead fix-effects.

2.4.2. TSSEM Stage 2 outcomes: path analysis

In order to offer a more complete understanding among the relationships by not only bivariate correlations but through MASEM's higher-level assessment capability, the results obtained by fitting the hypothesized models using TSSEM Stage 2 are presented. Table 5 summarizes the results obtained.

Table 4. Meta-analytic pooled correlation matrix

		MO	EO	LO	INNO	PERF
r	**MO**	1				
CI95						
k						
N						
I²						
r	**EO**	.44	1			
CI95		.37: .52				
k		30				
N		9541				
I²		.90				
r	**LO**	.52	.44	1		
CI95		.44: .61	.36: .53			
k		21	11			
N		6346	4189			
I²		.89	.80			
r	**INNO**	.36	.42	.42	1	
CI95		.32: .39	.38: .48	.36: .48		
k		99	53	35		
N		25390	14181	10025		
I²		.86	.89	.85		
r	**PERF**	.33	.34	.37	.38	1
CI95		.28: .38	.27: .40	.30: .44	.32: .44	
k		38	18	17	38	
N		10081	4507	4712	9805	
I²		.83	.78	.82	.88	

Source: Own elaboration based on metaSEM R package outputs, TSSEM Stage 1 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation – as an outcome; PERF: Firm Performance. r: observed correlations; k: number of studies; N: sample size; CI95: 95% confidence interval. All correlations are significant (p<.01).

Universalistic approach, which implies independent and parallel direct effects of strategic orientations to exert statistically significant direct effects on firm performance with no mediating role of innovation, was assessed (see Figure 2). Findings indicate that there was a direct and positive effect of each of the three independent strategic orientations on firm performance. The direct effect of the three strategic orientations explained the 36% of the firm performance variance. However, the hypothesized model did not fit the data well according to the rules of thumb for model fitness (see Table 5). Thus, the model depicted in the universalistic approach was not supported. Figure 6 depicts the path diagram.

Intermediary approach, which implies joint direct effects of strategic orientations on innovation, and the latter exert a significant direct effect on firm performance, was assessed (see Figure 3). Innovation plays a role as full mediator in the relationship. Findings indicate

that there was a direct and positive effect of each of the three strategic orientations on innovation, and a direct effect of innovation on firm performance (see Table 5). As in this model it is specified that the strategic orientations interact among each other, it is necessary to study the co-variances between them.

The joint effect of the three strategic orientations explained the 28% of the innovation variance and the 30% of the firm performance variance. Furthermore, the hypothesized intermediary model of complementary and jointly effects fitted the data well according to the rules of thumb for model fitness. Thus, the model depicted in the intermediary approach was supported. Figure 7 depicts the path diagram.

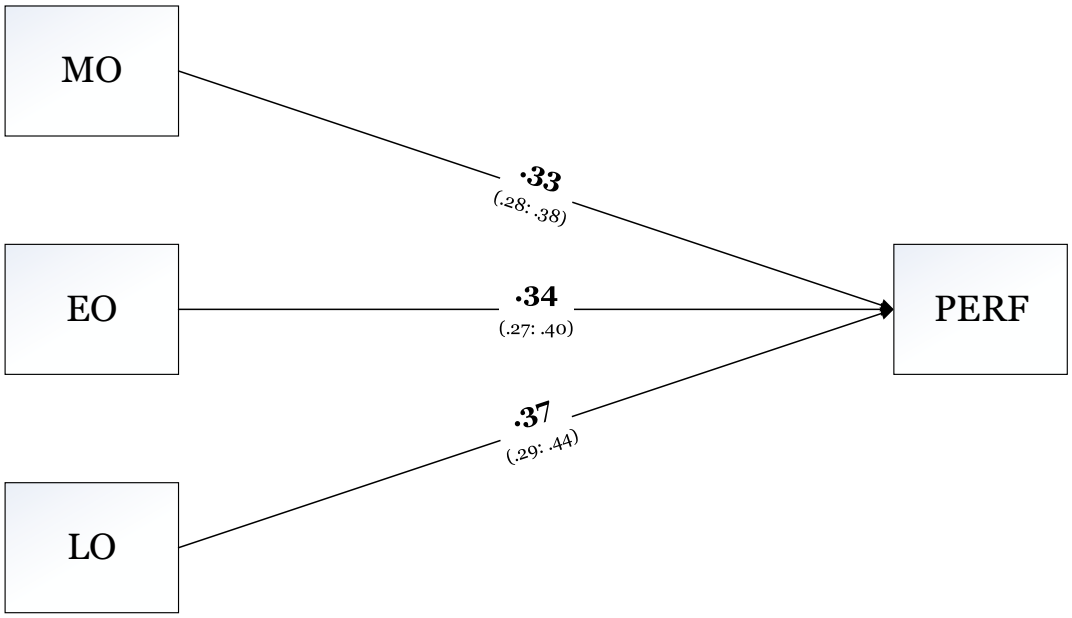
Holistic approach, which implies joint and complementary direct effects of strategic orientations on innovation, and the latter exert a significant effect on firm performance, playing a role as partial mediator in the relationship, was assessed (see Figure 4). The direct effects of strategic orientations on firm performance were estimated (see Table 5). In order to test the nature of the mediating role of innovation, the simultaneous direct and indirect effects from strategic orientations to firm performance were provided (see Table 5).

Estimates indicate that there is statistically significant direct effect from MO and LO to firm performance. EO exerts only a direct effect on innovation but no direct effect on firm performance. Also, there are indirect effects from MO and LO to firm performance. There is at least partial mediation of innovation, which means that there exists simultaneously both effects, direct effects from MO and LO to firm performance and indirect effect through innovation, considered significant as well.

The direct effects of MO and LO on firm performance are significant and the indirect effect are significant. Consequently, it can be said that the effect of MO and LO on firm performance is partially mediated by innovation. The indirect effects of EO on performance were significant, so the relation between EO and firm performance is said to be fully mediated by innovation. Thus, the model depicted in the intermediary approach was supported. Figure 8 depicts the path diagram.

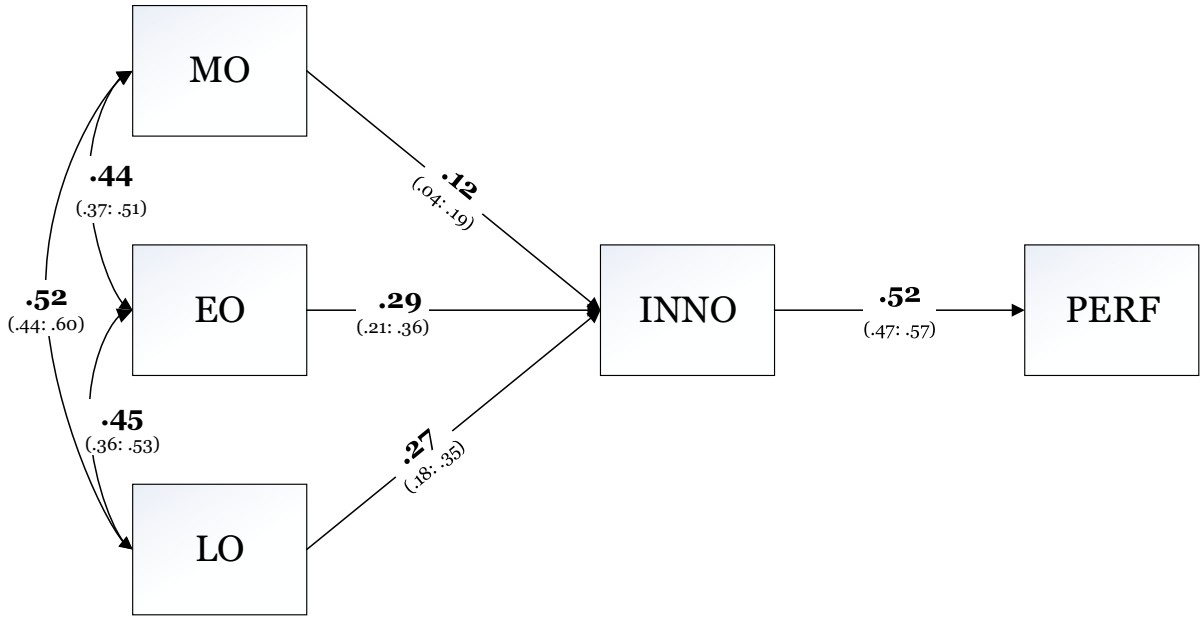
The conventional rules of thumb of goodness of fit measures indicated that the holistic approach is the superior theoretical approach among the assessed ones.

Figure 6. Universalistic approach path model with standardized parameter estimates (path coefficients) and 95% confidence intervals



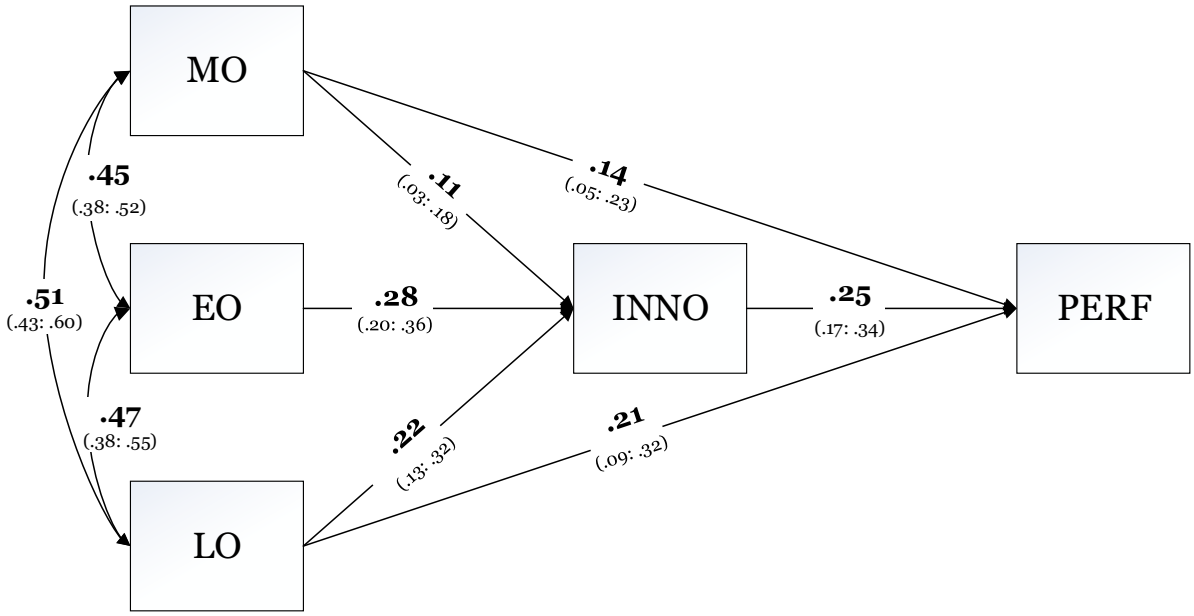
$\chi^2_{(3,\ 33063)}$=365.81*** CFI: .4868 RMSEA: .0605 SRMR: .3307

Figure 7. Intermediary approach path model with standardized parameter estimates (path coefficients) and 95% confidence intervals



$\chi^2_{(3,\ 33063)}$=77.19*** CFI: .9568 RMSEA: .0273 SRMR: .0821

Figure 8. Holistic approach path model with standardized parameter estimates (path coefficients) and 95% confidence intervals



$\chi^2_{(1,\ 33063)}=4.89^{**}$ CFI: .9977 RMSEA: .0109 SRMR: .0235

2.4.3. Robustness checks

To further examine the robustness of the results, a test was conducted since a large number of studies were included into the analyses. Exactly half of the total number of studies (66) were randomly selected for the test. The selected model for the robustness test was the depicted in the holistic approach (see Figure 4).

Results obtained from the test compared to the obtained from the holistic approach assessment were basically the same, except for marginal changes in the path coefficients and likelihood-based intervals. These results confirm the robustness of the model specification (see Annexes 3 and 4).

2.5. Discussion and implications

This research quantitatively synthesized the cumulated literature corpus on the relationship between strategic orientations –e.g.., MO, EO and LO–, innovation and firm performance through a meta-analytic path analysis.

Table 5. Summary of TSSEM Stage 2 results on the hypothesized models with their respective path coefficients, explained variance, chi-squared test, goodness of fit indices and model fit assessment

THEORETICAL APPROACH		PATH COEFFICIENTS			EXPLAINED VARIANCE		χ^2 TEST				GOODNESS OF FIT INDICES			MODEL FIT
		Effect	β	LBCI95	R^2	LBCI95	d.f.	N	Value	*p*	CFI	RMSEA	SRMR	Support
Universalistic	Direct Effects	MO→PERF	.33	.26: .37	.36	.28: .45	3	33,063	365.81	***	.4868	.0605	.3307	NO
		EO→PERF	.34	.27: .43										
		LO→PERF	.37	.26: .44										
Intermediary	Direct Effects	MO→INNO	.12	.04: .19	.28	.24: .33	3	33,063	77.19	***	.9568	.0273	.0821	YES
		EO→INNO	.29	.21: .36										
		LO→INNO	.27	.18: .35										
		INNO→PERF	.52	.47: .57	.30	.24: .36								
	Covariances (ψ)	MO↔EO	.44	.37: .51	N.A.									
		MO↔LO	.52	.44: .60										
		EO↔LO	.45	.36: .53										
	Indirect Effects	MO→INN→PERF	.06	.02: .10										
		EO→INN→PERF	.15	.11: .19										
		LO→INN→PERF	.14	.10: .19										
Holistic	Direct Effects	MO→INNO	.11	.03: .18	.26	.22: .31	1	33,063	4.89	***	.9977	.0109	.0235	YES
		EO→INNO	.28	.20: .36										
		LO→INNO	.22	.13: .32										
		MO→PERF	.14	.05: .23	.23	.19: .28								
		LO→PERF	.21	.09: .32										
		INNO→PERF	.25	.17: .34										
	Covariances (ψ)	MO→EO	.45	.38: .52	N.A.									
		MO→LO	.51	.43: .60										
		EO→LO	.47	.38: .55										
	Indirect Effects	MO→INN→PERF	.03	.01: .06										
		EO→INN→PERF	.07	.02: .11										
		LO→INN→PERF	.06	.02: .10										

Source: Own elaboration based on the metaSEM R package, TSSEM Stage 2 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome; PERF: Firm Performance; N.A.: Not Applicable.
(ψ) = In a path model covariances are represented by ψ.
*** = $p<.001$.

From a theoretical modeling and testing perspective, the validity and utility of three different theorized approaches extracted from the literature –universalistic, intermediary and holistic– were assessed in order to retain a structure that empirically fits the cumulated data well. It was demonstrated the superiority of the holistic approach due to its power for linking more complex relationships through simultaneous direct and indirect effects.

In the other hand, the nature of the mediating role of innovation was demonstrated as well: it can be said that innovation fully mediates the relation between MO and LO with firm performance, and partially mediate the relation between EO and firm performance.

This chapter contributed toward the understanding of the 'black box' that links strategic orientations and firm performance by providing higher-level assessments derived from the most recent and advanced research method in strategic management (Bergh et al., 2016) and explicating underlying generic processes within the relationships involved (Grewal et al., 2018).

The results demonstrated that the universalistic approach, widely implemented in a large body of literature, is not adequate for theory modeling and testing purposes to examine the strategic orientations and firm performance relationship. Such relationship specified in this extremely parsimonious approach reached the worst goodness of fit indices, since considering only direct effects from independent and parallel strategic orientations on firm performance does not fit the meta-analytic data.

One strong explanation on why researchers link directly strategic orientations with firm performance is perhaps because competitive advantage is difficult to measure; therefore, a methodological solution could be to link strategic resources and performance (Crook et al. (2008). However, within this approach, the effect of strategic orientation on firm performance can be consider only as potential. Ketchen et al. (2007, p. 962) stated that "strategic resources only have potential value, and that realizing this potential requires alignment with other important organizational elements", such as innovation.

This potential nature of the effect of strategic orientation on firm performance is also discussed by Doyle & Armenakyan (2014, p.196) and Hult et al. (2005, p. 1174) in the sense that it is not expected that the culture of an organization shapes performance directly, since "customers do not purchase a firm's goods and services simply because the firm has a particular

type of culture." Zhou et al. (2005) remarked this argument as well, affirming that "strategic orientation as culture-level values and norms do not automatically lead to superior performance."

Conceiving strategic orientations as 'best practices prescriptions' raised in terms of extreme parsimony in theory modeling is detrimental and, thus may possibly be abandoned for the sake of the advance in the field's knowledge. To disclose this main idea, Atuahene-Gima (2005, p. 79) and Mu et al. (2017, p. 3) among others, pointed out the idea of orientation being universally beneficial is overly simplistic. In this line, Hakala (2011, p. 207) considers that "universal 'truths' are valuable, but incapable of explaining the whole range of situations."

Adding more complexity in theoretical modeling and testing made sense. Introducing innovation as full mediator between the strategic orientations and firm performance relationship, within the intermediary theoretical approach in a chain of effects, is considered adequate and fits the meta-analytic data. Results from the intermediary approach demonstrate that strategic orientations do not operate in isolation properly, and mediating mechanisms such as innovation contribute to firm performance (e.g. Han et al., 1998; Matear et al., 2002; Arunachalam et al., 2018).

It is demonstrated that innovation plays a full mediating role. This more innovation-related approach allows to acknowledge that "in the end, it is a specific product or service introduction that generates revenues and not the firm's general commitment to innovation", as commented by Rubera & Kirca (2012, p. 135). Innovation capitalizes on a positional advantage based on innovative offerings or superior services, which in turn allow firms to enjoy superior performance (Hult & Ketchen, 2001).

However, from a more comprehensive theory modeling and testing perspective, the holistic approach which assumes the universal and intermediary approaches altogether probed its superiority against the two previous approaches. It was found that, by introducing innovation as partial mediator, there are significant statistically direct effects from MO and LO on firm performance, which is in line with the universalistic approach, but in the presence of innovation.

Previous results support most of the past research which found MO as a driver – directly and indirectly– to superior performance. Furthermore, indirect effect from EO on firm performance was retained as statistically significant. Thus, the nature of innovation is

ultimately delved, playing a partial mediating role in the relationship between MO and LO, and firm performance. Likewise, innovation plays a full mediating role in the relationship between EO and firm performance.

Results suggest that MO and LO are both important for firm performance; their effect is channeled through innovation, and subsequently on firm performance, in a chain of causal effects. Direct effects on firm performance were found as well. While MO and LO may help conceive superior products, processes, and ideas, it is likely that EO provides the stimulus for driving such activities, as noted by Hult et al. (2004). Therefore, their impact on firm performance is more operative through successful introduction of products and services into markets simultaneously with the effect of achieving customer satisfaction and in-depth generative learning from external environment, which are reflected into continuous superior firm performance. In this sense, it is feasible that innovations addressing the needs of new and emerging markets and the development of new products and services, could fully capture the effect of EO on firm performance. First-mover advantage rationale is more notorious in this chain of effects.

As for managerial implications, this chapter supports Gnizy et al.'s (2014, p. 496) advice in the sense that managers should focus on the benefits raised from the synergies of strategic orientations dispersed in different organizational functions (e.g., MO by marketing, EO by R&D and LO by HR) avoiding replication, reprocesses and waste of resources by isolating managing strategic orientations. Following Gatignon et al. (2016), in order to gain a competitive advantage and enjoy superior performance, firms should provide a strong impetus for strategic directions that lead the organization to systematically produce and deliver high-performing innovations, not allowing this to be the result of luck, even when some uncertainty does remain inherent in the innovation process. Putting customer satisfaction at the center of the firm's activity, improving the quality of learning from external environment and pursuing new market opportunities through the development of new products or services should lead to gain competitive advantage and enjoy superior firm performance.

2.6. Limitations and future research directions

Although meta-analytic path analysis is considered as a powerful and in-depth basis for quantitative synthesis of research findings (Bergh et al., 2016), certain aspects of the results presented in this research should be interpreted with utmost caution in light of their limitations.

For example, the reported results do not provide direct and unequivocal evidence regarding causality because non-primary research studies were set in experimental designs. The term 'effect' is used only as a matter of convenience (Aguinis et al., 2017). The nature of the conducted meta-analytic path analysis does not allow to strictly infer causal relationships, and it only provides high-level assessment for theory testing and for retain a structure that empirically fits the cumulated data well.

Another caution to acknowledge is the possible threat of endogeneity on the reported results. However, as this study conducted a meta-analytic path analysis on observed variables, not latent, the sources and threat of endogeneity is significant lower (Cheung, 2015b). Also, dependent effect sizes problem was treated by selecting one of multiple effect sizes based on *a priori* decision rule related to the theoretical background, as suggested by Hunter & Schmidt (2004).

In relation to the inclusion criteria of primary studies in the meta-analytic correlation matrix, it is important to note that several studies were excluded due to the lack of reporting correlations coefficients estimates of the constructs analyzed; and because several primary studies connected innovation as a capability with firm performance and bypassed innovation outcomes altogether. For these reasons, the scope of the final sample was reduced substantially to the detriment of enriched findings. Consequently, results were yielded only on data available according to methodological and theoretical background restrictions.

Other cautions about the scope of this study must be acknowledged. As it was of interest to contrast the validity and usefulness of the approaches assumed in the vast literature through meta-analytic path analysis, this study did not comprise issues regarding to the in-depth nature of the constructs involved in the primary studies and their multiple levels of analysis –e.g., methodologies, measure scales and samples–. This is inherent to the 'apples and oranges' problem (Card, 2011). However, as analyses were drawn in the light of the higher-level concept of strategic orientation, it was considered appropriate to average aggregate diverse levels of analysis having the advantage of improving the generalizability of the conclusions.

Likewise, regarding to the 'garbage in, garbage out' problem (Card, 2011) about the quality of primary studies in the identification process, no quality criteria was implemented in order to capture the largest possible number of primary studies for obtaining enriched findings,

despite the potential problem of capturing data from poor quality studies, but avoiding to some extent publication bias.

Future meta-analytic path analysis research efforts on the strategic orientation, innovation and firm performance relationship may include the implementation of *a priori* contextual moderators such as firm size and industry type by assuming a contingency approach.

Drawing on the potential of meta-analytic path analysis for quantitative synthesis of research findings purposes, a suitable perspective to deal with mediation and moderation effects may be through random-effects subgroup analysis, in order to handle the observed heterogeneity among the primary studies (Cheung, 2015b; Jak, 2015) in the sake of advancing in the strategic orientations' knowledge field.

CHAPTER 3: CONTINGENCY FACTORS IN THE RELATIONSHIP BETWEEN STRATEGIC ORIENTATIONS, INNOVATION AND FIRM PERFORMANCE: A META-ANALYTIC APPROACH OF THE MODERATING ROLE OF FIRM SIZE AND INDUSTRY SECTOR

3.1. Introduction

Under the resource-based view of the firm (RBT), the strategic orientation of a firm represents intangible capabilities –or sets of skills or behaviors– (Hult & Ketchen, 2001; Lonial & Carter, 2015) embedded into organizational culture reflecting "the means by which firms choose to attempt to create a sustainable presence in the markets in which they compete" (Gnizy et al., 2014, p. 478).

This concept has attracted widespread attention in the marketing, management and entrepreneurship literature over the past two decades (Deshpandé et al., 2012; Hakala, 2011), focusing mainly on three orientations: market orientation (MO), entrepreneurial orientation (EO), and learning orientation (LO). Broadly, it can be said that MO covers the adaptive process relating to the competitive environment, whereas EO and LO encompass the processes of matching resources with the environment (Hakala, 2011).

By definition, strategic orientations are linked to firm performance as its antecedents and important drivers (Hult et al., 2004). However, the nature of this relationship is not trivial. Second chapter of this doctoral dissertation quantitatively synthesized the cumulated literature corpus on the relationship between strategic orientations (e.g.., MO, EO and LO), innovation and firm performance through a meta-analytic path analysis, in order to retain a structure that empirically fits the cumulated data well, demonstrating the superiority of the holistic approach due to its power for linking more complex relationships through simultaneous direct and indirect effects. Also, it has determined that innovation plays a partial mediating role in the theorized approach.

Despite the general conclusion on the superior structure assessed, the relationships among strategic orientation, innovation and firm performance are complex and depend on the context. Indeed, these effects are not unconditional (Kirca et al., 2005, Grinstein, 2008b, Calantone et al., 2010), but rather depend on several contextual factors (Gatignon et al., 2016). In this sense, in order to advance in strategic management theory and practice, it is necessary

to assume a contingency approach which involves the examination of a priori contextual moderators and mediating mechanisms in the strategic orientation, innovation and firm performance simultaneously (Boyd et al., 2012).

Although previous literature suggests a relationship among contextual moderators, strategic orientations, innovation and firm performance, it is not conclusive about the magnitude and direction of this relationship (e.g., Gonzalez-Benito et al., 2015). Furthermore, whereas a large and growing body of research indicates that these relationships are contextual in nature and change as a function of contextual moderators (e.g., Gupta & Batra, 2016; Grinstein, 2008a), few past studies integrated moderation and mediation in strategic management research (Aguinis et al., 2017; Boyd et al., 2012).

This chapter aims to examine whether *a priori* contextual moderators such as firm size –large vs. SME firms– and industry sector –manufacturing vs. service firms– modify the relationships between strategic orientations and firm performance partially mediated by innovation, as established in the holistic approach assessed in the second chapter of this doctoral dissertation. This overall model is considered for the subsequent moderated-mediation integrative analysis.

A research question is addressed in this study: are there statistically significant differences across subgroups of studies in the relationships studied in the overall model or do the relationships persist regardless of contingency moderating factors?

One possible way to meta-analytically integrate moderation and mediation analysis and to handle the observed heterogeneity among the primary studies is through random-effects subgroup path analysis using the unified correlation-based MASEM's two-stage structural equation modeling (TSSEM) (Cheung, 2015b; Jak, 2015).

Contributions of this study are two-fold: First, implementing a contingency approach helps provide more theoretical precision leading to important and useful insights for theory and practice. Adding more complexity to the holistic approach through combining mediation and moderation would provide benefits from greater use in theory building and testing (Boyd et al., 2012; Aguinis et al., 2017). As a contingency approach through moderated mediation subgroup analysis pays attention to situational exigencies depending on a firms' competitive settings (Gupta & Bartra, 2016), it is more suitable to analyze the theorized relationships allowing to determine whether strategic orientations and firm performance, including the partial mediating

role of innovation, changes as a function of *a priori* categorical contingency factors, such as firm size –SMEs vs. large firms– and industry sector –manufacturing vs. service firms– between groups of interest.

Second, calculating the effects of the relations theorized in the overall model on the groups of interest allows to determine whether there are moderated mediating effects, or which is the same, differences in the magnitude of the theorized relationships. Thus, it is possible for managers to improve their decision-making process more accurately by acknowledging their own firm's characteristics and context, focusing the strategic traits which better encourage their innovation efforts to attain a superior performance.

3.2. Hypotheses development

Under the resource-based theory (RBT) of the firm, strategic orientations are important organizational capabilities that together contribute to sustainable advantage and superior firm performance (e.g., Hult & Ketchen, 2001; Zhou et al., 2005; Lonial & Carter, 2015). However, RBT does not explain the complex path sequence through which strategic orientations translate into financial outcomes (Poudel et al., 2012). In this sense, the first-mover advantage (FMA) (Kerin et al., 1992) arises as a theoretical perspective that complements RBT, allowing to better understand how strategic orientations as firm's organizational cultural capabilities –e.g., MO, EO and LO– are translated into superior performance through innovation –e.g., product, process, and organizational innovations–.

In the first chapter of this dissertation it was demonstrated the superiority of the holistic approach (see Figure 4), which involved the joint and complementary effects of strategic orientations on firm performance partially mediated by innovation, recalling the past research's main idea that universally beneficial direct effects of strategic orientations on firm performance is overly simplistic.

Introducing innovation as a mediator into the relationship made sense because "in the end, it is a specific product –or service– introduction that generates revenues and not the firm's general commitment to innovation" (Rubera & Kirca, 2012, p. 135). While MO and LO may help conceive superior products, processes, and ideas, it is likely that EO provides the stimulus for driving such activities (Hult et al., 2004).

Therefore, their impact on firm performance is more operative through successful introduction of products and services into markets simultaneously with the results of achieving customer satisfaction and in-depth generative learning from external environment, which in turn impact into superior firm performance. In this sense, it is feasible that innovation addressing the needs of new and emerging markets and the development of new products and services, fully captures the effect of EO on firm performance. First-mover advantage rationale is more notorious in this chain-of-effects approach.

Introducing more complexity by the examination of *a priori* contingency factors combined with mediating mechanisms as innovation in a contingency approach allows to acknowledge the conditions under which an effect varies in size, and the underlying mechanisms and processes that connect antecedents and outcomes (Aguinis et al., 2017).

3.2.1. Firm size: small-medium sized (SMEs) firms vs. large firms

3.2.1.1. Firm size, innovation and firm performance

Firm size refers to the scale and scope of operations, and it is a useful approximation of firm resources, turnover, or workforce (Bonaccorsi, 1992; Rubera & Kirca, 2012; Leal-Rodríguez et al., 2015). Meta-analytic studies examined the association between firm size and innovation, and it is stated that size affects the structure and processes of organizations (Damanpour, 2010; Camisón-Zornoza et al., 2004). Two ambiguous arguments are established in past research:

1) the degree of innovation is higher in small firms mainly because they have less bureaucracy and a more flexible structure, versatility and capacity to adapt to the environment, and less difficulty in accepting and implementing change; and,

2) large organizations develop a higher degree of innovation mainly because they have more complex and diversified resources and capabilities, the economies of scope to spread the risk of failure and absorb the costs of innovation, and more financial and human resources to market the innovation (Damanpour, 2010; Camisón-Zornoza et al., 2004).

From a first-mover advantage (FMA) perspective, SMEs must be pioneers in innovation in order to achieve a competitive advantage before more powerful rivals appear. For the large, established firm with financial resources and strong production, marketing, and distribution capabilities, the risks of pioneering are greater in terms of reputation and brands protection,

requiring more developed markets to exploit its complementary resources effectively (Grant, 2010, p. 308).

Following Rubera & Kirca (2012, p. 143), large firms seem to "appropriate greater returns in terms of market and financial positions", while SMEs are "in a better position to reap the benefits of their innovative efforts in stock markets." Former position is in line with first-mover advantage. Therefore,

H1. The magnitude of the direct effect of innovation on firm performance is stronger for SMEs than for large firms.

3.2.1.2. Effects of MO on innovation and on firm performance moderated by firm size

Previous literature suggests a relationship among size, strategic orientations, innovation and firm performance, although it is not conclusive about the magnitude of the relationships involved (e.g., González-Benito et al., 2015; Kirca et al., 2005; Rodríguez-Cano et al., 2004; Rauch et al., 2009). It was stated that large and SME firms should be studied as separate entities (O'Dwyer & Ledwith, 2010).

Several studies regarding to the relationship among strategic orientations, innovation and firm performance found differentiated effects between large firms and SMEs (e.g., Liu, 1995; Laforet, 2008, 2009, 2013; Ledwith & O'Dwyer, 2009; O'Dwyer & Ledwith, 2010; Gonzalez-Benito et al., 2015; Salavou et al., 2004). In this sense, firm size matters (Ledwith & O'Dwyer, 2009; O'Dwyer & Ledwith, 2010) or, which is the same, firm size moderates the relationships. Conversely, it was affirmed that the relationships involved do not differ for SMEs versus large firms (e.g., González-Benito et al., 2015; Zhang et al., 2015).

Past research suggested that large firms seem to be more market-oriented than SME firms (Liu, 1995; Grinstein, 2008a) or MO is not stronger in smaller firms. Firm size seems not to be a reason for the differences observed (Becherer et al., 2001). Meta-analytic evidence supports the idea that the effect of MO on innovation in large firms is stronger, given that SMEs face scarce resources for implementing an innovation-driven MO, which implies that a strong MO and innovation relationship is more affordable for large, resource-rich firms (Grinstein, 2008a). However, it is possible that the effect of MO on innovation does not differ between SMEs and large firms (González-Benito et al., 2015). Moreover, studies affirmed that MO in SMEs –specifically its customer orientation component– has no impact or even hinders

innovation, although it could be a critical determinant of performance (Laforet, 2008; Zhou et al., 2005; Ledwith & O'Dwyer, 2009; O'Dwyer & Ledwith, 2010). Therefore,

H2. The magnitude of the direct effect of MO on innovation is stronger for large than for SME firms.

H3. The magnitude of the direct effect of MO on firm performance is stronger for large than for SME firms.

3.2.1.3. Effect of EO on innovation moderated by firm size

Previous meta-analytic studies suggested that the level of EO seems to differ depending on firm size (Rosenbusch et al., 2013; Rauch et al., 2009). Interestingly, it was suggested that larger firms generate more innovations than SMEs (Pérez-Luño et al., 2011). However, it was also found that the association between EO and firm performance is not moderated by firm size (Rauch et al., 2009), and the effect of EO on innovation remains equal between large and SME firms (Gonzalez-Benito et al., 2015). Also, large firms tend to command a greater portfolio of resources to devise new offerings (Gupta & Batra, 2016). Still, bureaucratic structures and inertia may hinder large firms from implementing an EO. SME firms, due to their size limitations, often lack financial capital, but are more flexible, and their versatility allows them to quickly change and take advantage of new opportunities appearing in the environment which directly impact on innovation (Rosenbuch et al., 2013). Therefore,

H4. There are no significant differences in the direct effects of EO on innovation between SMEs and large firms.

3.2.1.4. Effect of LO on innovation and on firm performance moderated by firm size

It was suggested that LO may differ between large and SME firms (Salavou et al., 2004). The effect of LO on innovation is more important for SMEs than for large firms mainly due to the former's lack of resources for developing significant innovative activities. Generally, SMEs implement alternative ways of doing business to compensate the lack of resources though, for instance, opening to new ideas from external environment, which are more affordable in terms of seeking innovative ways to compete. On the other hand, the effect of LO on firm performance seems to be more important for large firms due to their more labor efficient organizational structures, the improved use of technology to lower administrative overhead, the more effective use of capital markets, more open channels of communication, innovative training techniques, etc. (Baker & Sinkula, 1999a). Lonial & Carter (2015) found

strong –not statistically significantly tested– differences in the LO and firm performance association between SMEs and multinationals. Dissimilarities are explained by the lower level of commitment to learning by SMEs. Therefore,

H5. The magnitude of the direct effect of LO on innovation is stronger for SMEs than for large firms.

H6. The magnitude of the direct effect of LO on firm performance is stronger for large than for SME firms.

3.2.2. Industry sector: manufacturing vs. service firms

3.2.2.1. Industry sector, innovation and firm performance

Industry sector refers to the division of the economy, which consist of firm groups that are engaged in similar or related products or services. Two types of industry sector are commonly studied in the literature, where the terms 'industry' and 'sector' have often been used synonymously: manufacturing and services (Forsman, 2011). Past research has demonstrated that manufacturing and service firms differ regarding to innovation (Damanpour, 1991). Due to the differences inherent between service and manufacturing firms, the impact of strategic orientation on innovation and firm performance could be different. More recently, literature emphasized the differences in the nature of activities of manufacturing and service firms (Forsman, 2011), and it was stated that the adoption of innovation in the service sector is not identical to the goods sector (Damanpour et al., 2009).

These differences can be explained in terms of outputs: contrary to manufacturing, in service firms the outputs are intangible, and its consumption is, to some extent, immediate. The interaction between customer and producer is more complex and the interaction must be complete for the delivery of the service. Difference in nature are also related to demand cycles: manufacturing of durable goods is a highly cyclical industry, whereas services are more stable, partly because services cannot be stored (Forsman, 2011). Furthermore, it is stated that innovation follows different trajectories among both industries: in the manufacturing sector it follows a technological trajectory, whereas in the service sector it does not; therefore, differences in adopting and generating innovations are established across both types of industries (Damanpour et al., 2009).

Still, empirical evidence suggested that there are no tremendous differences and rather there are more similarities between manufacturing and service sectors regarding to innovation (Forsman, 2011). As Damanpour (2009, p. 654) stated, "Innovation research has not generally distinguished between product and service innovations; that is, services offered by organizations in the service sector are conceptualized to be similar to products introduced by organizations in the manufacturing sector." Product and service innovations have external focus, are primarily market driven, and their introduction results in differentiation of the organization's output for its customers or clients. In this sense, the positive influence of innovation on firm performance seems to be equal for service and manufacturing firms since innovation is necessary for improving organizational effectiveness in both industry sectors (Damanpour et al., 2009). Therefore,

H7. The magnitude of the direct effect of innovation on firm performance significantly does not differ between manufacturing and service firms.

3.2.2.2. MO, innovation and firm performance moderated by industry sector

Several studies demonstrated that industry sector moderate the relationships among MO, innovation and firm performance; particularly, the effects of MO on firm performance seems to vary across industry sector (manufacturing vs. service firms). Meta-analytical studies found contradictory results. It was suggested that the relationship between MO and firm performance is more positive in manufacturing firms than in service firms (Kirca et al., 2005); and conversely, this effect seems to be stronger for service than manufacturing firms (Rodríguez-Cano et al., 2004; Chang et al., 2014). Additionally, innovation has a stronger effect on firm performance for manufacturing than for service firms (Chang et al., 2014). As service firms depend on person-to-person interactions, MO is a critical strategy for firm performance without launching new services (Rodríguez-Cano et al., 2004; Chang et al., 2014). On the other hand, services are perishable and more easily imitated, which put pressure on service firms to innovate (Grinstein, 2008a). Therefore,

H8. The magnitude of the direct effect of MO on innovation is stronger for services than for manufacturing firms.

H9. The magnitude of the direct effect of MO on firm performance is stronger for manufacturing than for SME firms.

3.2.2.3. EO, innovation and firm performance moderated by industry sector

On the other hand, industry sector seems not to moderate the relationships between EO and innovation, which suggests that the relationship remains equal across manufacturing and service firms. Although industry is often included as a control variable in primary studies, industry has not been frequently examined as a moderator variable (Rauch et al., 2009; Zahra, 2008). Interestingly, it was stated that the level of EO is higher in service than manufacturing firms (Rigtering et al., 2014), and conversely, no differences in the level of EO were found (Wu et al., 2008). However, little or nonempirical evidence of difference in the relationships involved was reported in the literature. Therefore,

H10. There are no differences in the direct effects of EO on innovation between manufacturing and service firms.

3.2.2.4. LO, innovation and firm performance moderated by industry sector

Similar to EO, industry sector seems not to moderate the relationship among LO, innovation and firm performance. Non-significantly different level of LO was found between industry sector and firm performance (Frank et al., 2012; Awasthy and Gupta, 2011). Furthermore, no differences of the effect of LO on innovation were found, although the impact of LO is only reflected on breakthrough but not on incremental innovation (Spanjol et al., 2012). Therefore,

H11. There are no significant differences in the direct effects of LO on innovation between manufacturing and service firms.

H12. There are no significant differences in the direct effects of LO on firm performance between manufacturing and service firms.

3.3. Method

This chapter conducts a meta-analytic path analysis based on meta-analytic structural equation modeling (MASEM), a combination of meta-analysis (MA) and structural equation modeling (SEM) (Bergh et al., 2016; Cheung, 2015b; Jak, 2015; Cooper et al., 2009). MASEM's two-stage structural equation modeling approach (TSSEM) was implemented using R package metaSEM (Cheung, 2015a). A meta-analytic path analysis consists in the collection, extraction and combination of the available empirical research data in order to test the explanatory power of a theorized model (Cheung, 2015b).

Moderation and mediation analysis in a meta-analytic structural equation modeling (MASEM) framework are simultaneously conducted in this chapter (Edwards & Lambert, 2007; Boyd et al., 2012; Aguinis et al., 2017). In this sense, moderation represents the idea that the magnitude or direction of the effect of an outcome variable's antecedent depends on contingency factors, whereas mediation points to the presence of an intervening variable or mechanism that transmits the effect of an antecedent variable on an outcome (Aguinis et al., 2017).

The data and overall model used for analyses was extracted from the previous meta-analytic path analysis conducted in the second chapter of this doctoral dissertation. In addition, it was performed a subgroup analysis, which is the traditional data-analytic approach when the moderator variable is categorical, according to Aguinis et al. (2017, p. 2). Subgroup analysis was conducted following steps and guidance by Jak & Cheung (2018), and suggestions by Edwards & Lambert (2007), Aguinis et al. (2017), and Boyd et al. (2012).

3.3.1. Subgroup analysis

This chapter conducts a subgroup analysis in a meta-analytic structural equation modeling (MASEM) framework to test hypotheses about group differences using two-stage structural equation modeling (TSSEM) and metaSEM package in R (Cheung, 2015a). Conceptually, moderation and mediation are integrated when the paths that constitute a mediated model are theorized to vary according to the level of a moderator variable (Aguinis et al., 2017).

Subgroup analysis seeks to estimate the distribution of effects across two –or more– sets of studies (Edwards & Lambert, 2007; Grewal et al., 2018) and consisted of dividing the overall sample –examined in the second chapter of this doctoral dissertation– into groups according to *a priori* categorical moderator variables, comparing regression coefficients across the subgroups.

Subsequently, each group of studies in the overall model studied in the second chapter was estimated separately. The overall sample of studies (N=33,063, k=135) was split into subgroups of contextual moderators such as firm size and industry sector. Two subgroups of studies for each moderator level were created –SMEs vs. large firms; and manufacturing vs. service firms–.

In the TSSEM Stage 1, different pooled correlation matrices were estimated for the subgroups of interest. The between-studies variance was calculated to assess whether contingency factors explain part of the heterogeneity.

Next, within the TSSEM Stage 2, structural model specified in the holistic approach were fitted into subgroups, to obtain the goodness of fit indices and the direct and indirect effects among the theorized relationships with their 95% likelihood-based intervals.

In order to compare the direct effects between subgroups, parameter estimates of direct effects were constrained to be equal across groups, one by one, to determine whether there were significant differences between parameters or not.

In this sense, only if the chi-square test difference of the effects across subgroups of interest is statistically significant it is possible to conclude that an effect is moderated by the subgrouping variable (Jak & Cheung, 2018; Edwards & Lambert, 2007; Boyd et al., 2012; Aguinis et al., 2017).

3.4. Results

3.4.1. TSSEM Stage 1 outcomes: pooled correlation matrix based on random effects modeling for splitted overall sample into subgroups

Tables 6 and 7 summarize the traditional meta-analytic bivariate pooled correlation matrix among the strategic orientations, innovation and firm performance with their associated average correlations coefficient estimation –effect sizes–, intervals at 95% confidence, number of studies and sample sizes obtained from TSSEM Stage 1 across firm size and industry sector groups of studies, respectively. The correlations exhibited high levels of between-study variation in all cases according to the I^2 statistic –varying from 0.09 to 0.91– which implies the adequacy of using the random-effects modeling approach instead fix-effects.

3.4.1.1. Firm size: small-medium sized (SMEs) vs. large firms

The results indicate that the variables studied are statistically significantly associated. Correlations between all variables were greater than .28 which can be considered medium to large, or large (see Table 6).

The Q statistic on testing the homogeneity of the pooled correlation matrix for both subgroups (SMEs and large firms) was $Q_{(151)}$=1093.38, p<.01 and $Q_{(116)}$=1723.80, p<.01, respectively, which indicates that the null hypothesis on the homogeneity of both correlation

matrices is rejected. The proportion of between-study variation (I^2 statistic) within the subgroups were smaller than the exhibit in the total sampling, which indicates that the size of the firm explains part of the between-study heterogeneity.

Table 6. Meta-analytic pooled correlation matrix for size of the firm

		MO	EO	LO	INNO	PERF
r	**MO**	1	.40	.42	.34	.28
CI95			.25: .54	.28: .57	.30: .39	.23: .33
k			8	8	43	18
N			2090	2083	10103	4851
I^2			.90	.90	.83	.64
r	**EO**	.47	1	.30	.37	.32
CI95		.37: .57		.24: .37	.28: .46	.26: .38
k		16		5	13	6
N		5668		1308	3136	1660
I^2		.91		.09	.84	.22
r	**LO**	.59	.54	1	.38	.38
CI95		.30: .43	.45: .62		.29: .47	.28: .48
k		11	6		12	5
N		3594	2881		3157	1863
I^2		.74	.57		.83	.70
r	**INNO**	.36	.45	.47	1	.30
CI95		.30: .50	.38: .52	.40: .53		.23: .36
k		32	29	18		15
N		8674	8223	5352		4201
I^2		.89	.91	.76		.75
r	**PERF**	.40	.36	.39	.45	1
CI95		.46: .62	.27: .46	.28: .50	.35: .54	
k		16	11	10	19	
N		3690	2694	2087	4457	
I^2		.89	.84	.86	.90	

Source: Own elaboration based on metaSEM R package outputs, TSSEM Stage 1 output. Pooled correlations for SME firms' subgroup (below diagonal) and large firms' subgroup (above the diagonal) of the research variables from the random effects' analysis. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance. r: observed correlations; CI95: 95% confidence interval; k: number of studies; N: sample size; I^2: percentage of total variance that is due to between-studies variability as opposed to within-study variability. All average correlations are significant (p<.01).

3.4.1.2. Industry sector: manufacturing vs. service firms

The results indicate that the variables studied are statistically significantly associated. Correlations between all variable were greater than .31 which can be considered medium to large, or large (see Table 7).

The Q statistic on testing the homogeneity of the pooled correlation matrix for both subgroups –SMEs and large firms– was $Q_{(96)}$=856.43, p<.01 and $Q_{(204)}$=1267.05, p<.01,

respectively, which indicates that the null hypothesis on the homogeneity of both correlation matrices was rejected.

The proportion of between-study variation –I^2 statistic– within the subgroups were smaller than the exhibit in the total sampling, which indicates that the industry sector explains part of the between-study heterogeneity.

Table 7. Meta-analytic pooled correlation matrix for industry sector

		MO	EO	LO	INNO	PERF
r	MO	1	.46	.54	.41	.37
CI95			.30: .63	.42: .66	.34: .48	.28: .45
k			6	12	25	14
N			3002	4600	8007	3871
I2			.92	.92	.91	.87
r	EO	.44	1	.52	.51	.42
CI95		.36: .52		.41: .62	.36: .67	.28: .57
k		21		6	10	5
N		5196		2884	3417	954
I2		.87		.77	.94	.86
r	LO	.45	.35	1	.41	.40
CI95		.34: .56	.26: .45		.32: .51	.28: .52
k		8	5		14	7
N		1335	1305		4865	1844
I2		.81	.62		.91	.85
r	INNO	.33	.40	.41	1	.35
CI95		.30: .37	.35: .45	.34: .48		.25: .46
k		67	40	18		13
N		14901	9421	4111		3139
I2		.81	.82	.80		.90
r	PERF	.32	.31	.35	.40	1
CI95		.26: .38	.25: .37	.25: .45	.32: .47	
k		22	13	9	24	
N		5419	3553	2457	6255	
I2		.78	.65	.81	.87	

Source: Own elaboration based on metaSEM R package outputs, TSSEM Stage 1 output. Pooled correlations for SME firms' subgroup (below diagonal) and large firms' subgroup (above the diagonal) of the research variables from the random effects' analysis. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance. r: observed correlations; CI95: 95% confidence interval; k: number of studies; N: sample size; I^2: percentage of total variance that is due to between-studies variability as opposed to within-study variability. All average correlations are significant (p<.01).

3.4.2. TSSEM Stage 2 outcomes: subgroup path analysis

In order to offer a more complete understanding among the relationships by not only bivariate correlations but through MASEM's higher-level assessment capability, the results

obtained by fitting the hypothesized models using TSSEM Stage 2 were presented (see Table 8).

3.4.2.1. Firm size: small-medium sized (SMEs) vs. firms large

The holistic approach, as overall model, implies joint and complementary effects of strategic orientations on firm performance partially mediated by innovation. It was assessed for both subgroups –SMEs vs. large firms–.

The direct effects of strategic orientations on firm performance were estimated. In order to test the nature of the mediating role of innovation, the simultaneous direct and indirect effects of strategic orientations on firm performance were provided (see Table 8).

SMEs firms' subgroup model almost exactly fits the meta-analytic data, regarding to its goodness of fit indices ($\chi^2_{(1,\ 13040)}$=.94, p=.36; CFI=1.0000; RMSEA=.0000; and SRMR=.0153).

Large firms' subgroup model fits well the meta-analytic data, regarding to its goodness of fit indices ($\chi^2_{(1,\ 11524)}$=14.22, p=.01; CFI=.9836; RMSEA=.0339; and SRMR=.0484).

In SMEs firms, the model explained 28% of the variance in innovation and 29% of the variance in firm performance. In large firms, the model explained 23% of the variance in innovation and 22% of the variance in firm performance.

For both subgroups, SMEs and large firms' studies, estimates indicate that there were statistically significant direct effects of MO, EO and LO on innovation. In this sense, MO and LO exert both direct and indirect effects on firm performance, while EO exert only indirect effects through innovation as hypothesized within the holistic approach in the total sample.

Results indicate that innovation plays a full mediating role between EO and performance, whereas it does play a partial mediating role between MO and LO, and firm performance.

Results indicate that, for both SMEs and large firms, the direct effects of EO and LO on innovation, and of MO on innovation and firm performance were significant as in the overall model for the total sample.

Table 8. Summary of TSSEM Stage 2 results on the subgroup path analysis for firm size

SUBGROUP	EFFECTS	PATH COEFFICIENTS			EXPLAINED VARIANCE		χ^2 TEST				GOODNESS OF FIT INDICES			MODEL FIT
		Effect	β	LBCI95	R^2	LBCI95	d.f.	N	Value	*p*	CFI	RMSEA	SRMR	Support
SMEs firms	Direct Effects	MO→INNO	.09	.04: .22	.28	.22: .31	1	13,040	.85	n.s.	1.000	.0000	.0153	YES
		EO→INNO	.28	.16: .39										
		LO→INNO	.26	.12: .39										
		MO→PERF	.22	.04: .40	.23	.19: .28								
		LO→PERF	.20	.01: .39										
		INNO→PERF	.31	.18: .44										
	Covariances (ψ)	MO→EO	.48	.38: .58	N.A.									
		MO→LO	.59	.51: .67										
		EO→LO	.54	.46: .62										
	Indirect Effects	MO→INN→PERF	.02	.03: .06										
		EO→INN→PERF	.09	.04: .15										
		LO→INN→PERF	.08	.04: .15										
Large firms	Direct Effects	MO→INNO	.12	.02: .22	.23	.18: .31	1	11,524	14.22	***	.9836	.0339	.0484	YES
		EO→INNO	.30	.16: .42										
		LO→INNO	.20	.10: .34										
		MO→PERF	.12	.05: .20	.22	.17: .30								
		LO→PERF	.27	.17: .40										
		INNO→PERF	.17	.06: .27										
	Covariances (ψ)	MO→EO	.47	.33: .62	N.A.									
		MO→LO	.35	.20: .50										
		EO→LO	.34	.27: .40										
	Indirect Effects	MO→INN→PERF	.02	.01: .05										
		EO→INN→PERF	.05	.01: .09										
		LO→INN→PERF	.04	.02: .07										

Source: Own elaboration based on the metaSEM R package, TSSEM Stage 2 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance; N.A.: Not applicable.

(ψ) = In a path model covariances are represented by ψ.

*** = $p<.001$.

Likewise, the indirect effects of MO, EO and LO on firm performance through innovation for both subgroups were small but significant.

After obtaining the results of the TSSEM Stage 2, path coefficients were compared in order to determine differences between parameters as evidence of moderating effects within SMEs and large firms were conducted (see Table 9).

Table 9. Chi-square test for significant firm size differences between parameter estimates (path coefficients)

DIRECT EFFECT	PATH COEFFICIENTS		χ^2 TEST		
	SMEs	Large	d.f.	Value	*p*
MO→INNO	.09	.12	1	.13	.71
EO→INNO	.28	.30	1	.03	.86
LO→INNO	.26	.20	1	.10	.75
MO→PERF	.22	.12	1	.58	.44
LO→PERF	.20	.27	1	1.94	.16
INNO→PERF	.31	.17	1	2.74	.09*

Source: Own elaboration based on Jak's (2015) procedure for subgroup analysis. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance.
* p < .1

After constraining the direct effects to be equal across groups, one by one, only a significant difference for the direct effect of innovation on firm performance was found ($\chi^2_{(1)}$=2.8981, p=.09, α=.10), leading to conclude that the effect of innovation on firm performance was stronger in SMEs that in large firms.

Constraining the other four effects to be equal did not lead to a significant deterioration of fit, $\chi^2_{(6)}$=4.05, p=.67, indicating that these effects can be considered equal across SMEs and large firms' studies.

Summarizing, findings supported hypotheses H1 and H4, while fail to support hypotheses H2, H3, H5, and H6. Chi-square test provided only significantly statistically differences in the effect of innovation on firm performance, other effects remained equal[16].

[16] It is important to note that non-rejection of hypotheses does not imply that the hypotheses are true. It only suggests that the hypothesized relations depicted in the path analysis have not enough statistical power to establish significant differences in the population (Jak & Cheung, 2018).

Table 10. Summary of TSSEM Stage 2 results on the subgroup path analysis for industry sector

SUBGROUP	EFFECTS	PATH COEFFICIENTS			EXPLAINED VARIANCE		χ^2 TEST				GOODNESS OF FIT INDICES			MODEL FIT
		Effect	β	LBCI95	R^2	LBCI95	d.f.	N	Value	p	CFI	RMSEA	SRMR	Support
Manufacturing firms	Direct Effects	MO→INNO	.10	.05: .20	.25	.21: .29	1	21361	3.62	**	1.000	.0111	.0207	YES
		EO→INNO	.26	.18: .40										
		LO→INNO	.26	.14: .37										
		MO→PERF	.16	.06: .36	.24	.18: .26								
		LO→PERF	.18	.04: .35										
		INNO→PERF	.29	.20: .42										
	Covariances (ψ)	MO→EO	.46	.39: .57	N.A.									
		MO→LO	.55	.50: .66										
		EO→LO	.53	.44: .68										
	Indirect Effects	MO→INN→PERF	.03	.01: .05										
		EO→INN→PERF	.07	.04: .12										
		LO→INN→PERF	.08	.04: .12										
Service firms	Direct Effects	MO→INNO	.15	.01: .38	.32	.25: .37	1	8582	2.51	***	.9974	.0133	.0366	YES
		EO→INNO	.40	.16: .64										
		LO→INNO	.11	.01: .24										
		MO→PERF	.16	.01: .36	.24	.12: .35								
		LO→PERF	.25	.06: .44										
		INNO→PERF	.16	.06: .35										
	Covariances (ψ)	MO→EO	.47	.33: .62	N.A.									
		MO→LO	.35	.20: .50										
		EO→LO	.34	.27: .40										
	Indirect Effects	MO→INN→PERF	.02	.01: .08										
		EO→INN→PERF	.04	.02: .06										
		LO→INN→PERF	.01	.01: .07										

Source: Own elaboration based on the metaSEM R package, TSSEM Stage 2 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance; N.A.: Not applicable.

(ψ) = In a path model covariances are represented by ψ.

*** = p<.001.

Results allow to suggest the persistence of the mediating role of innovation in the relationship between strategic orientations and firm performance as hypothesized in the overall model –holistic approach–.

There was no evidence for moderated mediation moderated effects by size of the firm. However, the link between innovation and firm performance is indeed moderated by firm size.

3.4.2.2. Industry sector: manufacturing vs. service firms

The overall model –holistic approach– was also assessed for two subgroups –manufacturing vs. service firms–. The direct effects of strategic orientations on firm performance were estimated.

In order to test the nature of the mediating role of innovation, the simultaneous direct and indirect effects of strategic orientations on firm performance were provided (see Table 10).

For the both manufacturing and services subgroups, estimates indicate that there were statistically significant direct effects of MO, EO and LO on innovation. Also, MO and LO exert direct effects on firm performance. As established previously in the holistic approach, EO only exert an indirect effect on firm performance through innovation.

Results indicate that innovation plays a partial mediating role between MO and LO on firm performance, whereas innovation fully mediates the relation between EO and firm performance.

Manufacturing firms' subgroup model fits well the meta-analytic data, regarding to the goodness of fit indices ($\chi^2_{(1,\ 21361)}$=3.62, p=.0570; CFI=1.0000; RMSEA=.0111; and SRMR=.0207).

Services firm's subgroup model also fits well the meta-analytic data, regarding to the goodness of fit indices ($\chi^2_{(1,\ 8582)}$=2.51, p=.1130; CFI=.9974; RMSEA=.0133; and SRMR=.0366).

In manufacturing firms, the model explained 25% of the variance in innovation and 24% of the variance in firm performance. In service firms, the model explained 32% of the variance in innovation and 24% of the variance in firm performance.

After obtaining the results of the TSSEM Stage 2, path coefficients were compared in order to determine differences between parameters as evidence of moderating effects within SMEs and large firms were conducted (see Table 11). After constraining the direct effects to be equal across groups, one by one, no significant difference for direct effects was found. Indirect effects of MO, EO and LO on firm performance through innovation for both groups were small but significant.

Table 11. Chi-square test for significant industry sector differences between parameter estimates (path coefficients)

DIRECT EFFECT	PATH COEFFICIENTS		χ^2 TEST		
	Manufact.	Services	d.f.	Value	*p*
MO→INNO	.10	.15	1	.33	.57
EO→INNO	.26	.40	1	1.15	.28
LO→INNO	.26	.11	1	1.81	.18
MO→PERF	.16	.16	1	.01	.95
LO→PERF	.18	.25	1	.35	.55
INNO→PERF	.29	.16	1	.86	.35

Source: Own elaboration based on Jak's (2015) procedure for subgroup analysis. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance.

Summarizing, findings support hypotheses H7, H10, H11, and H12 regarding to moderating effects of firm size, while fail to support hypotheses H8 and H9. Chi-square test provided only significantly statistically differences in the effect of innovation on firm performance, other effects remain equal[17].

Results allow to suggest the persistence of the mediating role of innovation in the relationship between strategic orientations and firm performance as hypothesized in the overall model –holistic approach–. However, there is no evidence for moderated mediation effects by industry sector, neither moderated effects between strategic orientations, innovation and firm performance's direct links were found.

3.5. Discussion and implications

In order to advance in strategic management theory and practice, this research assumed a moderated-mediation contingency approach involving the examination of *a priori* contingency factors into the relationships between strategic orientations and firm performance

[17] It is important to note that non-rejection of hypotheses does not imply that the hypotheses are true. It only suggests that the hypothesized relations depicted in the path analysis have not enough statistical power to establish significant differences in the population (Jak & Cheung, 2018).

mediated by innovation in a simultaneous setting through meta-analytic subgroup path analysis (Jak, 2015; Cheung, 2015b). Data and overall model –holistic approach– of involved relationships were extracted from a previous meta-analytic study conducted in the second chapter of this doctoral dissertation.

Mediation and moderation analyses were conducted simultaneously. It was tested whether firm size –SMEs vs. large firms– and industry sector –manufacturing vs. service firms– influence the strength or degree of the hypothesized relationships, and whether innovation plays a null, full or partial role in the relationship of strategic orientations and firm performance.

In this sense, a test of differences in parameters between subgroups was conducted. Based on the results, the following conclusions were drawn:

1) The mediating role of innovation in the relationship between strategic orientations and firm performance is not moderated by contingency factors such as firm size and industry sector. No significant differences in the mediating nature of innovation were found in the relationship between strategic orientations and firm performance among SMEs' and large firms' studies samples and among manufacturing and service firms' samples. Significant indirect effects were also found.
2) Most of the direct effects are not moderated –remained equal– across subgroups, except for the effect of innovation on firm performance, which seems to be stronger for SMEs than for large firms. Size of the firm indeed moderates the relationship. This result is in line with Crook et al. (2008, p. 1152) in the sense that "performance implications of strategic resources are important and relatively constant across a wide variety of contexts."

At a first glance, it seems that fostering MO, EO and LO is critical at any firm size and industry sector in order to enhance innovation outcomes and to attain superior performance. As most of the relationships persisted regardless of the contingency factors, direct and indirect hypothesized effects of strategic orientations on innovation and firm performance are not due to the influence of the size of the firm or the industry sector. When it is greater the effort of a firm –whether large or SME, or in manufacturing or service sector– to be more market, entrepreneurial and learning-oriented lead to enhance innovation outcomes and firm performance.

These findings support previous studies which found that although obvious differences in bureaucratic structures and resources bundles among SMEs and large firms exist, and even apparently large firms tend to be more market, entrepreneurial and leaning oriented, the impact of these orientations on innovation and performance does not differ in comparison to SMEs.

The main finding indicating that the impact of innovation on firm performance is stronger for SMEs than for large firms might be explained because SMEs are more sensitive to intense competition and one way to avoid rivals is through the introduction of innovations into markets in a first-mover advantage perspective. This finding is in line with Rosenbusch et al,'s (2011), in the sense that "SMEs benefit more from creating innovation outputs than generally dedicating more resources to the innovation task." (p. 452). The lack of resources leads SMEs to be more pragmatic, focusing in innovative outputs, which in turn benefit more this kind of businesses.

Perhaps, SMEs succeeding in translating new products or services into increased profits or other business results benefit more than large firms, given their financial resources constrains and lower market power to maximize new product adoption rates (Chandy & Tellis, 2000).

On the other hand, although the inherent marked differences in the nature of the activities –for instance, the interactions with customers– and outputs –tangibility and consumption– among manufacturing and service firms exist, the impact of strategic orientation on innovation and performance neither varies significantly. It might be partially explained by the equal importance of innovation in achieving organizational effectiveness in both industry sectors.

As both direct and indirect effects of strategic orientation on firm performance were demonstrated, the role of innovation remains equal as for the overall model, as hypothesized in the holistic approach assessed in the second chapter; thereby, it can be stated that innovation plays a partial mediating role between MO and LO and firm performance, whereas it plays a full mediating role between EO and firm performance.

Surprisingly, hypotheses related to differences in the relationships had to be rejected. It was expected that larger firms which have a structured bundle of resources –including human and financial– to implement significant market-driven activities leading to enhance innovation outputs, customer satisfaction and other market results found significant support in the meta-

analytic data. Instead, it seems that SMEs' related market-driven efforts lead to the same level of outcomes of innovation, which implies that innovation is not affected by contingency related to the size of the firm.

Also, it was unexpected that the effect of LO on firm performance holds for both SMEs and large firms. It seems that both SMEs and large firms' efforts to create and use knowledge, implement better communication channels, training techniques and other activities to enhance learning within the firm, have the same impact not only for innovation purposes, but to achieve superior performance through increasing productivity of employees within the firm. Supposedly, large firms are more supported by slack resources and structured labor relationships which allow continuous improvement and generative learning from the environment, but more amalgamated organizational structures such as within SMEs allow the same impact in comparison to large firms.

As expected, the effect of LO on innovation seems to be equal for manufacturing than for service firms. Although manufacturing firms frequently follow a technological trajectory (Damanpour et al., 2009), which imply mainly a relevant effort on developing radical or disruptive change in the terms of product life cycle; and conversely, service firms usually adopt products or technologies developed in goods industries, the effect of promoting generative learning within firms has the impact in both sectors.

As managerial implications of this chapter, managers should acknowledge that fostering market, entrepreneurial and learning orientations within their firms could lead to enhance innovations outcomes and achieve superior performance regardless the size of the firm and the industry sector. Innovation, when is introduced into markets in early stages of the product cycle life, could benefit more to SMEs avoiding intense competition.

For SMEs, the lack of physical, human and financial resources could not be an obstacle to conduct significant market-driven innovation activities, as large firms do. SMEs could take advantage of their flexibility and adaptability to changes in the environment pursuing new market opportunities –enhancing EO– and improving the quality of learning from external environment –enhancing LO– which in turn would be manifested in the development of successful new products and services.

3.6. Limitations and future research directions

Although meta-analytic path analysis is considered as a powerful and in-depth basis for quantitative synthesis of research findings (Bergh et al., 2016), certain aspects of the results presented in this study should be interpreted with utmost caution considering their limitations.

The limited justification about the selection of contingency factors, in this case, firm size and industry sector is acknowledged. Methodological reasons can be adduced: within MASEM framework, it is possible to conduct subgroup analysis for categorical moderators –as selected–. Very recently, methodological advances allow to use continuous moderators (Jak & Cheung, Forthcoming). At the time of the methodological development of this dissertation, such advances were not available.

Still, inclusion criteria for the selected contingency factors is robust, in terms of the availability of data from empirical studies and the ambiguous results yielded in past research. First, sufficient primary studies that clearly met the classification of subgroups were needed to be available for meaningful analyses. Second, past research is not clear about the direction and/or strength of the moderating variables selected –firm size and industry sector–.

As for the problems of moderation and mediation analysis pointed out by Aguinis et al. (2017), suggestions were considered, and no further inconveniences were evidenced for the subsequent meta-analytic moderated mediation procedures. As firm size and industry sector are not artificial dichotomous variables, but categorical, such categorization would not lead to significant detrimental of substantive conclusions. In this sense, only the problem regarding the disparity of the sizes of the subgroups' samples could generate concern, because of the potential decrease of statistical power. However, it is considered that the subgroups are representative given the significance of the pooled meta-analytic correlations obtained in the TSSEM Stage 1 and the goodness of fit indices obtained for each subgroup in the TSSEM Stage 2. No optimization problems were found in the meta-analytic procedures.

Regarding the categorization of the studies according to the contextual moderators, often the samples were not clearly identified with any of the subgroups, or mixed types of firms were found, representing a challenge in terms of inclusion criteria. Subgroup analysis was based on dichotomization according to whether the studies explicitly indicated that the samples examined firms which belong to one or another group of interest.

Still, inclusion criteria for the selected contingency factors is robust, in terms of the availability of data from empirical studies and ambiguous results yielded in past research. First, sufficient primary studies that clearly met the classification of subgroups were needed to be available for meaningful analyses. Second, past research is not clear about the direction and/or strength of the moderating variables selected –firm size and industry sector–.

Future research would focus on study the moderating effects of context-related factors, such as national culture, taking into account other mediating mechanisms of interest, within a MASEM framework.

As causal inferences cannot be assessed in meta-analytic analyses due to pre-eminence of cross-sectional designs of primary studies, a natural step to advance in theory and practice in management research should be using longitudinal data for moderated mediation analysis (Aguinis et al., 2017) in order to prevent biased estimations. One possible way to obtain longitudinal datasets is the use of secondary sources such as letters to shareholders and annual reports informing about the relationships during a period of interest (e.g., Dutta et al., 2016). In this sense, the relationship between strategic orientations, innovation and firm performance can be examined in a more accurate manner under a combined quantitative and qualitative framework, for instance, using structural equations model and text content analysis (Short & Palmer, 2008; Short et al., 2009).

CHAPTER 4: THE PATTERNS OF ASSOCIATION BETWEEN STRATEGIC ORIENTATIONS, INNOVATION, AND FIRM PERFORMANCE: A CO-OCCURRENCE NETWORK ANALYSIS APPLICATION

4.1. Introduction

The concept of strategic orientation has attracted widespread attention from market, entrepreneurial and management scholars (Hakala, 2011). By definition, strategic orientations, namely, market, entrepreneurial and learning orientations (MO, EO, and LO) are linked to firm performance as its antecedents and important drivers (Hult, Hurley, & Knight, 2004).

The literature on strategic orientations has established the notion that market, entrepreneurial and learning orientations are multidimensional, interlinked, correlated, but distinct constructs (Baker & Sinkula, 2009; Hakala, 2011). In fact, "these different orientations share similar characteristics, at least in terms of the role they play in innovation" (Gatignon et al., 2016, p. 125); and the association between them and firm performance might be stronger when they are considered collectively rather than in isolation and in an operating interplay basis (e.g., Ho et al., 2015; Mu & Di Benedetto, 2011; Cambra-Fierro et al., 2012).

Past research has stated that when strategic orientations are operating synergistically, innovation could benefit from complementarity, which means that the effect of one orientation can increase the effectiveness and efficiency of other orientations and that the combination of strategic orientations leads to superior performance (e.g., Baker & Sinkula, 2009; Gnizy & Shoham, 2014; Ho et al., 2015; Mu & Di Benedetto, 2011). Therefore, firms may find it more useful to adopt and combine multiple strategic orientations to develop a more complex corporate culture (Grinstein, 2008b). The identification of complementarities and associations among the various orientations is critical for examining their synergies (Gatignon et al., 2016).

Following Short et al. (2009) and Pollach (2012), this research draws from the assumption that the presence of a strategic orientation in a firm should be highlighted in its corporate disclosures as a reflection of its managerial cognitions, organizational culture, values, or identity. In other words, strategic orientations can be examined through their projections or exhibitions in the key organizational narratives –e.g., annual reports–. These key narratives are a source of rich and valuable data, from a qualitative point of view, which surveys or interviews

cannot provide in the same manner. One source of valuable unstructured data is the company's annual report on Form 10-K, which offers a detailed picture of a company's business and discusses its perspective on the business results and what is driving them (SEC, 2019).

The availability of this kind of rich data sources combined with the growing sophistication of analytical techniques due to recent advances in both the computational power and mathematical models and algorithms for the collection, extraction, visualization, analysis and interpretation of data (Castelfranchi, 2017; Filippov & Hofheinz, 2016) provides researchers the opportunity to explore and test hypotheses in new contexts and gain valuable insights that were difficult to attain with more traditional research methods (Duriau et al., 2007).

Text mining, defined as the "discovery and extraction of interesting, non-trivial knowledge from free or unstructured text" (Kobayashi et al., 2018, p. 2), is a possible way to produce knowledge derived from textual patterns and relationships, and can be used to reveal facts, trends, or constructs (Kobayashi et al., 2018; Delen & Crossland, 2008). Results derived from text mining applications are data-driven and not researcher-driven, improving the transparency of the evidence used to support research conclusions (Pokorny et al., 2018).

Numerous studies have applied text analysis in organizational research (see Table 12). Particularly, in the context of strategic orientations, computer-aided text analysis (CATA) approach yielded significant contribution towards construct measurement and validation procedures of MO (Zachary et al., 2011a; Zachary et al., 2011b), EO (Short et al., 2009, 2010; McKenny et al., 2018a; Engelen et al., 2015), and LO (Dutta et al., 2016). Dictionaries or word lists were developed and validated as well.

Despite the growing existence of empirical research, little is known about the interrelationships between strategic orientations (Hakala, 2011; Grinstein, 2008b) and innovation linking strategic orientations with firm performance. Although some commonalities "create difficulties for identifying effects specific to each type of orientation, the identification of complementarities among the various orientations is critical for examining their synergies" (Gatignon et al., 2016, p. 125). Particularly, further research is requested on exploring how the more successful firms adopt and balance various combinations of strategic orientations (Grinstein, 2008b).

Table 12. Studies applying text mining in management, entrepreneurship and marketing

AUTHOR	YEAR	TITLE	JOURNAL	TEXT MINING APPROACH	RESEARCH THEMES	TEXT DATA	CONTRIBUTION
McKenny, A. F., Aguinis, H., Short, J. C., & Anglin, A. H.	2018	What Doesn't Get Measured Does Exist: Improving the Accuracy of Computer-Aided Text Analysis	Journal of Management	Computer-Aided Text Analysis (CATA)	Measurement error variance estimation of Entrepreneurial Orientation, Market Orientation, and Ambidexterity	Letters to shareholders and 10-K annual reports	Although measurement error variance has not been measured thus far, it does exist. Results indicate that existing research using CATA measures may need to be revisited because substantive relations have been underestimated. Recommendations on how future research can minimize the effects of transient, specific factor, and algorithm error and demonstrated the significant difference these recommendations can make in terms of the quality of the resulting measures.
Short, J. C., McKenny, A. F., & Reid, S. W.	2018	More Than Words? Computer-Aided Text Analysis in Organizational Behavior and Psychology Research	Annual Review of Organizational Psychology and Organizational Behavior	Computer-Aided Text Analysis (CATA)	Organizational Behavior and Psychology Research	144 empirical articles from top management journals	The advent of CATA allows scholars to draw meaning from organizationally produced documents that potentially contain the thoughts, emotions, opinions, or other aspects ofwork life that are impossible to capture naturally using other research techniques.
Kobayashi, V. B., Mol, S. T., Berkers, H. A., Kismihók, G., & Den Hartog, D. N.	2018	Text Mining in Organizational Research	Organizational Research Methods	Cluster Analysis and Topic Modeling	Job Information Types and Worker Attributes	Job vacancy data from various employment websites	Text mining steps and associated methodologies to provide a sense of the applicability of text mining methodologies within the field of organizational research.
Banks, G. C., Woznyj, H. M., Wesslen, R. S., & Ross, R. L.	2018	A Review of Best Practice Recommendations for Text Analysis in R (and a User-Friendly App)	Journal of Business and Psychology	Topic Modeling	Topic modeling on leader-member exchange (LMX)	Open-ended survey responses using Amazon's Mechanical Turk (MTurk)	Outline of specific steps and best practice recommendations for how to conduct a particular type of computer-aided text analysis: topic modeling
McKenny, A. F., Short, J. C., Ketchen, D. J., Payne, G. T., & Moss, T. W.	2018	Strategic entrepreneurial orientation: Configurations, performance, and the effects of industry and time	Strategic Entrepreneurship Journal	Computer-Aided Text Analysis (CATA)	Measurement of strategic Entrepreneurial Orientation	10-K annual reports	The value of treating strategic EO from a configurations perspective and support for equifinality—where more than one pattern can lead to high performance in the same environment. Five strategic EO dimensions are not equally important to performance across contexts (i.e., industry and time). In fact, the more successful configurations tend to focus on one or a few key dimensions rather than give equal attention to them all, as traditional views and measures of EO might assume.

AUTHOR	YEAR	TITLE	JOURNAL	TEXT MINING APPROACH	RESEARCH THEMES	TEXT DATA	CONTRIBUTION
Belderbos, R., Grabowska, M., Leten, B., Kelchtermans, S., & Ugur, N.	2017	On the Use of Computer-Aided Text Analysis in International Business Research	Global Strategy Journal	Computer-Aided Text Analysis (CATA)	Global Mind-set	10-K annual reports	The correct use and potential value of CATA indicators and analyses in global strategy research, and critical procedures and validity steps that have to be followed to arrive at valid CATA-based indicators for focal constructs, assessment of sampling validity and the related selection of informative texts, a detailed content validity, and a correlation or discriminant validity analysis.
Piepenbrink, A., & Gaur, A. S.	2017	Topic Models As a Novel Approach To Identify Themes in Content Analysis: the Example of Organizational Research Methods	Academy of Management Proceedings	Topic Modeling	Topics in Organizational Research Methods' articles	Abstracts of academic articles	The usage of topic modeling as a computer aided content analytic tool. LDA topic modeling is presented in the larger context of methods for analyzing text data and demonstrated its application by analyzing the articles published in Organizational Research Methods journal since its inception.
Wang, X., & Dass, M.	2017	Building innovation capability: The role of top management innovativeness and relative-exploration orientation	Journal of Business Research	Computer-Aided Text Analysis (CATA)	Measurement of Top management innovativeness (TMI) and relative-exploration orientation (REO)	Letters to Shareholders	Certain managerial characteristics (e.g., younger or more industrial experience) can result in better financial performance. Managers with these characteristics are more likely to develop innovativeness, which ultimately leads to a better financial outcome for the firm.
Dutta, D. K., Gupta, V. K., & Chen, X.	2016	A Tale of Three Strategic Orientations: A Moderated-Mediation Framework of the Impact of Entrepreneurial Orientation, Market Orientation, and Learning Orientation on Firm Performance	Journal of Enterprising Culture	Computer-Aided Text Analysis (CATA)	Moderated-mediation impact of Entrepreneurial Orientation, Market Orientation, and Learning Orientation on Firm Performance	Letters to Shareholders	Dominant strategic orientations, EO and MO operate with some tension between them which, however, is mitigated by presence of LO. Moreover, when there is a fit (or alignment) between EO, MO, and LO, there is a greater probability that doing more of one orientation will increase the value of doing more of the other.
Surroca, J., Prior, D., & Tribó Giné, J. A.	2016	Using panel data DEA to measure CEOs' focus of attention: An application to the study of cognitive group membership and performance	Strategic Management Journal	Computer-Aided Text Analysis (CATA)	Assessment of CEOs' attentional focus.	Letters to Shareholders	The measurement of managers' cognitions allowed to identify the strategy dimensions on which CEOs focus their attention when seeking competitive advantages. there are groups of CEOs in the industry under study that share similar attention focus. Support for a link between CGs and performance is found. Results also indicate that measure of CEOs' cognitions is highly correlated with other measures drawn from CEOs' demographic characteristics and their letters to shareholders.

AUTHOR	YEAR	TITLE	JOURNAL	TEXT MINING APPROACH	RESEARCH THEMES	TEXT DATA	CONTRIBUTION
Matthies, B., & Coners, A.	2015	Computer-Aided Text Analysis of Corporate Disclosures - Demonstration and Evaluation of Two Approaches	The International Journal of Digital Accounting Research	Frequency analysis and link (network) analysis	Risk reporting in corporate disclosures	Annual reports of Germany-listed DAX companies in the industrial sector	The combined use of both text analysis approaches has proven advantageous since they complement each other and compensate for each other's weaknesses. The combination of quantitative results related to thematic categories (dictionary approach) as well as the exploration of unknown content and relationships (statistical approach) created a more comprehensive picture with regard to the presentation of corporate disclosure.
Engelen, A., Neumann, C., & Schwens, C.	2015	"Of Course I Can": The Effect of CEO Overconfidence on Entrepreneurially Oriented Firms	Entrepreneurship: Theory and Practice	Computer-Aided Text Analysis (CATA)	Measurement of Entrepreneurial Orientation	Letters to Shareholders	Over-confident CEOs favor firms' EO. However, CEO overconfidence's benefits are reduced, and the effects of some of its drawbacks are heightened as CEO overconfidence increases, leading to positive but decreasing marginal effects. Also, market dynamism moderates the relationship between CEO overconfidence and EO.
Illia, L., Sonpar, K., & Bauer, M. W.	2014	Applying co-occurrence text analysis with ALCESTE to studies of impression management	British Journal of Management	Co-occurence analysis	Impression management	Press releases	The introduction of a co-occurrence methodology particularly relevant for management studies examining IM, including the provision of visual outputs which are useful for interpreting results, the ability to study longitudinally the effectiveness of impression management at the inter- organizational level of analysis and the possibility of studying large textual data sets without using predefined dictionaries.
Anglin, A. H., Allison, T. H., McKenny, A. F., & Busenitz, L. W.	2014	The Role of Charismatic Rhetoric in Crowdfunding: An Examination with Computer-Aided Text Analysis	Research Methodology in Strategy and Management	Computer-Aided Text Analysis (CATA)	Measurement of Charismatic Rhetoric	Entrepreneurial narratives	The use of charismatic rhetoric in entrepreneurial narratives impacts the entrepreneur's ability to acquire funding.
Noel, T., & Erskine, L.	2013	The Silent Story: Using Computer-Aided Text Analysis to Predict Entrepreneurial Performance	Journal of Entrepreneurship	Computer-Aided Text Analysis (CATA)	Measurement of Concreteness and Cognition	Student journal entries	To being disposed toward cognitive activity instead of concrete action detracts from performance. This find- ing is consistent with the 'action bias' view of entrepreneurship. To the degree that one's use of language reflects underlying thought patterns, thinking concretely is a desirable trait for entrepreneurs.

AUTHOR	YEAR	TITLE	JOURNAL	TEXT MINING APPROACH	RESEARCH THEMES	TEXT DATA	CONTRIBUTION
Pollach, I.	2012	Taming textual data: The contribution of corpus linguistics to computer-aided text analysis	Organizational Research Methods	Keywords in context (KWIC); collocations; word distribution, corpus comparisions	Themes in sharehold letters	Letters to Shareholders	The use of corpus-linguistic analysis techniques can provide insights that computer-aided content analysis or computer-aided interpretive textual analysis alone would not provide. More specifically, these pertain to the comparison of corpora by means of keywords, the dispersion of words within a set of corpora, the identification of strong collocations, and the enhancement of self-constructed dictionaries with WordNet.
Zachary, M. A., McKenny, A. F., Short, J. C., Davis, K. M., & Wu, D.	2011	Franchise branding: An organizational identity perspective	Journal of the Academy of Marketing Science	Computer-Aided Text Analysis (CATA)	Measurement of Market Orientation, Entrepreneurial Orientation, and Charismatic Rhetoric	Franchisors' recruitment Web sites	The use of content analysis to identify how franchisors use rhetoric indicative of a market orientation, entrepreneurial orientation, and charismatic leadership on franchise recruitment Web sites to attract potential franchisees. Larger franchisors tend to incorporate more rhetoric indicative of a market orientation, entrepreneurial orientation, and charismatic leadership in their franchise branding than do smaller franchises.
Zachary, M., McKenny, A., Short, J., & Payne, G. T.	2011	Family business and market orientation: Construct validation and comparative analysis	Family Business Review	Computer-Aided Text Analysis (CATA)	Measurement of Market Orientation	Letters to Shareholders	The development and validation of a tool for measuring market orientation at the organizational level. Market orientation rhetoric exists in shareholder letters and this rhetoric is used to communicate the company's market orientation to shareholders.
Kunal, K., & Kumar, A.	2011	What Doesn't Get Measured Does Exist: Improving the Accuracy of Computer-Aided Text Analysis	Journal of Management	Computer-Aided Text Analysis (CATA)	Extractions of Strategic Human Resource Management of concept and co-occurrences	Annual reports and electronic format of books related to the field of human resource management	Top management prefers to give the important concepts of the field of SHRM a miss when it comes to communicating through one of its most strategically important documents. The mention of SHRM concepts in annual reports has more or less remained the same: in fact, a decrease in the mention of SHRM concepts was indicated in comparing the annual reports of the recent time period of 2007-2008 to the time period of 2003-2004.
Short, J. C., Broberg, J. C., Cogliser, C. C., & Brigham, K. H.	2010	Construct Validation Using Computer-Aided Text Analysis (CATA): An Illustration Using Entrepreneurial Orientation	Organizational Research Methods	Computer-Aided Text Analysis (CATA)	Validation of the construct of Entrepreneurial Orientation	Letters to Shareholders	Assessment of construct validity when using content analysis and procedures for future research. By implementing the checks on validity improve the confidence in the inferences made using content analysis. Failure to capitalize on such opportunities could result in inconsistent findings, limiting our understanding of substantive topics of interest.

AUTHOR	YEAR	TITLE	JOURNAL	TEXT MINING APPROACH	RESEARCH THEMES	TEXT DATA	CONTRIBUTION
Uotila, J., Maula, M., Keil, T., & Zahra, S. A.	2009	Exploration, exploitation, and financial performance: analysis of S&P 500 corporations	Strategic Management Journal	Computer-Aided Text Analysis (CATA)	Measurement of Exploitative and Explorative Orientations	News articles and newswires	A curvilinear relationship between the relative amount of exploration and financial performance supports March's (1991) argument that a balance between exploration and exploitation should provide optimal performance levels, and that such a balance involves trade-offs between exploration and exploitation.
Short, J. C., & Palmer, T. B.	2008	The Application of DICTION to Content Analysis Research in Strategic Management	Organizational Research Methods	Computer-Aided Text Analysis (CATA)	Measurement of Master variables and Calculated variables	Mission statements from schools of business	DICTION can be used to aid content analysis in strategic management research. DICTION is a reliable but 'humble device' because it ignores how and why words are chosen in texts and instead focuses only on the kinds of words people use. Results, therefore, are not replete with vivid images, but instead reveal patterns of word usage that may be missed with other forms of content analysis.
Duriau, V. J., Reger, R. K., & Pfarrer, M. D.	2007	A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements	Organizational Research Methods	Computer-Aided Text Analysis (CATA)	Organization studies	Abstracts of academic articles	Content analysis implemented with care should be of particular interest for management researchers because of several factors, including access to deep structures of managers, nonintrusiveness, analytical flexibility, and the ability to implement longitudinal designs. Several additional methodological and practical advantages also have been identified in terms of safety, scalability, cost effectiveness, collaboration, triangulation, and replicability.
McKenny, A. F., Short, J. C., & Payne, G. T.	2013	Using Computer-Aided Text Analysis to Elevate Constructs An Illustration Using Psychological Capital	Organizational Research Methods	Computer-Aided Text Analysis (CATA)	Construct elevation of Psychological Capital	Letters to Shareholders	Outline of a framework for ensuring theoretical and methodological rigor when using computer-aided text analysis to elevate constructs to the organizational level. Application of the framework to develop and validate a measure of organizational psychological capital. Longitudinal research by examining the extent to which organizational psychological capital changes in organizations over time in a 10-year sample of large, publicly traded organizations.
Zachary, M. A., Payne, G. T., Moore, C. B., & Sexton, J. C.	2017	Time to recalibrate? Exploring entrepreneurial orientation of family businesses before, during, and after an environmental jolt	Int. J. Management and Enterprise Development	Computer-Aided Text Analysis (CATA)	Measurement of Entrepreneurial Orientation	Letters to Shareholders	EO (i.e., proactiveness, innovativeness, and risk-taking) exhibited by family businesses changes over time. There is a general upward increase in EO during times of relative environmental stability, but EO is recalibrated following an environmental jolt

AUTHOR	YEAR	TITLE	JOURNAL	TEXT MINING APPROACH	RESEARCH THEMES	TEXT DATA	CONTRIBUTION
Lee, J., & Hong, Y. S.	2016	Extraction and visualization of industrial service portfolios by text mining of 10-K annual reports	Flexible Services and Manufacturing Journal	Co-occurrence analysis and self-organizing map	Extraction and visualization of industrial service portfolios	10-K annual reports	A methodology for the analysis of the servitization landscape of various industries focusing on (1) identifying the service portfolios of the respective manufacturers and (2) visualizing the servitization landscape

Likewise, the application of new or more advanced CATA methods is required, in order to offer new options for organizational researchers to uncover the latent themes and associations in a body of text (Short et al., 2018).

This exploratory data-driven study aims to address these research gaps by identifying the relevance and centrality of strategic orientations, innovation and firm performance and extracting their co-occurrence patterns, in order to better understand how these constructs of interest are adopted, combined and balanced in business practice.

Drawing on Form 10-K annual reports of 48 firms within S&P 500's communication services and materials industry sectors, this study conducts a co-occurrence network analysis using text analysis software KH Coder (Higuchi, 2016) to statistically and visually extract information from the text data.

Specifically, this research tackles the following research questions: To what extent firms adopt and exhibit their strategic orientation, innovation and firm performance? Which patterns of strategic orientations are adopted by firms and how these patterns are associated with innovation and firm performance?

Contributions of this study are three-fold: First, setting a data-driven text mining approach applying a co-occurrence network analysis combining co-occurrence analysis (for the identification of strategic orientations' relationships) with network analysis (for patterns extraction) provides a statistical, graphical and intuitive visualization of structural information on firms' strategies in real business contexts. This kind of text mining techniques allows to gain a more sophisticated understanding of the interplay between those constructs of interest (Hakala, 2011) on rich and publicly accessible data sources.

Second, by assuming both an aggregated (composite of discrete but related set of dimensions) and disaggregated (individual dimensions view) approaches of the strategic orientation concept might allow investigating, on one hand, more parsimonious relationships, facilitating simpler explanations on overall text data; and on the other, more complex relationships, avoiding 'excessive aggregation' and 'aiding prediction' (McKenny et al., 2018b).

Third, most of the studies employing text analysis in organizational research are CATA-based (Kobayashi et al., 2018); so far, no study on strategic orientation further applied text

mining, beyond construct measurement and validation, to dynamically explore combinations of strategic orientations adopted by firms, and how they shape patterns of associations with innovation and firm performance in practice.

This chapter is organized as follows: the first section presents an overview of the data-mining framework for analyzing Form 10-K annual reports. Data sampling and procedures such as text processing and mining are described for statistically and visually represent the associations and differences between constructs of interest and industry sectors through co-occurrence network analysis. The second section relates to results of the text mining process. Finally, the third section discusses the results obtained and presents the main conclusions.

4.2. Method

Text mining research serves as the main framework for text analysis, as it encompasses the theoretical approaches, methods, techniques, and tools to promote the use of rich sourced data in the field. Text mining, defined as the "discovery and extraction of interesting, non-trivial knowledge from free or unstructured text" (Kobayashi et al., 2018, p. 2), is a possible way to produce knowledge derived from textual patterns and relationships, and can be used to reveal facts, trends, or constructs (Kobayashi et al., 2018; Delen & Crossland, 2008).

Text content analysis, conceived as any methodological measurement applied to text (Duriau et al., 2007), is used by scholars in a variety of fields to organize and make sense of the words, phrases, and language used by individuals in speeches, organizational narratives, or other communication media. Content analysis captures cognitions, emotions, and other types of meaning as reflected in the rhetoric presented in words or narrative texts (Short et al., 2018a).

According to Indulska et al. (2012), within a text mining framework, and depending on the data, theoretical approach, objectives and research hypothesis, it is possible to assume two approaches to conduct content analysis: conceptual and relational.

In a conceptual analysis, text is examined for the presence of concepts; such concepts can represent words, phrases, or more complex constructs. Within this approach, the most representative application is computer-aided text analysis (CATA) which "enables the measurement of constructs by processing text into quantitative data based on the frequency of words" (McKenny et al., 2018, p. 2). In a conceptual analysis, algorithms read the text and classify concepts within the text into different categories based on dictionaries (Li, 2010).

Technically, a dictionary is a tabulated collection of items, each with an associated attribute, as, for example, in its traditional form of a word and associated definition. Thus, analysis is restricted to the term 'word lists,' where the created collections of words attempt to identify a particular attribute of a document (Loughran & McDonald, 2016). The occurrence of specific codes indicates the presence and salience of a construct of interest in the data (Short et al., 2018; Pokorny et al., 2018).

On the other hand, relational analysis approach pays attention not only to *what* is disclosed but also to *how* it is disclosed, by tabulating not only the frequency of concepts in the body of text, but also the co-occurrence of concepts. Pre-defined concepts can be assessed regarding the interconnection to each other within the documents.

Within the relational approach, co-occurrence is interpreted as an indicator of semantic proximity and refers to the above chance occurrence of two terms from a text corpus located in close proximity to each other in a certain order (Ignatow & Mihalcea, 2018). The fact that two concepts co-occur in an organizational document is interesting in itself: for instance, supposing that an annual report mentions innovation in every sentence in which customer is also mentioned. Even if the exact relation is unknown between the two concepts –if any–, it is known that the firm apparently associates customers with innovation, and this might influence readers if this association is strongly present in many annual reports.

Relationships between constituents of complex systems can be represented in terms of networks (Yang et al., 2016). Network analysis, from a graph theory approach, refers to the structure and visualization of individual entities regarded as nodes, and relationships or interactions between them, which are regarded as edges (Ignatow & Mihalcea, 2018). Nodes correspond to the constructs of interest into which text excerpts are coded and meaning is computationally explored, which in this study refer to strategic orientations, innovation, and firm performance. In an effort to convey coding patterns observed in the data as well as how codes are interrelated, researchers typically report frequencies of code applications and code co-occurrence matrices (Pokorny et al., 2018).

Groups of nodes highly connected between them but with few links to other nodes are called communities. These interconnected groups bring out much information about the network (Pons & Latapy, 2005). Finding communities within a graph helps unveil the internal organization of a graph and can also be used to characterize the entities that compose it.

Community detection extracts structural information of a network in an unsupervised manner, allowing to unveil the existence of a non-trivial internal network organization. This grouping method also let "to infer special relationships between the nodes that may not be easily accessible from direct empirical tests" (Yang et al., 2016, p. 1), helping understand the properties of dynamic processes taking place in a network.

Co-occurrence network analysis, the combination of the both previously mentioned approaches, provides a graphical visualization of the relationship between nodes –dimensions of strategic orientations, innovation and firm performance– extracted from texts –10-K annual reports–. Co-occurrence network analysis allows the discovery and visualization of the relationship patterns in the content of text collections (Matthies & Coners, 2015). Since concepts having similar appearance patterns are directly linked to one another, it is easier to identify the groups of concepts that represent main topics in texts and their centrality using a co-occurrence network, in comparison to other methods, such as multi-dimensional scaling and correspondence analysis (Higuchi, 2016).

4.3. Text mining procedure

KH Coder software for text mining was used to analyze the content of 10-K annual reports and to explore the extracted information statistically and visually. It is a practical free software and its source code is open to the public (Higuchi, 2016). This software is one of the most friendly and powerful tools to conduct text content analysis. Text mining operations that can be performed include concept extraction, self-organizing maps, multidimensional scaling, clustering, and co-occurrence networks. KH Coder is used in almost 500 scholarly publications (Deokar et al., 2018) and it is reviewed as a major text mining tool in marketing studies (Tang & Guo, 2015).

This chapter conducts a co-occurrence network analysis following the steps for text mining proposed by Kobayashi et al. (2018) and Indulska et al. (2012), which refer on how to implement text analysis in an organizational research context.

The first step is related to the selection of text data, which can be any organizational narrative or corporate disclosures –e.g., annual reports–. These key narratives are a source of rich and valuable data, from a qualitative point of view, which surveys or interviews cannot provide in the same manner.

The second step is text preprocessing, which includes:

- Cleaning the text data retaining only the relevant text elements.
- Deleting unimportant characters –e.g., extra whitespaces, formatting tags–.
- Implementing a stop word removal procedure to ignore words which information content does not contribute to the meaning of the text, for instance, conjunctions and prepositions.
- Parsing the text to obtain more efficient data, which implies extracting HTML code, embedded PDF's, and image items for creating compressed versions of the data.

The purpose is to create a file in plain text –generally formatted as .txt– which software can read to be transformed into mathematical structures –vectors and matrices–.

The third step refers to the text mining operations, which include:

- Semantic –or conceptual– extraction through the analysis of frequency of terms included in the coding rule –dictionaries–. This results in a document-by-term matrix, where the columns are the variables, the rows are the unit of analysis –e.g., sentences, paragraphs or documents–, and the weights of the words or phrases are the values of the variables according to the unit of analysis.
- Relational extraction through co-occurrence network analysis, for mining patterns of association of constructs which involves:
    - Comparing similarity and proximity of concepts through the Jaccard similarity coefficient, which is a parameter used to compare characteristics between sets of information efficiently without the use of data redundancy (Singthongchai & Niwattanakul, 2013; Irani et al., 2016).
    - Detecting community structures, which can be performed using the Walktrap algorithm (Pons & Latapy, 2005). This is a hierarchical clustering algorithm to capture structural similarities between constructs of interest as nodes in a network. The basic idea of this method is that short distance random walks tend to stay in the same community (Yang et al., 2016).

- Evaluating the strength of co-occurrences through the analysis of the minimum spanning tree (MST) using the Prim method (Higuchi, 2016). MST indicates which associations are most important in the network. Mathematically, is defined as the sub-network that connects all nodes while minimizing the link weights and without forming loops (Tewarie et al., 2015).
- Assessing the centrality of a concept, which is reflected by the influence of a construct in texts and determines what kind of role it plays in a textual network. The degree of centrality is manifested in terms of the number of nodes to which a given node is directly connected (Higuchi, 2016).

As a result of the fourth step, a network map visualizes an undirected co-occurrence network where each concept represents a node in the network. The links or edges between nodes are represented by the magnitude of occurrences the two nodes have together.

4.3.1. Text data selection

4.3.1.1. Data source: Annual reports on Form 10-K

Annual reports are considered the most important external document of any company as they contain crucial information about their financial performance and their future strategies (Kloptchenko, et al., 2004). In the context of text analysis, annual reports are "prime materials to study the interaction of firms with their environment" (Duriau et al., 2007, p. 17).

In the same line of thought, these reports are key communication vehicles between a firm's management and its stakeholders and are primary sources of financial and operating information about the firm (Michalisin, 2001, p. 152).

Methodologically, annual reports have several advantages in terms of reliability and exhaustiveness over other sources of corporate information to study cognitive phenomena (Duriau et al., 2007) and to obtain information on management's strategic posture (e.g., Noble et al., 2002).

Following Michasilin (2001), annual reports are a valid and meaningful source of information about firm innovativeness and strategy. This has implications in a two-fold manner:

- First, for stakeholders, since laws and rules require public companies to disclose meaningful information to the public, providing a common pool of knowledge to use to judge for themselves whether to buy, sell, or hold a particular security. This critical information is related to company's strategy, products and services, risks, competitors, perspectives on the business results and what is driving them (SEC, 2019).
- Second, for researchers, since annual reports are manifestations of important values and strategic postures in organizations, therefore, these corporate disclosures are indeed a valuable data source for management research (Michalisin, 2001). Moreover, "publicly traded organizations communicate with stakeholders regularly through annual reports. Thus, this type of communication provides a valuable sampling frame for content analytic research because it maximizes sample size and increases the availability of texts from multiple time periods" (McKenny et al., 2018, p. 8).

The annual report on Form 10-K is an annual corporate disclosure regulated by the U.S. Securities and Exchange Commission (SEC), which is the regulatory institution with the mission to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation (SEC, 2019). In this sense, laws and regulations prohibit companies from making materially false or misleading statements. Omitting material information is forbidden as well. Additionally, the heads of the companies –CEO and CFO– are required to certify the accuracy of the reports.

Form 10-K provides a comprehensive overview of the company's business and financial condition and includes audited financial statements, information about how the company operates, its main products and services, subsidiaries, markets, competition, regulations and risk factors, among other business information.

According to the SEC (2019), all 10-Ks filed with SEC are available to the public on the SEC's EDGAR website. The form 10-K is structured in five parts and 15 items which includes these sections:

- Business: describes the company's business, its main products and services, what subsidiaries it owns, and what markets it operates in. This section may also include information about recent events, competition the company faces,

regulations that apply to it, labor issues, special operating costs, or seasonal factors.

- Risk Factors: includes information about significant risks that the company faces, generally listed in order of importance.
- Selected Financial Data: provides certain financial information about the company for the last five years.
- Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A): gives the company's view on the business results of the past fiscal year. Here are examples of how an MD&A may discuss risks that the company faces:
    - A consumer company might discuss ways in which it seeks to meet changing tastes.
    - A manufacturing company that relies on natural resources may discuss how it assesses commodity risks and conducts resource management programs.
    - A financial institution may discuss ways that management monitors liquidity and assures adequate capital under various scenarios, such as a rise in interest rates or a ratings downgrade.
    - A global company may discuss how it handles exchange rate risks.
    - Companies may discuss how they face competition, build their brands, or manage in an economic downturn.
    - Companies also may discuss how they ensure compliance with laws and regulations, or how they are addressing the impact of new or anticipated laws and regulations.
- Financial Statements and Supplementary Data: contains the company's audited financial statements, including the income statement, balance sheets, and statement of cash flows.

Annual reports, particularly 10-K filing, have been analyzed by researchers for a very wide range of topics. For instance, predicting market movement (Das, 2014); strategic human resource management (Kunar & Kunal, 2011); firms' performance predictions (Kang et al., 2018); predictors of corporate bankruptcy (Shirata et al., 2011), and industrial service portfolios (Lee & Hong, 2016) among others.

4.3.1.2. Sampling frame: Standard & Poor's 500 companies (S&P 500) within materials and communication services industry sectors

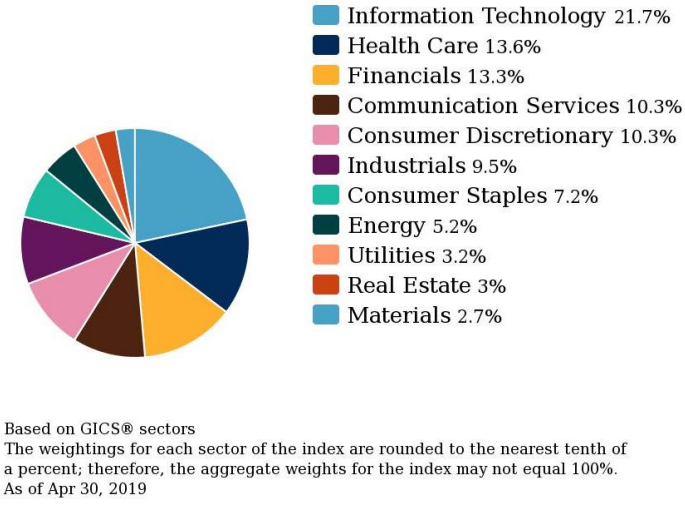
The S&P 500 lists the most valuable public companies in the United States and is widely regarded as the best single gauge of large-cap equities (S&P Down Jones Indices, 2019). The index includes 500 leading companies and captures approximately 80% of the available market capitalization. There is over USD 9.9 trillion indexed or benchmarked to the index, with indexed assets comprising approximately USD 3.4 trillion of this total. Firms listed in S&P 500 are classified based on the Global Industry Classification Standard (GICS). In this case, two industry sectors (communication services and materials) are selected specifically because both represent exclusively services and manufacturing firms, respectively.

Communication services sector includes "companies that facilitate communication and offer related content and information. It includes telecom, media and entertainment companies, producers of interactive gaming products and companies engaged in content and information creation or distribution through proprietary platforms" (MSCI Inc., 2019). World-wide known, young and most valued companies born in Silicon Valley such as Facebook, Netflix and Google belong to this sector (see Table 13).

On the other hand, the materials sector includes "companies that manufacture chemicals, construction materials, glass, paper, forest products, and related packaging products, and metals, minerals and mining companies, including producers of steel" (MSCI Inc., 2019).

Table 13. S&P 500 Sector Weightings (As of April 30, 2019).

GICS Sector	GICS Sector Weightings
Information Technology	21,7%
Health Care	13,6%
Financials	13,3%
Communications	10,3%
Consumer Discret.	10,3%
Industrials	9,5%
Consummer Staples	7,2%
Energy	5,2%
Utilities	3,2%
Real Estate	3,0%
Materials	2,7%



Source: S&P Dow Jones Indices. (2019). S&P 500®. Retrieved May 6, 2019, from https://us.spindices.com/indices/equity/sp-500

The sample of texts comprises selected firms' annual reports on Form 10-K from 2016 to 2018 (see Table 14). The selected sample of firms consisted of 22 companies for the communication services sector and 26 for the materials sector, for a total of 48 companies. Within this selected companies, the total sample includes 140 annual reports.

4.3.2. Text preprocessing

Sample frame 10-K filings were obtained from The Notre Dame Software Repository for Accounting and Finance (SRAF, 2019); originally, textual data is collected from the U.S. Securities and Exchange Commission (SEC) website.

According to SRAF (2019), the parsing process applied to annual reports in the repository essentially cleans each filing document of extraneous materials. A substantial portion of an EDGAR text filing's content consists of HTML code, embedded PDF's, jpg's and other artifacts not typically of interest. For instance, a complete file size for some of the largest filings exceeds 400MB. As researchers does not require some of these artifacts, the parsing process can be made orders of magnitude more efficient by extracting these items and creating compressed versions of the filings.

Also, all of the original markup language tags –HTML, XBRL, XML– are deleted from the original document. Next, all the individual files –annual reports– obtained from the SRAF database were unified in a single .txt file format in order to arrange a joint analysis.

First, 10-K filings were grouped according to the industry sector, whether communication services or materials. Stop word list from SRAF (2019) was used for the analysis.

4.3.3. Text mining operations

KH Coder allows content analysis using both a deductive conceptual –dictionary-based– and relational extraction approach. The software analyzes codes from the text data, using pre-defined dictionaries or word lists for the constructs of interest.

Such dictionaries for coding strategic orientations, innovation and firm performance constructs were developed and validated by Short et al. (2010), Zachary et al., 2011; McKenny et al. (2018b) and Dutta et al. (2016) (see Annex 3). Word lists used are mutually exclusive, each word was associated with one and only one dimension, as suggested by Neuendorf (2002). Paragraphs were the analysis unit. Table 15 shows the results of composing coding rules.

Table 14. Sample frame of S&P 500 companies within communication services and materials industry sectors

NAME	SYMBOL	GICS SECTOR	GICS SUB INDUSTRY	WEIGHTING	NET INCOME (BILLIONS OF USD)	NUMBER OF EMPLOYEES	FOUNDED
Facebook, Inc.	FB	Communication Services	Interactive Media & Services	1,889017	22,11	30.275	2008
Alphabet Inc Class A	GOOGL	Communication Services	Interactive Media & Services	1,440892	30,74	98.771	1998
The Walt Disney Company	DIS	Communication Services	Movies & Entertainment	0,984935	12,60	201.000	1983
Verizon Communications	VZ	Communication Services	Integrated Telecommunication Services	0,958053	15,52	144.500	1886
AT&T Inc.	T	Communication Services	Integrated Telecommunication Services	0,920112	19,95	273.210	1930
Comcast Corp.	CMCSA	Communication Services	Cable & Satellite	0,803783	11,73	184.000	1993
Netflix Inc.	NFLX	Communication Services	Movies & Entertainment	0,67762	1,21	5.400	1963
Linde plc	LIN	Materials	Industrial Gases	0,402551	1,33	59.715	1985
DowDuPont	DWDP	Materials	Diversified Chemicals	0,344641	3,84	98.000	1981
Charter Communications	CHTR	Communication Services	Cable & Satellite	0,263782	1,23	94.800	1982
Ecolab Inc.	ECL	Materials	Specialty Chemicals	0,189293	1,51	48.400	2004
Air Products & Chemicals Inc	APD	Materials	Industrial Gases	0,181894	1,43	15.150	1930
Activision Blizzard	ATVI	Communication Services	Interactive Home Entertainment	0,151969	1,81	9.900	1997
Sherwin-Williams	SHW	Materials	Specialty Chemicals	0,150209	1,81	52.695	1980
Electronic Arts	EA	Communication Services	Interactive Home Entertainment	0,117321	1,43	9.300	1986
Twitter, Inc.	TWTR	Communication Services	Interactive Media & Services	0,117276	1,20	3.900	1993
PPG Industries	PPG	Materials	Specialty Chemicals	0,113189	1,34	47.300	2006
LyondellBasell	LYB	Materials	Specialty Chemicals	0,107803	4,90	19.450	2000
Newmont Mining Corporation	NEM	Materials	Gold	0,101501	---	12.569	1980
Ball Corp	BLL	Materials	Metal & Glass Containers	0,081968	0,47	18.300	1983
Weyerhaeuser	WY	Materials	Lumber & Wood Production	0,081301	0,58	9.300	1952
International Paper	IP	Materials	Paper Packaging	0,076132	2,14	56.000	1923
CBS Corp.	CBS	Communication Services	Broadcasting	0,072852	1,96	12.700	1940
Omnicom Group	OMC	Communication Services	Advertising	0,071721	1,33	79.500	1994
Nucor Corp.	NUE	Materials	Steel	0,071547	1,32	25.100	1990
Freeport-McMoRan Inc.	FCX	Materials	Copper	0,068819	1,820	30.000	1880
Vulcan Materials	VMC	Materials	Construction Materials	0,065974	---	8.373	1918
Twenty-First Century Fox Cl. A	FOXA	Communication Services	Movies & Entertainment	0,056953	0,03	20.500	1946
Intl Flavors & Fragrances	IFF	Materials	Specialty Chemicals	0,056547	0,30	7.300	1802
Celanese Corp.	CE	Materials	Specialty Chemicals	0,055868	---	7.592	1920
Martin Marietta Materials	MLM	Materials	Construction Materials	0,055393	0,08	8.111	1923
Take-Two Interactive	TTWO	Communication Services	Interactive Home Entertainment	0,045646	0,17	4.492	1883
Eastman Chemical	EMN	Materials	Diversified Chemicals	0,044879	0,85	14.000	1912
CenturyLink Inc	CTL	Communication Services	Integrated Telecommunication Services	0,043755	1,39	51.000	1898
FMC Corporation	FMC	Materials	Fertilizers & Agricultural Chemicals	0,042528	0,54	7.000	1889
Viacom Inc.	VIAB	Communication Services	Movies & Entertainment	0,041052	1,69	11.200	1879

NAME	SYMBOL	GICS SECTOR	GICS SUB INDUSTRY	WEIGHTING	NET INCOME (BILLIONS OF USD)	NUMBER OF EMPLOYEES	FOUNDED
CF Industries Holdings Inc	CF	Materials	Fertilizers & Agricultural Chemicals	0,040672	-0,42	2.950	2007
WestRock	WRK	Materials	Paper Packaging	0,039289	---	44.800	1993
Avery Dennison Corp	AVY	Materials	Paper Packaging	0,038078	0,30	30.000	1909
Packaging Corporation A.	PKG	Materials	Paper Packaging	0,037082	---	14.600	1921
The Mosaic Company	MOS	Materials	Fertilizers & Agricultural Chemicals	0,03708	-0,10	15.000	1940
Interpublic Group	IPG	Communication Services	Advertising	0,035853	0,64	54.000	1959
Albemarle Corp	ALB	Materials	Specialty Chemicals	0,032519	0,74	5.400	1883
Dish Network	DISH	Communication Services	Cable & Satellite	0,031998	2,10	17.000	1960
Sealed Air	SEE	Materials	Paper Packaging	0,028196	---	15.000	1866
TripAdvisor	TRIP	Communication Services	Interactive Media & Services	0,021639	0,11	3.008	1909
Discovery Inc. Class A	DISCA	Communication Services	Broadcasting	0,019432	1,19	7.000	2015
News Corp. Class A	NWSA	Communication Services	Publishing	0,019111	-1,51	28.000	1900

To identify the presence and relevance of constructs of interest, KH Coder conducts a frequency analysis of terms included in the coding rule –dictionaries–. It results in a frequency list indicating the number of paragraphs each code applies to, and its percentage of the total.

To extract patterns of association of constructs, a co-occurrence network analysis was conducted. KH Coder identifies the relationships between constructs using the Jaccard similarity coefficient, which is a parameter used to compare characteristic similarity and proximity between sets of information efficiently without the use of data redundancy (Singthongchai & Niwattanakul, 2013; Irani et al., 2016). Centrality is reflected by the influence of a construct in texts and determines what kind of role it plays in a textual network. The degree of centrality is manifested in terms of the number of nodes to which a given node is directly connected (Higuchi, 2016).

KH Coder detects communities structure using the Walktrap algorithm (Pons & Latapy, 2005). Additionally, analysis of the minimum spanning tree (MST) was provided, based on the strength of co-occurrence using the Prim method (Higuchi, 2016). MST indicates which associations are most important in the network. Mathematically, is defined as the sub-network that connects all nodes while minimizing the link weights and without forming loops (Tewarie et al., 2015).

4.4. Results

Two types of outputs were derived from text mining analysis: frequency lists (Table 16 and 17), which indicate the exhibited relevance of constructs of interest among the 10-K annual reports; and co-occurrence network maps (Figures 8 and 9), which visualize the patterns of combination and association.

Table 16 lists the results of the obtained frequency list, which quantitatively shows the relative relevance of composite strategic orientations, innovation and firm performance reflected in the annual reports. Table 17 lists strategic orientations in a multidimensional view, showing the relative relevance of each individual dimension in the text. Jointly, almost half of the frequencies (42.65%) belong to MO (19.76%), EO (15.54%) and LO (6.97%), which indicate that narrative exhibitions on these constructs are significantly important for S&P companies in terms of their business and strategy. A total of 102,051 paragraphs were analyzed.

Figure 9 and 10 shows the aggregated and disaggregated view of strategic orientations, respectively, and their relationships with innovation and firm performance. The size of nodes represents the relative frequency of constructs (as shown in Table 1) and the Jaccard distances (coefficients of the edges) indicate the relative degree of their co-occurrence, that is, the strength of connections between them. The network map is represented through minimum span tree, in which all nodes are connected to each other directly or indirectly to indicate substantive relationships among constructs of interest.

Table 15. Composing coding rule based on developed and validated dictionaries on market orientation, entrepreneurial orientation, learning orientation, innovation and firm performance

CONSTRUCT OF INTEREST	DIMENSION	CODING DEFINITION	EXAMPLE
Market orientation		The organization-wide creation, coordination, and exploitation of market information in pursuit of competitive advantage (Kohli & Jaworski, 1990; Narver & Slater, 1990).	
	Customer orientation	The adequate understanding of a customer's psyche as to provide "superior value" for said customer(s) in a continuous and sustainable manner (Narver & Slater, 1990)	In addition to creating new flavors and fragrances, our researchers and product development teams advise **customers** on ways to improve their existing products by adjusting or substituting current ingredients with more readily accessible or less expensive materials or by modifying the current ingredients to produce an enhanced yield. This often results in creating a better value proposition for our customers (International Flavors & Fragrances, 2016).
	Competitor orientation	The understanding of the short-term strengths and weaknesses as well as the long-term capabilities and strategies of both current and potential key competitors (Aaker, 1988; Day & Wensley, 1988; Porter, 1980, 1985)	**Competitors** often develop content that imitates or competes with our best-selling games, and take sales away from them or reduce our ability to charge (Activision Blizzard, 2016).
	Interfunctional coordination	The coordination and utilization of a firm's resources, human or otherwise, to create "superior value" for the target buyer (Narver & Slater, 1990).	Our CRM model combines members of our team from within our manufacturing facilities and members of our business development team who reside remotely and nearer to our customers around the world. We also have **cross-functional teams** in the areas of quality, operational excellence, quoting, and design engineering with representatives from our various locations that provide support to our teams on a global basis (WestRock, 2018).
Entrepreneurial orientation		The processes, practices, activities, and behaviors of managers to pursue **new market opportunities (Covin & Slevin, 1991).**	
	Autonomy	The actions of individuals or teams to surface and pursue opportunities to completion.	Our organization is highly **decentralized**, with most day-to-day operating decisions made by our division general managers and their staff (Nucor Corporation, 2018).
	Competitive aggressiveness	The aggressive organizational positioning or responses to defend	We believe that we **compete** favorably on the factors described above. However, our

CONSTRUCT OF INTEREST	DIMENSION	CODING DEFINITION	EXAMPLE
		against competitors, unfavorable industry trends, and other external threats.	industry is evolving rapidly and is becoming increasingly **competitive** (Twitter, 2016).
	Innovativeness	The willingness to encourage creativity and the development of new marketable ideas and inventions.	We endeavor to be the most **creative, innovative** and efficient company in our industry. Our core strategy is to capitalize on the popularity of video games by developing and publishing high-quality interactive entertainment experiences across a range of genres (Take-Two Interactive, 2018).
	Proactiveness	The anticipation of future changes and the undertaking of appropriate, often innovative, action to capitalize on the opportunity or mitigate the threat.	Our failure to effectively **anticipate** or adapt to new technologies and changes in consumer expectations and behavior could significantly adversely affect our competitive position and our business and results of operations (Charter Communications, 2017).
	Risk-taking	The willingness to take bold action in the face of uncertainty.	We **face risks** relating to competition for the leisure time and discretionary spending of audiences, which has intensified in part due to advances in technology and changes in consumer expectations and behavior (Charter Communications, 2018).
Learning orientation		The set of organizational values that influence the propensity of the firm to create and use knowledge (Sinkula, et al., 1997)	
	Commitment to learning	The organizational value toward learning, which influences the intensity to promote a learning culture (Sinkula, Baker, & Noordewier, 1997).	We invest substantial capital in our content, including in the production of original content on our networks, in our films and in our television production business, before **learning** the extent to which it will garner critical success and popularity with consumers (Viacom, 2018).
	Open-Mindedness	The willingness to critically evaluate the operational routine and accept new ideas (Sinkula, et al., 1997).	We take great pride in our culture. We embrace collaboration and creativity and encourage the iteration of **ideas** to address complex technical challenges. Transparency and **open dialogue** are central to how we work, and we like to ensure that company news reaches our employees first through internal channels (Google, 2018).
	Shared vision	The focus or direction of learning among the members of an organization. Without a shared vision, individuals are less likely to know what organizational expectations exist, what outcomes to measure, or what theories in use are in operation (Sinkula, et al., 1997).	All significant events are investigated, and lessons learned are **shared** with workers (Newmont Mining Corporation, 2017).
Innovation (as an outcome)		The consequences of innovation activities or the outputs of innovation process (Crossan & Apauyin, 2010).	The timely **introduction of new products** and **improvements** in current products helps determine our success (Avery Dennison Corp., 2016).
Firm performance		The economic outcomes resulting from the interplay among an organization's attributes, actions, and environment" (Combs, Crook, and Shook 2005, p. 262) capturing the underlying manifestations of how well a firm is effectively satisfying its stated goals (Bergh et al., 2016; Combs et al., 2005).	Changes in our business strategy or restructuring of our businesses may increase our costs or otherwise affect the profitability of our businesses (Walt Disney Company, 2017).

Table 16. Frequency list of constructs: strategic orientations as composite constructs, innovation, and firm performance

CONSTRUCTS OF INTEREST	FREQUENCY	PERCENT
Market_Orientation	20165	19.76%
Entrepreneurial_Orientation	15860	15.54%
Learning_Orientation	7108	6.97%
Innovation	2286	2.24%
Firm_Performance	20795	20.38%
N of Paragraphs	102051	

Table 17. Frequency list of constructs: strategic orientations' dimensions, innovation, and firm performance

CONSTRUCTS OF INTEREST	FREQUENCY	PERCENT
MO_CompetitorOrient	6180	6.06%
MO_CustomerOrient	11912	11.67%
MO_InterfuncCoord	6884	6.75%
EO_Autonomy	1211	1.19%
EO_CompetitiveAggressiveness	5599	5.49%
EO_Innovativeness	6111	5.99%
EO_Proactiveness	5527	5.42%
EO_RiskTaking	1241	1.22%
LO_CommitmentLearning	4563	4.47%
LO_OpenMindedness	720	0.71%
LO_SharedVision	2103	2.06%
N of Paragraphs	102051	

Figure 9. Co-occurrence network map of composite strategic orientations, innovation and firm performance

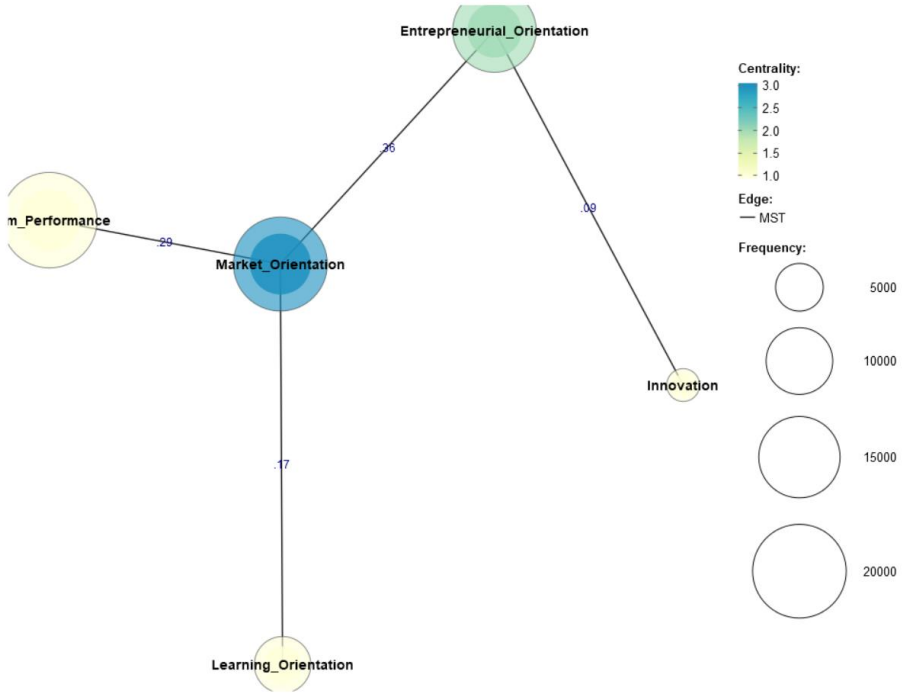
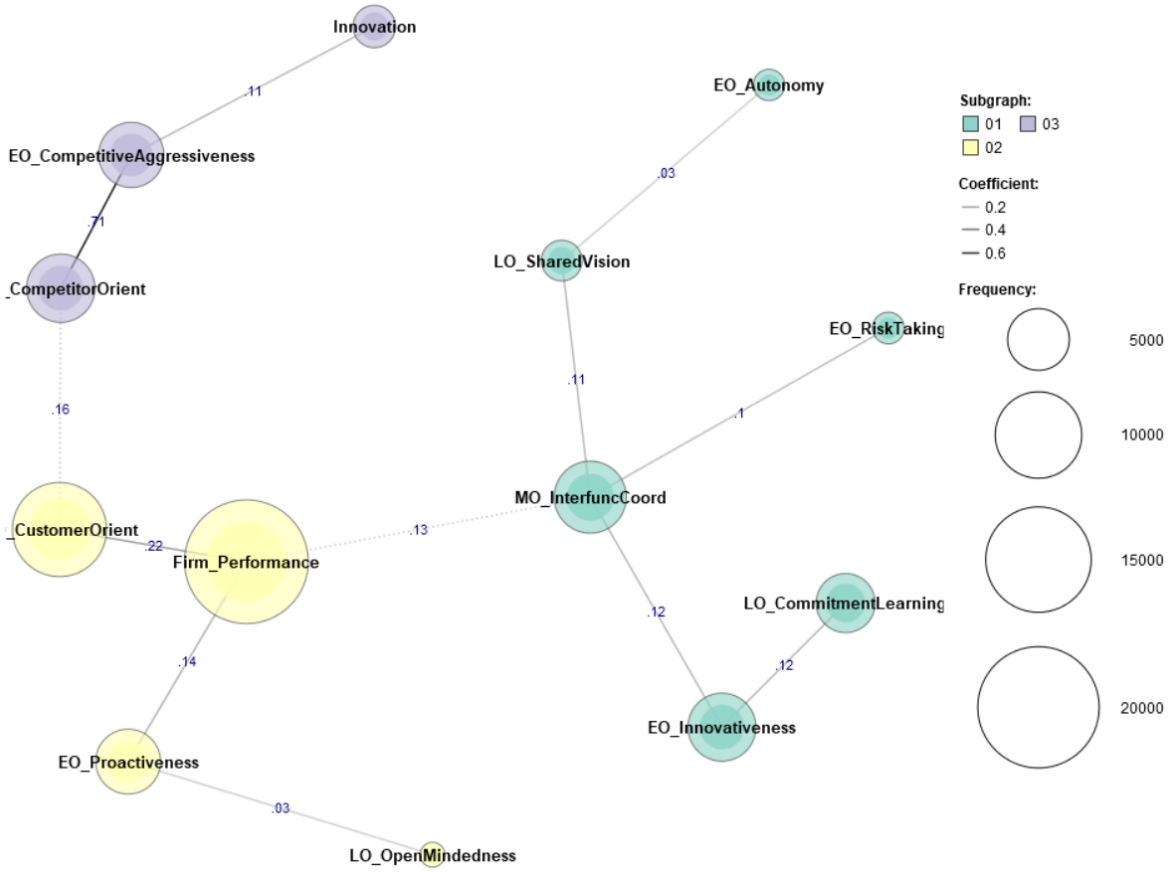


Figure 10. Co-occurrence network map of strategic orientations' dimensions, innovation and firm performance



As shown in Figure 9, the aggregated view of strategic orientations and the links with innovation and firm performance, MO plays a central role in corporate narratives. This is evidenced by its multiple direct links with EO (.36), LO (.16) and Firm Performance (.29) which is the most exhibited construct in narratives. Also, EO is linked to innovation (.09). In this sense, Innovation is indirectly linked to Firm Performance through EO and MO. LO is also indirectly linked to Firm Performance through MO.

As shown in Figure 10, the Walktrap community detection algorithm generates three visually colored communities as follows:

Community 1 includes Firm Performance (20.38%), MO-Customer Orientation (11.67%), EO-Proactiveness (5.42%), and LO-Open Mindedness (0.71%). Narratives on Firm performance are directly and more associated to MO-Customer Orientation (.22) and EO-Proactiveness (.14). EO-Proactiveness and LO-Open Mindedness are less associated (.03).

Community 2 includes MO–Competitor Orientation (6.06%), EO-Competitive Aggressiveness (5.49%), and Innovation (2.24%). Narratives on EO-Competitive Aggressiveness are directly and strongly associated with MO–Competitor Orientation (.71), and Innovation (.11).

Community 3 includes MO-Interfunctional Coordination (6.75%), EO-Innovativeness (5.99%), LO-Shared Vision (2.06%), LO-Commitment to Learning (4.47%), EO-Autonomy (1.19%), and EO-Risk Taking (1.22%). MO-Interfunctional Coordination is more associated to EO-Innovativeness (.12), LO-Shared Vision (.11), and EO-Risk Taking (.10). EO-Innovativeness is also associated to LO-Shared Vision (.12). LO-Shared Vision is associated to EO-Autonomy (.03).

As shown in Figure 10, communities are interconnected. Communities 1 and 2 are linked by MO-Customer Orientation and MO–Competitor Orientation (.16). Communities 1 and 3 are linked by Firm Performance and MO-Interfunctional Coordination (.13).

4.5. Discussion and implications

This exploratory data-driven study applied co-occurrence network analysis on a sample of S&P 500 companies' 10-K annual reports in order to explore the exhibited relationships between strategic orientations, innovation and firm performance and to extract their co-occurrence patterns, for a better understanding how these constructs of interest are adopted, combined and balanced in existing business practices and contexts.

From an aggregated view of strategic orientations, it is demonstrated the relevance and centrality of these constructs of interest among corporate disclosures. Results of frequency analysis indicated that MO plays a central role in the relationships between strategic orientations, innovation and firm performance, supporting the idea that MO has become a cost of doing business, in order to prevent business failure (Kumar et al., 2011).

Although firm performance's narratives are the most exhibited in annual reports (as expected since corporate disclosures aims to provide overview information on business and financial condition), MO is the construct which is more connected with alternative orientations, innovation and firm performance. These findings support past research in the sense that firms are more likely to associate MO with LO or EO (Grinstein, 2008b). EO and LO play a supporting role in creating value for customers by pursuing the right market opportunities and

influencing the creation and use of knowledge and insights needed to capitalize on these opportunities.

Apparently, narratives related to innovation outcomes, such as the introduction of new products or services into markets, are not closely related to the businesses results' narratives. The former are more associated to creativity and exploration of market opportunities rather than the latter one on specific financial and business results.

From a strategic orientations' disaggregated view, this study found three major co-occurrence patterns of combination of strategic orientations, innovation and firm performance that represent firms' narrative exhibitions with regards to their business and strategy. Overall, customers, competitors, and resources within firms cover a central place on organizational narratives exhibitions.

First, companies place great emphasis on associating aspects such as firm's profitability, finance, sales, reputation, and other goals results with the adequate understanding of current and future customers' needs to provide them with superior value, and with the anticipation and capitalization of market opportunities. Narratives on anticipating future changes or mitigating threats are slightly connected to accepting new ideas and questioning operative routines.

Second, competition has a special emphasis in corporate narratives. Companies associate the understanding of weaknesses and strengths of competitors and the responses to defend against them, industry trends and external threats with leveraging the introduction of new products/services into markets. It seems that the first-mover advantage leads to a better defense against increasing competition.

Third, companies further exhibit the importance of synergies developed by the different functional areas working together to improve creativity and innovation processes and with shared learning expectations among individuals and teams. Creative and explorative firms' exhibitions are also associated with the promotion of a learning culture. The coordination and utilization of resources are associated with encouraging employees to take bold actions to venture into uncertain outcomes. Narratives on organizational expectations about learning are slightly connected with individual and teams' autonomous actions to pursue opportunities.

Practitioners and researchers may find useful to mine qualitative rich and in-depth public text data to unveil underlying organizational phenomena of interest provided by public

institutions, customers, markets and other interesting sources. That could not be possible to analyze with other common research methods.

Although for more exploratory or descriptive studies applying text mining is not mandatory to establish the validity of inferences (Kobayashi et al., 2018), the conclusions of this study must be interpreted in light of their limitations. For example, while text mining procedures can identify words and phrases associated with constructs of interest, it cannot interpret the use of this language in context, which can lead to misinterpretations (Short et al., 2009). Still, co-occurrence of constructs is a strong indication of the presence, relevance and resilience of constructs of interest in organizational narratives.

Future research, from a contingency approach, could focus on differences between various types of firms in order to analyze whether the patterns of combinations persist or not regardless of contextual moderators such as firm size, industry sector and national culture. Subgroup analysis could provide a better understanding of phenomena under study.

CHAPTER 5: CONCLUSIONS

5.1. Summary of dissertation and contributions

Although most of the literature has stressed that strategic orientations are linked to firm performance as its antecedents and important drivers, the role of innovation as a mediator in the relationship remains unclear.

Likewise, past research has established that the relationships between strategic orientation, innovation and firm performance are affected by contingency factors; however, studies are not conclusive about whether the relationships persist or not regardless of contingency factors, such as firm size and industry sector.

Moreover, while it is well established that firms may find it more useful to adopt and combine multiple strategic orientations to develop a more complex corporate culture, little is known about to what extent firms effectively adopt and exhibit patterns of association between strategic orientations, innovation and firm performance in a business practice context.

RBT served as the framework to summarize or synthesize past research by considering strategic orientations as market-based resources –assets or capabilities– related to marketing activities such as innovation (Kozlenkova et al., 2014, p. 10). FMA complements RBT explaining how strategic orientations are translated into superior performance through innovation (e.g., product, process, and organizational innovations) in a chain of causal effects. Competitive advantage is produced by generating abnormal positive profits due to monopoly rents and defining consumer attitudes in a new market (Ho et al., 2015; Poudel et al., 2012; Arunachalam et al., 2018; Kumar et al., 2011). Within both RBT and FMA it is possible to model the relationships –depicted in past research– in a meta-analytic path model setting allowing to analyze underlying mechanisms –mediators and moderator– and compare the relative effects (direct or indirect) of strategic orientations on firm performance.

On the other hand, RBT also served as the theoretical framework to explore how the relationships between strategic orientations, innovation and firm performance are adopted, combined and balanced successfully in a real business context –S&P500 companies–. As strategic orientations are market-based resources (assets or capabilities) with the characteristic of complementarity, the benefits from one resource are leveraged by the presence of another (Kozlenkova et al., 2014, p. 11). Through text mining it is possible to extract patterns of co-

occurrence of the relationships, indicating their associations and combinations as the result of their complementarity.

Drawing on a combination between a resource-based theory (RBT) of the firm and first-mover advantage (FMA) rationale, and using a meta-analytic structural equation modeling (MASEM) and text mining methods, this dissertation essentially shed light on:

- The mediating role of innovation in the strategic orientation and firm performance relationship.
- The subgroup moderating role of contingency factors such as firm size –large vs. SME firms– and industry sector (manufacturing vs. service firms) between strategic orientations and firm performance including innovation as a mediator.
- The co-occurrence patterns of association between strategic orientations, innovation and firm performance.

The main results of this dissertation revealed that:

- From a meta-analytic and structural equation modeling perspective, the holistic approach of the relationships between strategic orientations and firm performance, which assumes both the universal and intermediary approaches altogether, probed its superiority. The nature of innovation is ultimately delved, playing a partial mediating role in the relationship between MO and LO, and firm performance. Likewise, innovation plays a full mediating role in the relationship between EO and firm performance.
- From a contingency approach, involving moderated mediating relationships within the overall holistic hypothesized model, most of the relationships persisted regardless of contingency factors –firm size and industry sector–. No significant differences in the mediating nature of innovation were found in the relationship between strategic orientations and firm performance between SMEs and large firms, and between manufacturing and service firms. Significant indirect effects were also found. Furthermore, most of the direct effects are not moderated –remained equal– across subgroups, except for the effect of innovation on firm performance, which seems to be stronger for SMEs than for large firms. Size of the firm indeed moderates the relationship.

- From a co-occurrence network approach, exploring the patterns of association between strategic orientations, innovation and firm performance, MO plays a central role in the associations connecting other orientations with innovation and firm performance. Unexpectedly, innovation is not closely associated to performance. Previous finding may indicate that innovative efforts and outcomes are not expected to be short-termed. On the other hand, three major co-occurrence patterns of association –communities– linking strategic orientations, innovation and firm performance were identified: Community 1 includes Firm Performance, MO-Customer Orientation, EO-Proactiveness, and LO-Open Mindedness. Community 2 includes MO–Competitor Orientation, EO-Competitive Aggressiveness, and Innovation. Community 3 includes MO-Interfunctional Coordination, EO-Innovativeness, LO-Shared Vision, LO-Commitment to Learning, EO-Autonomy, and EO-Risk Taking.

This dissertation contributed to advance strategic management theory and practice toward the understanding of the 'black box' that links strategic orientations and firm performance; assuming a contingency approach to test moderation and mediation hypotheses and examining the patterns of association by providing higher-level assessments derived from two of the *state-of-the-art* methods in organizational research: MASEM (Bergh et al., 2016; Grewal et al., 2018) and text mining (Kobayashi et al., 2018).

For theory modeling and testing, this dissertation quantitatively synthesized the cumulated literature corpus on the relationship between strategic orientations, innovation and firm performance through a meta-analytic path analysis. The validity and utility of three different theorized approaches extracted from the literature –universalistic, intermediary and holistic– were assessed in order to retain a structure that empirically fits the cumulated data well. It was demonstrated the superiority of the holistic approach due to its power for linking more complex relationships through simultaneous direct and indirect effects. On the other hand, the nature of the mediating role of innovation was demonstrated as well: it can be said that innovation fully mediates the relation between MO and LO with firm performance, and partially mediates the relation between EO and firm performance.

The holistic approach which assumes the universal and intermediary approaches altogether probed its superiority against the two previous approaches. It was found that, by introducing innovation as partial mediator, there are significant statistically direct effects from

MO and LO on firm performance, which is in line with the universalistic approach, but in the presence of innovation. Previous results support most of the past research which found MO as a driver to superior performance. Furthermore, indirect effect from EO on firm performance was retained as statistically significant. Thus, the nature of innovation is ultimately delved, playing a partial mediating role in the relationship between MO and LO, and firm performance. Likewise, innovation plays a full mediating role in the relationship between EO and firm performance.

Results suggest that MO and LO are both important for firm performance, because their effect is channeled through innovation, and subsequently on firm performance, in a chain of causal effects, albeit direct effects on firm performance were found as well. MO impacts directly on firm performance through the culture and behaviors that focus on customer satisfaction. This notion is basic for doing business in order to prevent business failure. LO impacts on firm performance by increasing the productivity of employees. Efforts to create and use knowledge, implement better communication channels, training techniques and other activities are reflected in superior performance.

On the other hand, while MO and LO may help conceive superior products, processes, and ideas, it is EO which provides the stimulus for driving such activities. In a simultaneous setting, as presented in the holistic approach, the impact of strategic orientations on firm performance is more operative through successful introduction of products and services into markets simultaneously with the effect of achieving customer satisfaction and in-depth generative learning from external environment, which in turn leads to continuous superior firm performance.

In this sense, it is feasible that innovations addressing the needs of new and emerging markets and the development of new products and services, fully capture the effect of EO on firm performance. First-mover advantage rationale is more notorious in this chain of effects.

This dissertation contributed to test moderating hypotheses in a contingency approach, as suggested in past research. Fostering MO, EO and LO is critical at any firm size and industry sector in order to enhance innovation outcomes and to attain superior performance.

Still, moderating effects are limited only to the differences in the impact of innovations in SMEs in comparison with large firms. SMEs are more sensitive to intense competition and one way to avoid rivals is through the introduction of innovations into markets in a first-mover

advantage perspective. Perhaps, SMEs succeeding in translating new products or services into increased profits or other business results benefit more than large firms, given their financial resources constrains and lower market power to maximize new product adoption rates (Chandy & Tellis, 2000).

Moreover, although obvious differences in bureaucratic structures and resources bundles among SMEs and large firms exist, and even apparently large firms tend to be more market, entrepreneurial and leaning oriented, the impact of these orientations on innovation and performance does not differ comparing to SMEs. Likewise, although the inherent marked differences in the nature of the activities –for instance, the interactions with customers– and outputs –tangibility and consumption– among manufacturing and service firms exist, no evidence for moderating effects were found.

No evidence for moderated mediation was found neither. As both direct and indirect effects of strategic orientation on firm performance exist, the role of innovation remain equal as for the overall model, as hypothesized in the holistic approach assessed in the second chapter; thereby, it can be stated that innovation plays a partial mediating role between MO and LO and firm performance, whereas it plays a full mediating role between EO and firm performance.

Within a text mining framework and in an exploratory data-driven research, this dissertation contributed to unveil certain co-occurrence patterns of association between strategic orientations, innovation and firm performance that are adopted, combined and balanced in existing business practices and contexts.

MO plays a central role in the relationships between strategic orientations, innovation and firm performance, supporting the idea that MO has become ‘the cost of doing business’, in order to prevent business failure (Kumar et al., 2011). These findings support past research in the sense that firms are more likely to associate MO with LO or EO (Grinstein, 2008b). EO and LO play a supporting role in creating value for customers by pursuing the right market opportunities and influencing the creation and use of knowledge and insights needed to capitalize these opportunities.

Apparently, narratives related to innovation outcomes, such as the introduction of new products or services into markets, are not closely related to the business results’ narratives. The

former are more associated to creativity and exploration of market opportunities rather than latter ones on specific financial and business results.

This study found three major co-occurrence patterns of combination of strategic orientations, innovation and firm performance that represent firms' narrative exhibitions regarding to their business strategies. Customers, competitors, and resources within firms cover a central place on organizational narratives exhibitions.

First, companies place great emphasis on associating aspects such as firm's profitability, finance, sales, reputation, and other goals results with the adequate understanding of current and future customers' needs to provide them with superior value, and with the anticipation and capitalization of market opportunities. Narratives on anticipating future changes or mitigate threats are slightly connected to accepting new ideas and questioning operative routines.

Second, competition has a special emphasis in corporate narratives. Companies associate the understanding of weaknesses and strengths of competitors and the responses to defend against them, industry trends and external threats with leveraging the introduction of new products/services into markets. This result suggests that the first-mover advantage leads to a better defense against increasing competition.

Third, companies further exhibit the importance of synergies developed by the different functional areas working together to improve creativity and innovation processes and with shared learning expectations among individuals and teams. Creative and explorative firms' exhibitions are also associated with the promotion of a learning culture. The coordination and utilization of resources are associated with encouraging employees to take bold actions to venture into uncertain outcomes. Narratives on organizational expectations about learning are slightly connected with individual and teams' autonomous actions to pursue opportunities.

5.2. Managerial implications

A fundamental issue in the field of strategic management is why there are businesses in the same sector that reach different levels of performance. This issue is relevant both for managerial practice and for academic research. One factor that allows to offer a possible answer to this question is the strategic orientations and their relationships with innovation and the performance of firms.

Thus, this study has implications for business managers as well as for researchers in this field. On the one hand, this dissertation allows practitioners to better understand the different strategic orientations and identify how the analyzed orientations influence their business performance. This information can be useful for carrying out actions that allow them to adjust some of their investments and guiding principles to improve their business performance levels.

Although the three orientations reviewed are different constructs, they can act complementarily and simultaneously. Strategic orientations should be understood as balancing elements, and the synergies created redound into systematically produce and deliver high-performing innovations, which lead to superior performance in comparison with competitors.

For a business to be market-oriented, it should focus on putting customer satisfaction at the center of the firm's activity; for being learning-oriented, managers should carefully scan the external environment; and to be entrepreneurial-oriented, managers should pursue new market opportunities through the development of new products or services.

Managers should acknowledge that fostering and exhibiting market, entrepreneurial and learning orientations within their firms could lead to enhance innovations outcomes and achieve superior performance, regardless of the size of the firm and the industry sector. Particularly, practitioners should notice that introducing innovations into markets in early stages of the product life cycle could benefit more to SMEs avoiding intense competition and generating a first-mover advantage.

For SMEs, the lack of physical, human and financial resources could not be an obstacle to conduct significant market-driven innovation activities, as large firms do. The lack of such resources should lead SMEs to be more pragmatic, focusing in delivering innovative outputs diligently. SMEs could take advantage of their flexibility and adaptability to changes in the environment pursuing new market opportunities –enhancing EO– and improving the quality of learning from external environment –enhancing LO– which in turn would be manifested in the development of successful new products and services.

5.3. Limitations and future research lines

Meta-analytic structure equation models and text mining are considered *state-of-the-art* methods in organizational research. However, certain aspects of the results presented in this

dissertation must be interpreted with caution considering their limitations. First, although meta-analysis is considered as a robust method for integrating accumulated knowledge, this dissertation does not provide an exhaustive, comprehensive and systematic literature review. It only applied a rigorous coding process of primary studies to draw meaningful conclusions on the relationships of interest. In the same line, it should be noted that the hypothesized theoretical models developed in the dissertation are not comprehensive, their only purpose was to depict and test some theoretical approaches assumed in past research in order to retain an empirical structure for future research, which can be complemented by adding new variables and integrating new relationships.

Second, the reported results from the meta-analytic path analysis do not provide direct and unequivocal evidence regarding causality because non-primary research studies were set in experimental designs and most of the data from those studies were collected using cross-sectional designs (Landis, 2013). Results of this dissertation do not allow to strictly infer causal relationships, only provided high-level assessment for theory testing and for the retention of a structure that empirically fits the cumulated data well. Precisely, the term 'effect' is used only as a matter of convenience, as noted by Aguinis et al. (2017). Also, the expression ''true' causal effects' only may be used to note that the causal structure of the model is correctly specified (Edwards & Lambert, 2007).

Endogeneity might be a serious problem conducting meta-analyses. Still, the threat of endogeneity is significantly lower (Jak & Cheung, 2018) since meta-analytic path analysis is conducted on observed variables, not latent, and structural equation modeling enables to simultaneously take correlations among study variables into account, thus counterbalancing potential endogeneity effects (Antonakis, Bendahan, Jacquart, & Lalive, 2010). Even so, as mentioned above, meta-analytic procedures in this dissertation are not intended to infer causal relationships, and therefore, endogeneity should not be a problem because it is not aimed to claim causality.

Also, the dependent effect sizes problem was treated by selecting one of multiple effect sizes based on *a priori* decision rule related to the theoretical background, as suggested by Hunter & Schmidt (2004) and López-López et al. (2018).

Inclusion criteria of primary studies in the meta-analytic correlation matrix could be challenged. Several studies were excluded due to the lack of reporting correlations coefficients

estimates of the constructs analyzed; and because several primary studies connected innovation as a capability with firm performance and bypassed innovation outcomes altogether. For these reasons, the scope of the final sample was reduced substantially to the detriment of enriched findings. Consequently, results were drawn only on data available according to methodological and theoretical background restrictions.

Other cautions about the scope of this study must be acknowledged. As it was of interest to contrast the validity and usefulness of the approaches assumed in the vast literature through meta-analytic path analysis, this study did not comprise issues regarding to the in-depth nature of the constructs involved in the primary studies and their multiple levels of analysis (e.g., methodologies, measure scales and samples). This is inherent to the 'apples and oranges' problem (Card, 2011). However, as analyses were drawn in the light of the higher-level concept of strategic orientation, it was considered appropriate to average aggregate diverse levels of analysis having the advantage of improving the generalizability of the conclusions. Likewise, regarding to the 'garbage in, garbage out' problem (Card, 2011) about the quality of primary studies in the identification process, no quality criteria were implemented in order to capture the largest possible number of primary studies for obtaining enriched findings, despite the potential problem of capturing data from poor quality studies, but avoiding to some extent publication bias.

In relation to the aforementioned issue, as pointed out by Cheung (2019b), "no techniques such as forest plot, and funnel plots designed to check for publication bias were applied in this dissertation. Such techniques were developed for univariate meta-analysis. Since correlation matrices are multivariate in nature, it is not clear how these techniques can be extended to MASEM." Further research is needed to help prevent publication bias within MASEM framework.

As for the problems of moderation and mediation analysis posed by Aguinis et al. (2017), suggestions were considered, and no further inconveniences were evidenced for the subsequent meta-analytic moderated mediation procedures. As firm size and industry sector are not artificial dichotomous variables, but categorical, such categorization would not lead to significant detrimental of substantive conclusions. In this sense, only the problem regarding the disparity of the sizes of the subgroups' samples could generate concern, because the potential decrease of statistical power. However, it is still considered that the subgroups are representative given the significance of the pooled meta-analytic correlations obtained in the

TSSEM Stage 1 and the goodness of fit indices of proposed models in the TSSEM Stage 2. No optimization problems were found in the meta-analytic procedures.

The categorization of the studies according to the contextual moderators represented a challenge in terms of inclusion criteria. Often, the samples were not clearly identified with any of the subgroups, or mixed types of firms were found in the studies. Subgroup analysis was based on dichotomization according to whether the studies explicitly indicated that the samples examined firms which belong to one or another group of interest (e.g., SMEs or large firms).

As for the text mining approach of this dissertation, concerns regarding to the identification of codes –words or phrases– must be acknowledged. The deductive or dictionary-based approach of text mining cannot interpret the use of this language in context, which can lead to misinterpretations (Short et al., 2009). Still, co-occurrence of constructs is a strong indication of the presence, relevance and resilience of constructs of interest in organizational narratives connecting a business with their stakeholders.

The sample used in this dissertation could be limited since only two sectors were included on the basis of their manufacturing and servicing nature. Still, for text mining purposes, it was assumed that the sample size does not affect the relevance of results, given that for more exploratory or descriptive studies it is not mandatory to impose strategies designed for establishing the validity of inferences (Kobayashi et al., 2018. p. 25).

Future meta-analytic research efforts on the strategic orientation, innovation and firm performance relationship could include:

- Other intermediate mechanisms such as marketing capabilities and organizational learning, which may better explain the link between strategic orientations and firm performance. Introducing these capabilities as mediators in the relationship could explain better whether direct effects from strategic orientations to firm performance remain or not, in a pathway or chain of effects manner.
- Other *a priori* context-related moderators, such as national culture that could operate as a contingency factor in the strategic orientations and firm performance relationship. Particularly, cultural values –and practices– such as future orientation related to planning, investing in the future, and delaying

gratification (House & Javidan, 2004, p. 12), can explain differences in innovation and performance across national settings.

- The meta-analytic assessment of new theoretical models considering strategic orientations as a more complex construct, as suggested by Gnizy et al. (2014) taking advantage of MASEM's ability to test frameworks with new theoretical constructs using latent variables to detect new insights and develop new theories. Such efforts may involve meta-analytic confirmatory factor analysis and structural equations models.

Future research involving text mining applications could include:

- Companies within other different sectors, such as information technology, consumer discretionary, financials and health care, for more enriched results allowing to determine differences in a contingency approach, for instance, differences among sectors and size of the firms.
- The use of directed or weighted co-occurrence networks analysis to provide causal inferences using texts (Egami et al., 2018). In this sense, it could be possible to identify concepts within texts and then define relationships between the concepts with the ability to specify the strength, meaning, sign, and direction of the relationships (Pokorny et al., 2018).
- The combination of longitudinal datasets obtained through text mining of letters to shareholders, annual reports or other organizational narratives informing about the relationships during a period of interest. In this sense, the relationship between strategic orientations, innovation and firm performance could be examined in a more accurate manner under a combined quantitative and qualitative framework, for instance, using structural equations model and text content analysis (Short & Palmer, 2008; Short et al., 2009).

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ANNEXES

Annex 1. Overview of studies included in the meta-analysis

ID	AUTHOR	YEAR	TITLE	JOURNAL
1	Abdullah saeed A, & Aimin, W.	2015	Market Orientation Impact on Radical and Incremental Marketing Innovation: A Study of Saudi Arabia Hospital Marketing Efforts.	International Journal of Management Science and Business Administration
2	Acar, A. Z. & Özşahin, M.	2018	The relationship among strategic orientations, organizational innovativeness, and business performance	International Journal of Innovation Management
3	Ahmadi, H., & O'Cass, A.	2016	The role of entrepreneurial marketing in new technology ventures first product commercialisation	Journal of Strategic Marketing
4	Akman, G., & Yilmaz, C.	2008	Innovative Capability, Innovation Strategy and Market Orientation: an Empirical Analysis in Turkish Software Industry	International Journal of Innovation Management
5	AL-Nuiami, M., Subhi Idris, W. M., Moh'd AL-Ferokh, F. A., & Moh'd Abu Joma, M. H.	2014	An Empirical Study of the Moderator Effect of Entrepreneurial Orientation on the Relationship between Environmental Turbulence and Innovation Performance in Five-star Hotels in Jordan	International Journal of Business Administration
6	Alarcón del Amo, M. del C., Gómez, J. E., Llonch, J., & Rialp, J.	2014	Strategic orientation and new venture performance in the hospitality industry	International Journal of Business Environment
7	Alegre, J., & Chiva, R.	2013	Linking Entrepreneurial Orientation and Firm Performance: The Role of Organizational Learning Capability and Innovation Performance	Journal of Small Business Management
8	Allameh, S. M., & Khalilakbar, R.	2018	Exploring the antecedents of innovation performance: the roles of entrepreneurial orientation, learning orientation and organisational learning	International Journal of Business Excellence
9	Angkanurakbun, C., & Wanarat, S.	2016	The mediating effect of product innovation capability on entrepreneurial pro-activeness and hotel performance	International Journal of Innovation Management
10	Arunachalam, S., Ramaswami, S. N., Herrmann, P., & Walker, D.	2018	Innovation pathway to profitability: the role of entrepreneurial orientation and marketing capabilities	Journal of the Academy of Marketing Science
11	Atuahene-Gima, K.	2005	Resolving the Capability—Rigidity Paradox in New Product Innovation	Journal of Marketing
12	Atuahene-Gima, K., & Ko, A.	2001	An Empirical Investigation of the Effect of Market Orientation and Entrepreneurship Orientation Alignment on Product Innovation	Organization Science
13	Atuahene-Gima, K., Slater, S. F., & Olson, E. M.	2005	The contingent value of responsive and proactive market orientations for new product program performance	Journal of Product Innovation Management
14	Augusto, M., & Coelho, F.	2009	Market orientation and new-to-the-world products: Exploring the moderating effects of innovativeness, competitive strength, and environmental forces	Industrial Marketing Management
15	Avlonitis, G. J., & Salavou, H. E.	2007	Entrepreneurial orientation of SMEs, product innovativeness, and performance	Journal of Business Research
16	Baker, W. E., Grinstein, A., & Harmancioglu, N.	2016	Whose Innovation Performance Benefits More from External Networks: Entrepreneurial or Conservative Firms?	Journal of Product Innovation Management
17	Baker, W. E., & Sinkula, J. M.	2009	The complementary effects of market orientation and entrepreneurial orientation on profitability in small businesses	Journal of Small Business Management

ID	AUTHOR	YEAR	TITLE	JOURNAL
18	Baker, W. E., & Sinkula, J. M.	2005	Market Orientation and the New Product Paradox	Journal of Product Innovation Management
19	Baker, W. E., & Sinkula, J. M.	1999	Learning Orientation, Market Orientation, and Innovation: Integrating and Extending Models of Organizational Performance	Journal of Market-Focused Management
20	Baker, W. E., & Sinkula, J. M., Grinstein, A., & Rosenzweig, S.	2014	The effect of radical innovation in/congruence on new product performance	Industrial Marketing Management
21	Beck, L., Janssens, W., Debruyne, M., & Lommelen, T.	2011	A Study of the Relationships Between Generation, Market Orientation, and Innovation in Family Firms	Family Business Review
22	Beyene, K. T., Shi, C. S., & Wu, W. W.	2016	Linking culture, organizational learning orientation and product innovation performance: the case of ethiopian manufacturing firms	South African Journal of Industrial Engineering
23	Boso, N., Cadogan, J., & Story, V.	2013	Entrepreneurial orientation and market orientation as drivers of product innovation success: A study of exporters from a developing economy	International Small Business Journal
24	Bouncken, R. B., Plüschke, B. D., Pesch, R., & Kraus, S.	2016	Entrepreneurial orientation in vertical alliances: joint product innovation and learning from allies	Review of Managerial Science
25	Brettel, M., Oswald, M., & Flatten, T.	2012	Alignment of market orientation and innovation as a success factor: A five-country study	Technology Analysis & Strategic Management
26	Calantone, R., Garcia, R., & Dröoge, C.	2003	The Effects of Environmental Turbulence on New Product Development Strategy Planning	Journal of Product Innovation Management
27	Camarero, C. & Garrido, M. J.	2012	Fostering Innovation in Cultural Contexts: Market Orientation, Service Orientation, and Innovations in Museums	Journal of Service Research
28	Carbonell, P., & Rodríguez Escudero, A. I.	2010	The effect of market orientation on innovation speed and new product performance	Journal of Business & Industrial Marketing
29	Chen, Y., Tang, G., Jin, J., Xie, Q., & Li, J.	2014	CEOs' Transformational Leadership and Product Innovation Performance: The Roles of Corporate Entrepreneurship and Technology Orientation	Journal of Product Innovation Management
30	Chen, Y. C., Li, P. C., & Evans, K. R.	2012	Effects of interaction and entrepreneurial orientation on organizational performance: Insights into market driven and market driving	Industrial Marketing Management
31	Cheng, C. C. J., & Huizingh, E. K. R. E.	2014	When Is Open Innovation Beneficial? The Role of Strategic Orientation	Journal of Product Innovation Management
32	Cheng, C. C. J., & Sheu, C.	2017	When are strategic orientations beneficial for collaborative service innovation?	Service Industries Journal
33	Cheng, C. C., & Krumwiede, D.	2012	The role of service innovation in the market orientation - New service performance linkage	Technovation
34	Chenuos, N. & Maru, C. L.	2015	Learning Orientation and Innovativeness of Small and Micro Enterprises	International Journal of Small Business and Entrepreneurship Research
35	Choi, S.	2014	Learning Orientation and Market Orientation as Catalysts for Innovation in Nonprofit Organizations	Nonprofit and Voluntary Sector Quarterly
36	Çömez, P., & Kítapci, H.	2016	The Effect of Quality Orientation, Market Orientation and Learning Orientation on Firm Innovativeness	European Journal of Business and Social Sciences
37	Fang, S.-R., Chang, E., Ou, C.-C., & Chou, C.-H.	2014	Internal market orientation, market capabilities and learning orientation	European Journal of Marketing
38	Fernández-Mesa, A., & Alegre, J.	2015	Entrepreneurial orientation and export intensity: Examining the interplay of organizational learning and innovation	International Business Review

ID	AUTHOR	YEAR	TITLE	JOURNAL
39	Ford, D., & Paladino, A.	2013	Enabling innovation through strategic synergies	Journal of Product Innovation Management
40	Frishammar, J., & Horte, S. A.	2007	The role of market orientation and entrepreneurial orientation for new product development performance in manufacturing firms	Technology Analysis & Strategic Management
41	Gao, G. Y., Zhou, K. Z., & Yim, C. K. (Bennett)	2007	On what should firms focus in transitional economies? A study of the contingent value of strategic orientations in China	International Journal of Research in Marketing
42	Garcia Ramirez, R., Maldonado Guzman, G., & Martinez Serna, M.	2014	The Relationship between Market Orientation, Entrepreneurial Orientation, and Innovation: Evidence from Mexican SMEs	Journal of Business and Economics
43	García-Morales, V. J.,Llorens-Montes, F. J., &Verdú-Jover, A. J.	2006	Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship	Industrial Management & Data Systems
44	Gatignon, H., & Xuereb, J.-M.	1997	Strategic orientation of the firm and new product performance	Journal of Marketing Research
45	Gnizy, I., Baker, W. E. & Grinstein, A.	2014	Proactive learning culturee: A dynamic capability and key success factor for SMEs entering foreign markets	International Marketing Review
46	González-Benito, Ó., Muñoz-Gallego, P. A., & García-Zamora, E.	2015	Entrepreneurship and market orientation as determinants of innovation: the role of business size	International Journal of Innovation Management
47	Gunawan, T., Jacob, J., & Duysters, G.	2016	Network ties and entrepreneurial orientation: Innovative performance of SMEs in a developing country	International Entrepreneurship and Management Journal
48	Hong, J., Song, T. H., & Yoo, S.	2013	Paths to success: How do market orientation and entrepreneurship orientation produce new product success	Journal of Product Innovation Management
49	Hsieh, M.-H., Tsai, K.-H. & Wang, J.-R.	2008	The moderating effects of market orientation and launch proficiency on the product advantage–performance relationship	Industrial Marketing Management
50	Hsu, Chia-Chien & Lin, Ching-Torng	2017	The Influence of Learning Orientation and Human Resource Practices on Firm Innovativeness and Innovations: An Application of the Push and Pull Framework	Journal of Economics and Management
51	Huang, Jing-Wen Li, Yong-Hui	2017	The mediating role of ambidextrous capability in learning orientation and new product performance	Journal of Business & Industrial Marketing
52	Im, S., Nakata, C., & Park, H.	2003	Determinants of Korean and Japanese New Product Performance: An Interrelational and Process View	Journal of International Marketing
53	Im, Subin & Workman, John P.	2004	Market Orientation, Creativity, and New Product Performance in High-Technology Firms	Journal of Marketing
54	Ivastava, P., Yoo, J., Frankwick, G. L., & Voss, K. E.	2013	Evaluating the Relationship of Firm Strategic Orientations and New Product Development Program Performance	Journal of Marketing Theory and Practice
55	Jaw, C., Lo, J.-Y., & Lin, Y.-H.	2010	The determinants of new service development: Service characteristics, market orientation, and actualizing innovation effort	Technovation
56	Jeong, I., Pae, J. H. & Zhou, D.	2006	Antecedents and consequences of the strategic orientations in new product development: The case of Chinese manufacturers	Industrial Marketing Management
57	Jiménez-Jimenez, D., Cegarra-Navarro, J. G., Gattermann Perin, M., Sampaio, C. H., & Lengler, J. B.	2014	Entrepreneurial capacities as antecedents of business performance in Brazilian firms	Canadian Journal of Administrative Sciences
58	Jiménez-Jimenez, D., Sanz Valle, R., & Hernandez-Espallardo, M.	2008	Fostering innovation	European Journal of Innovation Management

ID	AUTHOR	YEAR	TITLE	JOURNAL
59	Kam-Sing Wong, S.	2014	Impacts of environmental turbulence on entrepreneurial orientation and new product success	European Journal of Innovation Management
60	Kaya, N., & Patton, J.	2011	The effects of knowledge-based resources, market orientation and learning orientation on innovation performance: An empirical study of Turkish firms	Journal of International Development
61	Kim, N., Im, S., & Slater, S. F.	2013	Impact of Knowledge Type and Strategic Orientation on New Product Creativity and Advantage in High-Technology Firms	Journal of Product Innovation Management
62	Kocak, A., Carsrud, A., & Oflazoglu, S.	2017	Market, entrepreneurial, and technology orientations: impact on innovation and firm performance	Management Decision
63	Kyriakopoulos, K., & Moorman, C.	2004	Tradeoffs in marketing exploitation and exploration strategies: The overlooked role of market orientation	International Journal of Research in Marketing
64	Lages, L. F., Silva, G., & Styles, C.	2009	Relationship Capabilities, Quality, and Innovation as Determinants of Export Performance	Journal of International Marketing
65	Langerak, F., Hultink, E. J., & Robben, H.	2007	The mediating role of new product development in the link between market orientation and organizational performance	Journal of Strategic Marketing
66	Leal-Rodríguez, A. L., & Albort-Morant, G.	2016	Linking Market Orientation, Innovation And Performance: An Empirical Study On Small Industrial Enterprises In Spain.	Journal of Small Business Strategy
67	Ledwith, A., & O'Dwyer, M.	2009	Market Orientation, NPD Performance, and Organizational Performance in Small Firms	Journal of Product Innovation Management
68	Lee, S.-M., Li, C.-Y., & Tsai, C.-Y.	2017	Achieving new product development performance through entrepreneurial orientation: Evidence from Taiwan	International Journal of Technology, Policy and Management
69	Li, C.-R., Lin, C.-J., & Chu, C.-P.	2008	The nature of market orientation and the ambidexterity of innovations	Management Decision
70	Li, Y., Guo, H., Yi, Y., & Liu, Y.	2010	Ownership concentration and product innovation in Chinese firms: The mediating role of learning orientation	Management and Organization Review
71	Li, Y., Liu, Y., & Zhao, Y.	2006	The role of market and entrepreneurship orientation and internal control in the new product development activities of Chinese firms	Industrial Marketing Management
72	Liu, G., Ko, W. W. J., Ngugi, I., & Takeda, S.	2017	Proactive entrepreneurial behaviour, market orientation, and innovation outcomes	European Journal of Marketing
73	Liu, S.	2011	The role of service innovativeness in the relationship between market orientation and innovative performance: moderator or mediator?	Service Industries Journal
74	Liu, T.-C., & Chen, Y.-J.	2015	Strategy orientation, product innovativeness, and new product performance	Journal of Management & Organization
75	Low, D. R., Chapman, R. L. & Sloan, T. R.	2007	Inter-relationships between innovation and market orientation in SMEs	Management Research News
76	Lukas, B. A., & Ferrell, O. C.	2000	The Effect of Market Orientation on Product Innovation	Journal of the Academy of Marketing Science
77	Madhoushi, M., Sadati, A., & Delavari, H.	2011	Entrepreneurial Orientation and Innovation Performance: The Mediating Role of Knowledge Management	Asian Journal of Business Management
78	Mahto, R.V., McDowell, W.C., Kudlats, J., & Dunne, T. C.	2018	Learning Orientation and Performance Satisfaction as Predictors of Small Firm Innovation: The Moderating Role of Gender	Group Decision and Negotiation
79	Martínez Serna, M. del C., Vega Martínez, J. E., & Vega Martínez, J.	2016	The Impact of Learning Orientation on Innovation and Performance in SME´S in México	International Review of Management and Business Research

ID	AUTHOR	YEAR	TITLE	JOURNAL
80	Matsuno, K., & Mentzer, J. T.	2000	The Effects of Strategy Type on the Market Orientation-Performance Relationship	Journal of Marketing
81	Mavondo, F. T., Chimhanzi, J., & Stewart, J.	2005	Learning orientation and market orientation: Relationship with innovation, human resource practices and performance	European Journal of Marketing
82	Maydeu-Olivares, A., & Lado, N.	2003	Market orientation and business economic performance: A mediated model	International Journal of Service Industry Management
83	Melton, H. L., & Hartline, M. D.	2013	Employee Collaboration, Learning Orientation, and New Service Development Performance	Journal of Service Research
84	Moorman, C., & Rust, R. T.	1999	The Role of Marketing	Journal of Marketing
85	Morgan, T., Anokhin, S., Kretinin, A., & Frishammar, J.	2015	The dark side of the entrepreneurial orientation and market orientation interplay: A new product development perspective	International Small Business Journal
86	Morris, M. H., Avila, R. A., & Morris, M. H.	1993	Individualism and the Modern Corporation: Implications for Innovation and Entrepreneurship	Journal of Management
87	Mu, J., & Di Benedetto, C. A.	2011	Strategic orientations and new product commercialization: Mediator, moderator, and interplay	R & D Management
88	Mu, J., Thomas, E., Peng, G., & Di Benedetto, A.	2016	Strategic orientation and new product development performance: The role of networking capability and networking ability	Industrial Marketing Management
89	Narver, J. C., Slater, S. F., & MacLachlan, D. L.	2004	Responsive and Proactive Market Orientation and New Product Success	Journal of Product Innovation Management
90	Nasution, H. N., Mavondo, F. T., Matanda, M. J., & Ndubisi, N. O.	2011	Entrepreneurship: Its relationship with market orientation and learning orientation and as antecedents to innovation and customer value	Industrial Marketing Management
91	Ngo, L. V., & O'Cass, A.	2012	In search of innovation and customer-related performance superiority: The role of market orientation, marketing capability, and innovation capability interactions	Journal of Product Innovation Management
92	Nguyen, B., Yu, X., Melewar, T. C., & Gupta, S.	2016	Critical brand innovation factors (CBIF): Understanding innovation and market performance in the Chinese high-tech service industry	Journal of Business Research
93	Nybakk, E.	2012	Learning Orientation, Innovativeness and Financial Performance in Traditional Manufacturing Firms: a Higher-Order Structural Equation Model	International Journal of Innovation Management
94	O'Cass, A., & Weerawardena, J.	2009	Examining the role of international entrepreneurship, innovation and international market performance in SME internationalisation	European Journal of Marketing
95	Ozkaya, H. E., Droge, C., Hult, G. T. M., Calantone, R., & Ozkaya, E.	2015	Market orientation, knowledge competence, and innovation	International Journal of Research in Marketing
96	Paladino, A.	2008	Analyzing the Effects of Market and Resource Orientations on Innovative Outcomes in Times of Turbulence	Journal of Product Innovation Management
97	Parkman, I. D., Holloway, S. S., & Sebastiao, H.	2012	Creative industries: aligning entrepreneurial orientation and innovation capacity	Journal of Research in Marketing and Entrepreneurship
98	Pelham, A. M., & Wilson, D.	1996	A longitudinal study of the impact of market structure, firm structure, strategy, and market orientation culture on dimensions of small-firm performance	Journal of the Academy of Marketing Science

ID	AUTHOR	YEAR	TITLE	JOURNAL
99	Pérez-Luño, A., Wiklund, J., & Cabrera, R. V.	2011	The dual nature of innovative activity: How entrepreneurial orientation influences innovation generation and adoption	Journal of Business Venturing
100	Pradthana, L., & Jaroenwisan, K.	2013	Organizational Innovativeness: The Empirical Study of Hotel Business in Southern Thailand	International Journal of Business and Social Science
101	Prifti, R., & Alimehmeti, G.	2017	Market orientation, innovation, and firm performance—an analysis of Albanian firms	Journal of Innovation and Entrepreneurship
102	Racela, O. C.	2015	Viable strategy configurations and new product development capability and performance	Asia Pacific Journal of Marketing and Logistics
103	Ramaseshan, B., Caruana, A., & Pang, L. S.	2002	The effect of market orientation on new product performance: a study among Singaporean firms	Journal of Product & Brand Management
104	Reid, M., & Brady, E.	2012	Improving firm performance through NPD: The role of market orientation, NPD orientation and the NPD process	Australasian Marketing Journal
105	Reis Neto, J. F. dos, Muñoz-Gallego, P. A., Souza, C. C. de, Pedrinho, D. R., Favero, S., & von Mühlen, A. S. R.	2016	Strategic orientations and cooperation of external agents in the innovation process of rural enterprises	Ciência Rural
106	Renko, M., Carsrud, A., & Brännback, M.	2009	The Effect of a Market Orientation, Entrepreneurial Orientation, and Technological Capability on Innovativeness: A Study of Young Biotechnology Ventures in the United States and in Scandinavia	Journal of Small Business Management
107	Rodríguez-Pinto, Javier Carbonell, Pilar, & Rodríguez-Escudero, Ana I.	2011	Speed or quality? How the order of market entry influences the relationship between market orientation and new product performance	International Journal of Research in Marketing
108	Salavou, Helen	2005	Do Customer and Technology Orientations Influence Product Innovativeness in SMEs? Some New Evidence from Greece	Journal of Marketing Management
109	Salge, T. O., & Vera, A.	2012	Benefiting from Public Sector Innovation: The Moderating Role of Customer and Learning Orientation	Public Administration Review
110	Sanchez-Hernandez, M. I., & Miranda, F. J.	2011	Linking internal market orientation and new service performance	European Journal of Innovation Management
111	Sandvik, I. L., & Sandvik, K.	2003	The impact of market orientation on product innovativeness and business performance	International Journal of Research in Marketing
112	Shan, P., Song, M., & Ju, X.	2016	Entrepreneurial orientation and performance: Is innovation speed a missing link?	Journal of Business Research
113	Sheng, M. L., & Chien, I.	2016	Rethinking organizational learning orientation on radical and incremental innovation in high-tech firms	Journal of Business Research
114	Song, J., Wei, Y. S., & Wang, R.	2015	Market orientation and innovation performance: The moderating roles of firm ownership structures	International Journal of Research in Marketing
115	Spanjol, J., Mühlmeier, S., & Tomczak, T.	2012	Strategic orientation and product innovation: Exploring a decompositional approach	Journal of Product Innovation Management
116	Storey, C., & Hughes, M.	2013	The relative impact of culture, strategic orientation and capability on new service development performance	European Journal of Marketing
117	Story, V. M., Boso, N., & Cadogan, J. W.	2015	The Form of Relationship between Firm-Level Product Innovativeness and New Product Performance in Developed and Emerging Markets	Journal of Product Innovation Management

ID	AUTHOR	YEAR	TITLE	JOURNAL
118	Tajeddini, K.	2011	Customer Orientation, Learning Orientation, and New Service Development: An Empirical Investigation of the Swiss Hotel Industry	Journal of Hospitality & Tourism Research
119	Tajudin, M. M., Musa, O., & Musa, N. C.	2012	Effects of Organizational Culture, Market Orientation, and Innovativeness toward New Product Performance amongst Malaysian SMEs	International Journal of Innovation and Business Strategy
120	Thoumrungroje, Amonrat, & Racela, Olimpia	2013	The contingent role of customer orientation and entrepreneurial orientation on product innovation and performance	Journal of Strategic Marketing
121	Van Riel, A., Lemmink, J., & Ouwersloot, H.	2004	High-technology service innovation success: A decision-making perspective	Journal of Product Innovation Management
122	Vázquez, R., Santos, M. L., & Álvarez, L. I.	2001	Market orientation, innovation and competitive strategies in industrial firms	Journal of Strategic Marketing
123	Wang, C.-H.	2015	The Impact of Market Orientation on Innovation Performance: Does Service Innovation Matter?	Journal of Business Studies Quarterly
124	Weerawardena, J., & O'Cass, A.	2004	Exploring the characteristics of the market-driven firms and antecedents to sustained competitive advantage	Industrial Marketing Management
125	Wei, Y. (Susan), & Atuahene-Gima, K.	2009	The moderating role of reward systems in the relationship between market orientation and new product performance in China	International Journal of Research in Marketing
126	Wren, Brent M., Souder, W. E., & Berkowitz, D.	2000	Market Orientation and New Product Development in Global Industrial Firms	Industrial Marketing Management
127	Yannopoulos, P., Auh, S., & Menguc, B.	2012	Achieving fit between learning and market orientation: Implications for new product performance	Journal of Product Innovation Management
128	Yu, X., Nguyen, B., & Chen, Y.		Internet of things capability and alliancee: Entrepreneurial orientation, market orientation and product and process innovation	Internet Research
129	Zehir, C., & Wujiabudula, A.	2016	The Effects of Organizational Learning on Firn Performance through Product Innovation	Journal of Global Strategic Management
130	Zhai, Y.-M., Sun, W.-Q., Tsai, S.-B., Wang, Z., Zhao, Y., & Chen, Q.	2018	An Empirical Study on Entrepreneurial Orientation, Absorptive Capacity, and SMEs' Innovation Performance: A Sustainable Perspective	Sustainability
131	Zhang, J., & Duan, Y.	2010	The impact of different types of market orientation on product innovation performance	Management Decision
132	Zhou, K. Z., Yim, C. K., & Tse, D. K.	2005	The Effects of Strategic Orientations on Technology- and Market-Based Breakthrough Innovations	Journal of Marketing

Annex 2. Independent samples included in the meta-analysis with their extracted correlations scores, year of publication and sample size

ID	AUTHOR	YEAR	SAMPLE	MO_EO	MO_LO	MO_INNO	MO_PERF	EO_LO	EO_INNO	EO_PERF	LO_INNO	LO_PERF	INNO_PERF
1	Abdullah & Aimin	2015	109	NA	NA	0.74	NA	NA	NA	NA	NA	NA	NA
2	Acar & Özşahin.	2018	161	NA	NA	0.54	0.34	NA	NA	NA	NA	NA	NA
3	Ahmadi & O'Cass	2016	142	0.41	NA	0.27	NA	NA	0.31	NA	NA	NA	NA
4	Akman & Yilmaz	2008	156	NA	NA	0.31	NA	NA	NA	NA	NA	NA	NA
5	AL-Nuiami et al.	2014	13	NA	NA	NA	NA	NA	0.61	NA	NA	NA	NA
6	Alarcón del Amo et al.	2014	203	0.52	0.81	0.71	0.44	0.6	0.73	0.3	0.65	0.43	0.56
7	Alegre, & Chiva	2013	182	NA	NA	NA	NA	NA	0.53	0.42	NA	NA	0.63
8	Allameh & Khalilakbar	2018	203	NA	NA	NA	NA	0.53	0.4	NA	0.43	NA	NA
9	Angkanurakbun & Wanarat	2016	240	NA	NA	NA	NA	NA	0.77	0.54	NA	NA	0.61
10	Arunachalam et al.	2018	198	NA	NA	NA	NA	NA	0.21	0.08	NA	NA	0.2
11	Atuahene-Gima	2005	227	NA	NA	0.26	NA	NA	NA	NA	NA	NA	NA
12	Atuahene-Gima & Ko	2001	181	0.39	NA	0.24	NA	NA	0.13	NA	NA	NA	NA
13	Atuahene-Gima et al.	2005	175	NA	0.33	0.25	NA	NA	NA	NA	NA	NA	NA
14	Augusto & Coelho	2009	89	NA	NA	0.31	NA	NA	NA	NA	NA	NA	NA
15	Avlonitis & Salavou	2007	149	NA	NA	NA	NA	NA	0.19	NA	NA	NA	NA
16	Baker et al.	2016	1978	0.45	0.54	0.5	NA	0.45	0.58	NA	0.49	NA	NA
17	Baker & Sinkula	2009	88	0.34	NA	0.28	0.38	NA	0.69	0.29	NA	NA	0.34
18	Baker & Sinkula	2005	243	NA	NA	0.44	0.15	NA	NA	NA	NA	NA	0.06
19	Baker & Sinkula	1999	411	NA	0.65	0.46	0.32	NA	NA	NA	0.51	0.35	0.38
20	Baker et al.	2014	236	NA	NA	0.38	NA	NA	NA	NA	NA	NA	NA

ID	AUTHOR	YEAR	SAMPLE	MO_EO	MO_LO	MO_INNO	MO_PERF	EO_LO	EO_INNO	EO_PERF	LO_INNO	LO_PERF	INNO_PERF
21	Beck et al.	2011	154	NA	NA	0.57	NA	NA	NA	NA	NA	NA	NA
22	Beyene et al.	2016	286	NA	NA	NA	NA	NA	NA	NA	0.35	NA	NA
23	Boso et al.	2013	164	0.23	NA	0.15	NA	NA	0.34	NA	NA	NA	NA
24	Bouncken et al.	2016	171	NA	NA	NA	NA	NA	0.45	NA	NA	NA	NA
25	Brettel et al.	2012	737	NA	NA	0.21	0.55	NA	NA	NA	NA	NA	NA
26	Calantone et al.	2003	453	NA	NA	0.17	NA	NA	NA	NA	NA	NA	NA
27	Camarero & Garrido	2012	491	NA	NA	0.3	NA	NA	NA	NA	NA	NA	NA
28	Carbonell & Rodríguez-Escudero	2010	247	NA	NA	0.22	NA	NA	NA	NA	NA	NA	NA
29	Chen et al.	2014	151	NA	NA	NA	NA	NA	0.57	NA	NA	NA	NA
30	Chen et al.	2012	159	NA	NA	NA	NA	NA	0.47	0.25	NA	NA	0.17
31	Cheng & Huizingh	2014	223	0.15	NA	0.36	0.41	NA	0.02	0.24	NA	NA	0.24
32	Cheng & Sheu	2017	724	NA	0.1	0.28	0.3	NA	NA	NA	0.29	0.27	0.14
33	Cheng & Krumwiede	2012	235	NA	NA	0.18	0.2	NA	NA	NA	NA	NA	NA
34	Chenuos & Maru	2015	333	NA	NA	NA	NA	NA	NA	NA	0.45	NA	NA
35	Choi	2014	258	NA	0.26	0.17	NA	NA	NA	NA	0.19	NA	NA
36	Çömez & Kítapci	2016	128	NA	0.55	NA	0.46	NA	NA	NA	NA	0.43	NA
37	Fang et al.	2014	159	NA	0.69	0.49	0.29	NA	NA	NA	0.54	0.34	0.42
38	Fernández-Mesa & Alegre	2015	150	NA	NA	NA	NA	NA	0.55	NA	NA	NA	NA
39	Ford & Paladino	2013	243	0.2	NA	0.24	NA	NA	0.27	NA	NA	NA	NA
40	Frishammar & Horte	2007	224	NA	NA	0.36	0.35	NA	NA	NA	NA	NA	0.33
41	Gao et al.	2007	380	NA	NA	0.22	0.1	NA	NA	NA	NA	NA	NA
42	Garcia-Ramirez et al.	2014	318	NA	NA	NA	NA	0.23	0.46	0.32	0.35	0.45	0.32
43	García-Morales et al.	2006	408	0.74	NA	0.46	NA	NA	0.66	NA	NA	NA	NA

ID	AUTHOR	YEAR	SAMPLE	MO_EO	MO_LO	MO_INNO	MO_PERF	EO_LO	EO_INNO	EO_PERF	LO_INNO	LO_PERF	INNO_PERF
44	Gatignon & Xuereb	1997	393	NA	NA	0.2	NA	NA	NA	NA	NA	NA	NA
45	Gnizy et al.	2014	155	0.45	NA	0.51	NA	NA	0.55	NA	NA	NA	NA
46	González-Benito et al.	2015	440	0.42	0.53	0.36	NA	0.52	0.38	NA	0.38	NA	NA
47	Gunawan & Duysters	2016	120	NA	NA	NA	NA	NA	0.3	NA	NA	NA	NA
48	Hong et al.	2013	471	0.89	NA	0.64	NA	NA	0.7	NA	NA	NA	NA
49	Hsieh et al.	2008	112	NA	NA	0.42	NA	NA	NA	NA	NA	NA	NA
50	Hsu et al.	2017	305	NA	NA	NA	NA	NA	NA	NA	0.54	NA	NA
51	Huang & Li	2017	336	NA	NA	NA	NA	NA	NA	NA	0.24	NA	NA
52	Im et al. (1)	2003	149	NA	NA	0.34	NA	NA	NA	NA	NA	NA	NA
53	Im et al. (2)	2003	111	NA	NA	0.35	NA	NA	NA	NA	NA	NA	NA
54	Im et al.	2004	312	NA	NA	0.1	0.16	NA	NA	NA	NA	NA	0.11
55	Ivastava et al.	2013	183	0.69	NA	0.17	NA	NA	0.42	NA	NA	NA	NA
56	Jaw et al.	2010	136	NA	NA	0.58	NA	NA	NA	NA	NA	NA	NA
57	Jeong et al.	2006	232	NA	NA	0.24	NA	NA	NA	NA	NA	NA	NA
58	Jiménez-Jimenez et al.	2014	361	NA	NA	0.37	0.3	NA	NA	NA	NA	NA	NA
59	Jiménez-Jimenez et al.	2008	744	NA	NA	NA	NA	0.28	0.51	0.3	0.29	0.56	0.34
60	Kam-Sing Wong	2014	244	NA	NA	NA	NA	NA	0.37	NA	NA	NA	NA
61	Kaya & Patton	2011	135	NA	0.68	0.59	NA	NA	NA	NA	0.53	NA	NA
62	Kim et al.	2013	100	NA	NA	0.25	NA	NA	NA	NA	NA	NA	NA
63	Kocak et al.	2017	818	0.6	NA	0.51	0.21	NA	0.59	0.2	NA	NA	0.24
64	Kyriakopoulos & Moorman	2004	340	NA	NA	0.27	NA	NA	NA	NA	NA	NA	NA
65	Lages et al.	2009	112	NA	NA	NA	NA	NA	NA	NA	0.34	0.22	0.36
66	Langerak et al.	2007	211	NA	NA	0.31	0.28	NA	NA	NA	NA	NA	0.63
67	Leal-Rodríguez, & Albort-Morant	2016	145	NA	NA	0.63	0.87	NA	NA	NA	NA	NA	0.71

ID	AUTHOR	YEAR	SAMPLE	MO_EO	MO_LO	MO_INNO	MO_PERF	EO_LO	EO_INNO	EO_PERF	LO_INNO	LO_PERF	INNO_PERF
68	Ledwith & O'Dwyer	2009	106	NA	NA	0.31	0.28	NA	NA	NA	NA	NA	0.71
69	Lee et al.	2017	111	0.36	0.63	0.34	NA	0.42	0.32	NA	0.23	NA	NA
70	Li et al.	2008	227	NA	0.2	0.36	NA	NA	NA	NA	0.22	NA	NA
71	Li et al.	2010	351	NA	NA	NA	NA	NA	NA	NA	0.69	0.18	0.17
72	Li et al.	2006	585	0.07	NA	0.01	NA	NA	0.09	NA	NA	NA	NA
73	Liu et al	2017	401	0.44	NA	0.34	NA	NA	0.53	NA	NA	NA	NA
74	Liu	2011	169	NA	NA	0.25	0.48	NA	NA	NA	NA	NA	0.33
75	Liu & Chen	2015	118	NA	NA	0.26	NA	NA	NA	NA	NA	NA	NA
76	Low et al.	2007	73	0.25	NA	0.26	0.25	NA	0.21	0.26	NA	NA	NA
77	Lukas & Ferrell	2000	194	NA	NA	0.37	NA	NA	NA	NA	NA	NA	NA
78	Madhoushi et al.	2011	164	NA	NA	NA	NA	NA	0.44	NA	NA	NA	NA
79	Mahto et al.	2018	66	NA	NA	NA	NA	NA	NA	NA	0.41	NA	NA
80	Martínez Serna et al.	2016	350	NA	NA	NA	NA	NA	NA	NA	0.47	0.17	NA
81	Matsuno & Mentzer	2000	364	NA	NA	0.29	0.37	NA	NA	NA	NA	NA	0.41
82	Mavondo et al.	2005	227	NA	0.47	0.39	0.24	NA	NA	NA	0.29	0.12	0.04
83	Maydeu-Olivares & Lado	2003	122	NA	NA	0.55	0.36	NA	NA	NA	NA	NA	0.35
84	Melton & Hartline	2013	160	NA	NA	NA	NA	NA	NA	NA	0.2	NA	NA
85	Moorman & Rust	1999	128	NA	NA	0.3	0.24	NA	NA	NA	NA	NA	NA
86	Morgan et al.	2015	206	0.3	NA	-0.04	NA	NA	0.22	NA	NA	NA	NA
87	Morris et al.	1993	84	NA	NA	NA	NA	NA	0.21	NA	NA	NA	NA
88	Mu & Di Benedetto	2011	348	0.5	NA	0.42	NA	NA	0.45	NA	NA	NA	NA
89	Mu et al.	2016	399	0.1	NA	0.21	NA	NA	0.19	NA	NA	NA	NA
90	Narver et al.	2004	41	NA	NA	0.51	NA	NA	NA	NA	NA	NA	NA
91	Nasution et al.	2011	231	0.91	0.84	0.82	0.71	0.77	0.91	0.71	0.71	0.62	0.72
92	Ngo & O'Cass	2012	163	NA	NA	0.51	0.44	NA	NA	NA	NA	NA	0.64

ID	AUTHOR	YEAR	SAMPLE	MO_EO	MO_LO	MO_INNO	MO_PERF	EO_LO	EO_INNO	EO_PERF	LO_INNO	LO_PERF	INNO_PERF
93	Nguyen et al.	2016	182	NA	0.68	0.56	0.45	NA	NA	NA	0.73	0.5	0.51
94	Nybakk	2012	241	NA	NA	NA	NA	NA	NA	NA	0.58	0.27	0.46
95	O'Cass & Weerawardena	2009	302	NA	NA	NA	NA	NA	0.57	0.53	NA	NA	0.58
96	Ozkaya et al. (1)	2015	288	NA	NA	0.6	0.42	NA	NA	NA	NA	NA	NA
97	Ozkaya et al. (2)	2015	386	NA	NA	0.4	0.32	NA	NA	NA	NA	NA	NA
98	Paladino	2008	211	NA	0.53	0.31	0.3	NA	NA	NA	0.22	0.28	0.35
99	Parkman et al.	2012	57	NA	NA	NA	NA	NA	0.27	0.35	NA	NA	NA
100	Pelham & Wilson	1996	68	NA	NA	0.1	0.38	NA	NA	NA	NA	NA	NA
101	Pérez-Luño et al.	2011	400	NA	NA	NA	NA	NA	0.14	NA	NA	NA	NA
102	Pradthana & Jaroenwisan	2013	212	0.36	0.64	0.65	NA	0.34	0.51	NA	0.64	NA	NA
103	Prifti & Alimehmeti	2017	99	NA	NA	0.26	0.35	NA	NA	NA	NA	NA	NA
104	Racela	2015	156	0.61	NA	0.35	NA	NA	0.47	NA	NA	NA	NA
105	Ramaseshan et al.	2002	127	NA	NA	0.66	NA	NA	NA	NA	NA	NA	NA
106	Reid & Brady	2012	173	NA	NA	0.24	NA	NA	NA	NA	NA	NA	NA
107	Reis Neto et al.	2016	208	0.63	NA	0.44	NA	NA	0.6	NA	NA	NA	NA
108	Renko et al.	2009	85	0.3	NA	0.16	NA	NA	0.08	NA	NA	NA	NA
109	Rodríguez-Pinto et al.	2011	244	NA	NA	0.32	NA	NA	NA	NA	NA	NA	NA
110	Salavou	2005	126	NA	0.41	0.12	NA	NA	NA	NA	0.28	NA	NA
111	Salge & Vera	2012	153	NA	0.66	0.15	NA	NA	NA	NA	0.13	NA	NA
112	Sanchez-Hernandez & Miranda	2011	74	NA	NA	0.52	NA	NA	NA	NA	NA	NA	NA
113	Sandvik & Sandvik	2003	298	NA	NA	0.3	-0.04	NA	NA	NA	NA	NA	0.03
114	Shan et al.	2016	153	NA	NA	NA	NA	NA	0.26	0.25	NA	NA	NA
115	Sheng & Chien	2016	70	NA	NA	NA	NA	NA	NA	NA	0.65	NA	NA

ID	AUTHOR	YEAR	SAMPLE	MO_EO	MO_LO	MO_INNO	MO_PERF	EO_LO	EO_INNO	EO_PERF	LO_INNO	LO_PERF	INNO_PERF
116	Song et al.	2015	242	NA	NA	0.38	NA	NA	NA	NA	NA	NA	NA
117	Spanjol et al.	2012	222	0.51	0.28	0.12	NA	0.36	0.24	NA	0.49	NA	NA
118	Storey & Hughes	2013	105	NA	NA	NA	NA	0.46	0.36	NA	0.25	NA	NA
119	Story et al. (1)	2015	319	NA	NA	0.4	NA	NA	NA	NA	NA	NA	NA
120	Story et al. (2)	2015	221	NA	NA	0.29	NA	NA	NA	NA	NA	NA	NA
121	Tajeddini	2011	118	NA	0.35	0.21	0.44	NA	NA	NA	0.31	0.62	0.35
122	Tajudin et al.	2012	65	NA	NA	0.2	NA	NA	NA	NA	NA	NA	NA
123	Thoumrungroje & Racela	2013	159	0.57	NA	0.43	0.33	NA	0.52	0.31	NA	NA	0.37
124	Van Riel et al.	2004	251	NA	NA	0.3	NA	NA	NA	NA	NA	NA	NA
125	Vázquez et al.	2001	174	NA	NA	0.5	0.34	NA	NA	NA	NA	NA	0.36
126	Wang, C.-H.	2015	235	NA	NA	0.51	NA	NA	NA	NA	NA	NA	NA
127	Weerawardena & O'Cass	2004	324	NA	NA	NA	NA	NA	0.58	NA	NA	NA	NA
128	Wei & Atuahene-Gima	2009	110	NA	NA	0.05	NA	NA	NA	NA	NA	NA	NA
129	Wren et al.	2000	375	NA	NA	0.53	NA	NA	NA	NA	NA	NA	NA
130	Yannopoulos et al.	2012	216	NA	NA	0.34	NA	NA	NA	NA	NA	NA	NA
131	Yu et al.	2016	207	0.55	NA	0.44	NA	NA	0.47	NA	NA	NA	NA
132	Zehir & Wujiabudula	2016	295	NA	NA	NA	NA	NA	NA	NA	0.64	0.57	0.69
133	Zhai et al.	2018	302	NA	NA	NA	NA	NA	0.35	0.3	NA	NA	0.46
134	Zhang & Duan	2010	227	NA	NA	0.47	NA	NA	NA	NA	NA	NA	NA
135	Zhou et al.	2005	350	0.26	NA	0.31	0.07	NA	0.38	0.44	NA	NA	0.31

Annex 3. Meta-analytic pooled correlation matrix for the robustness check

		MO	EO	LO	INNO	PERF
r	**MO**	1				
CI95						
k						
N						
I^2						
r	**EO**	.46	1			
CI95		.36: .55				
k		19				
N		6879				
I^2		.92				
r	**LO**	.52	.44	1		
CI95		.44: .61	.36: .53			
k		20	11			
N		6171	4189			
I^2		.90	.81			
r	**INNO**	.39	.47	.42	1	
CI95		.27: .42	.39: .54	.36: .48		
k		47	30	30		
N		13530	9488	8898		
I^2		.87	.92	.87		
r	**PERF**	.36	.35	.37	.38	1
CI95		.30: .42	.27: .42	.30: .44	.31: .46	
k		28	15	16	31	
N		7399	3887	4362	8158	
I^2		.84	.82	.82	.88	

Source: Own elaboration based on metaSEM R package outputs, TSSEM Stage 1 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance. r: observed correlations; k: number of studies; N: sample size; CI95: 95% confidence interval. All correlations are significant (p<.01).

Annex 4. Summary of TSSEM Stage 2 results on the robustness check model with its respective path coefficients, explained variance, chi-squared test, goodness of fit indices and model fit assessment

THEORETICAL APPROACH		PATH COEFFICIENTS			EXPLAINED VARIANCE		χ^2 TEST				GOODNESS OF FIT INDICES			MODEL FIT
		Effect	β	LBCI95	R^2	LBCI95	d.f.	N	Value	*p*	CFI	RMSEA	SRMR	Support
Holistic (Robustness Check)	Direct Effects	MO→INNO	.14	.03: .24	.29	.24: .35	1	18045	2.29	*	.9999	.00085	.0182	YES
		EO→INNO	.32	.22: .43										
		LO→INNO	.19	.08: .29										
		MO→PERF	.16	.05: .25	.25	.21: .31								
		LO→PERF	.21	.09: .32										
		INNO→PERF	.25	.17: .34										
	Covariances (Ψ)	MO→EO	.47	.38: .57	N.A.									
		MO→LO	.52	.43: .60										
		EO→LO	.46	.37: .54										
	Indirect Effects	MO→INN→PERF	.04	.01: .07										
		EO→INN→PERF	.09	.06: .14										
		LO→INN→PERF	.05	.02: .09										

Source: Own elaboration based on the metaSEM R package, TSSEM Stage 2 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation -as an outcome-; PERF: Firm Performance; N.A.: Not Applicable.
(Ψ) = In a path model covariances are represented by ψ.
** = p<.1.*

Annex 5. Word lists for coding strategic orientations, innovation and firm performance constructs, based on dictionaries developed and validated by Short et al. (2010), McKenny et al. (2018b) and Dutta et al. (2016)

CONSTRUCT OF INTEREST	DIMENSION	CODING DEFINITION
Market orientation		<*MO_CompetitorOrient> | <*MO_CustomerOrient> | <*MO_InterfuncCoord>
	Customer orientation	attendee | buyer | client | consumer | customer | emptor | end-market | end-user | habitue | market | 'market segment' | passenger | patient | patron | purchase | shopper | spectator | subscribe | user | vend | visitor | player
	Competitor orientation	adversary | aggression | aggressive | aggressor | ambition | ambition | ambitious | antagonist | antagonize | aspirant | aspire | assail | assailant | barricade | battle | beat | bid | block | blockade | challenge | clash | collide | combat | compete | competing | competition | competitive | competitor | conflict | confront | conquer | contend | contentious | contest | counteraction | cutthroat | disputant | dispute | enemy | engage | entrant | fight | foe | formidable | grapple | imitator | jockey | match | opponent | oppose | opposition | 'out bid' | outclass | outmatch | outrank | outrate | participant | participate | resist | rival | spar | strive | struggle | superior | surpass | vied | vying | war | aggressor | combatant | imitator | advantage
	Interfunctional coordination	accordant | 'across divisions' | 'across bundaries' | 'across the company' | amalgam | associate | coaction | coactive | coadjuvant | coalesce | collaborate | 'company wide' | complemental | concerted | concurrent | congenial | connect | consolidate | cooperate | cooperation | coordinate | correlated | fuse | fusion | harmony | 'in concert' | incorporate | integral | integrate | integration | interact | interaction | interactive | joint | 'joint task' | mutual | 'mutually beneficial' | reciprocal | reciprocity | share | simpatico | symbiosis | symbiotic | syncretism | synergistic | synergy | synthesis | synthesize | team | together | unification | unified | unite | unity | coaction | integrated | 'cross functional' | interfunctional | 'cross brand' | mobilize | 'diverse team' | 'entire organization' | multidisciplinary | multi-disciplinary | 'work together' | 'working together' | 'throughout our company' | 'throughout the company' | 'throughout the organization' | 'division wide' | company-wide | division-wide | cross-functional | inter-functional
Entrepreneurial orientation		<*EO_Autonomy> | <*EO_CompetitiveAggressiveness> | <*EO_Innovativeness> | <*EO_Proactiveness> | <*EO_RiskTaking>
	Autonomy	at-liberty | authorization | autonomic | autonomous | autonomy | autonomic | decontrol | deregulation | distinct | 'do it yourself' | emancipation | freedom | 'free thinking' | independence | independent | liberty | on-ones-own | prerogative | self-directed | self-directing | self-direction | self-rule | self-ruling | separate | sovereign | sovereignty | unaffiliat | unattach | unconfined | unconnect | unfetter | unforce | ungovern | unregulate | decentralize
	Competitive aggressiveness	achievement | aggressive | ambitious | antagonist | aspirant | battle | capitalize | challenge | combat | competing | competition | competitive | conflicting | contend | contender | contentious | contest | contestant | cutthroat | defend | 'dog eat dog' | enemy | engage | entrant | exploit | fierce | fight | intense | intensive | 'jockey for position' | 'best-in-class' | combat | compete | competer | competing | competition | competitive | competitiveness | competitor | competitory | conflicting | contend | contender | contentious | contest | contestant | cutthroat | defend | dog-eat-dog | enemy | entrant | exploit | fierce | fight | fighter | fighting | 'global leader' | 'industry leadership' | 'industry leading' | industry-leading | intensity | 'jockey for position' | joust | jouster | 'lead the industry' | 'lead the world' | 'leader in our industry' | 'leadership position' | 'leading its industry' | 'leading supplier' | 'led the industry' | 'lock horns' | 'market leader' | 'market leaders' | 'market leadership' | 'market leading' | 'market-leading' | opponent | oppose | opposing | opposition | outgrow | pacesetter | peer | peers | 'play against' | preeminence | pre-eminenence | preeminent | pre-eminent | 'ready to fight' | rival | 'sector-leading' | struggle | tussle | unequaled | unmatched | unparalleled | unrivaled | vying | 'world leader' | wrestle
	Innovativeness	ad-lib | adroit | adroitness | clever | conceive | concoct | concoction | concoctive | 'conjure up' | create | creative | creativity | creator | discover | discovery | dream | 'dream up' | envisage | envision | expert | form | formulation | frame | free-thinker | genesis | genius | gifted | 'hit upon' | imagination | imaginative | imagine | improvise | ingenious | ingenuity | innovate | innovative | innovativeness | introduce | introducing | initiative | initiator | innovate | inspiration | inspire | inventive | inventiveness | inventor | 'make up' | mastermind | 'master stroke' | metamorphose | metamorphosis | neoteric | neoterism | neoterize | 'new wrinkle' | originality | origin | recast | recasting | resourceful | resourcefulness | restyle | restyling | revolutionize | visionary | visualize | 'new course' | 'new directions' | R&D | 'research and development' | 'research & development' | 'new ways' | idea | design | excogitation | conception | initiation | foundation | institution | origination | creation | instauration | novel | radical | automate | feature | novel | 'new use'
	Proactiveness	acquire | acquiring | anticipate | envision | expect | exploration | exploratory | explore | forecast | foreglimpse | foreknow | foresee | foretell | 'forward looking' | inquire | inquiry | investigate |

		investigation | 'look into' | 'opportunity seeking' | proactive | probe | prospect | scrutinization | scrutiny | search | study | survey | opportunity | opportunities
	Risk-taking	adventuresome | adventurous | audacious | bet | bold | 'bold spirited' | brash | brave | chance | chancy | courageous | danger | dangerous | dare | daredevil | daring | dauntless | dicey | enterprising | fearless | gamble | gutsy | headlong | incautious | intrepid | plunge | precarious | rash | reckless | stake | temerity | uncertain | venture | venturesome | wager | 'face risks' | risk-taking
Learning orientation		<*LO_CommitmentLearning> | <*LO_OpenMindedness> | <*LO_SharedVision>
	Commitment to learning	learn | learning | study | education | instruction | training | scholarship | knowledge | education | erudition | culture | intellect | 'academic attainment' | enlightenment | illumination | edification | insight | information | understanding | sageness | wisdom | sophistication | 'commitment to learning' | 'thinking literacy' | 'knowledge development' | 'learning culture' | 'acquire a knowledge of' | 'gain an understanding of' | 'acquire skill in' | 'become competent in' | 'become proficient in' | grasp | master | 'take in' | absorb | assimilate | 'pick up' | digest | familiarize | 'become expert in' | 'know inside out' | 'know backwards' | comprehend | 'work at' | 'apply oneself to' | 'be taught' | 'have lessons in' | pursue | 'find out' | 'become aware' | study
	Open-Mindedness	think | view | unbiased | unprejudiced | prejudice-free | accepting | non-partisan | neutral | non-aligned | non-judgemental | non-discriminatory | anti-discrimination | objective | disinterested | dispassionate | detached | tolerant | liberal | permissive | broad-minded | undogmatic | unprescriptive | receptive | 'open to suggestions' | amenable | flexible | 'willing to change' | 'open mindedness' | 'open mind' | unlearn | 'generative learning' | 'capacity for change' | 'open to new ideas' | question | 'new insights' | 'new knowledge' | 'open dialog' | 'original idea' | 'original ideas' | 'think outside'
	Shared vision	shared | shared-vision | 'shared vision' | concept | impression | 'mental picture' | image | 'mental image' | visualize | visualization | notion | theory | abstraction | 'shared vision' | 'esprit de corps' | 'decentralized planning' | 'knowledge sharing' | 'facilitated leadership' | 'learn and adapt' | 'learning organization' | common | 'shared view' | collective | 'common goals' | together
Innovation (as an outcome)		'new service' | 'new product' | 'radical change' | 'incremental change' | 'new measure' | 'new method' | 'new device' | 'new system' | innovation | invent | invention | 'new process' | 'new compound' | 'new content' | 'new generation' | 'new medicine' | 'new molecular' | 'new pharmaceutical' | 'new platform' | 'new process' | 'new solution' | 'new technique' | 'new technology' | 'new technologies' | 'new therapy' | 'new tool' | 'new treatment' | 'next generation' | next-generation | novation | novelty | patent | 'process development' | 'product development' | 'product launch' | 'product launch' | prototype | 'push the envelope' | re-engineering | 'significant progress' | 'dramatic improvements' | modernization | 'advanced technology' | 'new business' | 'new design' | 'new construction' | 'new facility' | 'new production' | 'new operation' | 'new development' | 'new project' | novation | 'new content' | 'new division' | 'new platform' | 'new software' | 'new game' | 'new things' | 'new lines of' | introduction | launch | 'new digital' | 'new direct-to-consumer' | 'new music' | 'new and improved' | 'new or improved'
Firm performance		performance | performed | beneficial | benefit | benefited | benefits | cash | cost | 'cost effective' | 'cost effectiveness' | 'cost efficient' | desirable | desire | earn | earnings | emolument | fecundity | fructuous | fruit | gain | gainful | income | lucrative | lucre | money | moneymaking | 'net income' | proceeds | productive | productivity | profit | 'profit making' | profitable | profits | profiting | propitious | prosper | returns | revenue | reward | rich | valuable | value | win | winnings | wins | yield | 'pay off' | 'paid dividends' | revenues | 'bottom line' | EBIT | EBITDA | result | resultant | outcome | outperform | sale