EXPLORING FIRM STRATEGIC ORIENTATIONS: A COMPLEMENTARITY PERSPECTIVE

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ABSTRACT

A firm's strategic orientation is a critical component of its organizational culture as it shapes its strategies, operations, and performance. Firms face meaningful trade-offs when they adopt traditional or emerging strategic approaches. Thus, a better understanding of various strategic orientations and their interplay is critical to guide scholars investigating organizational culture and senior executives looking to determine the appropriate strategic orientation(s) for their firms. This dissertation consists of two separate but interrelated essays, which investigate the concept of network centricity – an emerging firm strategic orientation reflecting the recent developments in information technology – as well as its interplay with other firm orientations and performance.

Leveraging the resource-based view and the VRIO framework, the first essay examines the relative impacts of customer centricity and competitor centricity on innovativeness, market position, and financial position. I apply advanced meta-analytic structural equation modeling (MASEM) techniques to study both strategic orientations simultaneously and estimate the model with 583 effect sizes from 179 independent samples obtained from 171 studies. This study also explores why some firms benefit more or less from customer or competitor centricity under various environmental conditions.

The second essay develops the concept of network centricity. I examine its individual performance outcomes as well as its interplay with customer centricity and competitor centricity to explore the complementarity among these strategic orientations. Increasingly, a firm's ability to engage in strategic partnerships to compete with other firm networks determines the success and failure of firms in the marketplace. I identify this phenomenon as network centricity and define it as a set of company-wide values, norms, and beliefs that promote the development of

firm's long-term multilateral partnerships with other organizations. I offer conceptualization and operationalization of the firm's network centricity and leverage data from multiple sources (Medtrack pharmaceutical business intelligence database, text analysis of the letters to shareholders in firm annual reports, Compustat) to explore the effects of complementarity of network centricity, customer centricity, and competitor centricity on firm performance.

This dissertation is dedicated to Olga, Andrew, and Anna.

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LIST OF ABBREVIATIONS

FE	fixed effects
GLS	generalized least squares
HQ	headquarters
LIWC	linguistic inquiry and word count
MASEM	meta-analytic structural equation modeling
OLS	ordinary least squares
ROA	return on assets
ROI	return on investment
R&D	research and development
SAMD	sample-adjusted meta-analytic deviancy
SEM	structural equation modeling
SIC	standard industrial classification
SME	small and medium enterprises
TSSEM	two-stage structural equation modeling
VRIO	value, rarity, inimitability, organization
WLS	weighted least squares

ESSAY ONE:

SHOULD COMPANIES FIGHT RIVALS OR INDULGE CUSTOMERS? A META-ANALYTIC ASSESSMENT OF THE IMPACTS OF CUSTOMER AND COMPETITOR CENTRICITY

Abstract

The positive effects of customer centricity and competitor centricity are well documented in the marketing literature. However, the relative importance of these firm strategic orientations under various conditions for different firms still remains unexplored. Leveraging the resource-based view and the VRIO framework, this study explores the relative impacts of customer centricity and competitor centricity on innovativeness, market position, and financial position. I apply an advanced meta-analytic structural equation modeling (MASEM) technique to study both strategic orientations simultaneously and estimate the model with 583 effect sizes from 179 independent samples obtained from 171 studies. The results reveal the complex nature of customer centricity and competitor centricity. Competitor centricity is more strongly associated with innovativeness than customer centricity, while customer centricity has a stronger impact on firm performance. This study also examines why some firms benefit more or less from customer or competitor centricity under various environmental conditions, such as firm size, firm type, industry type, and country context.

Keywords: *customer centricity; competitor centricity; innovativeness; firm performance; meta-analysis, MASEM*

Introduction

"*The essence of strategy formulation is coping with competition.*"

(Porter 1979)

"*If you're competitor-focused, you have to wait until there is a competitor doing something. Being customer-focused allows you to be more pioneering.*"

(Jeff Bezos, founder of Amazon; LaGesse 2008)

To what extent firms should focus on understanding and satisfying customer needs and/or on following and surpassing the activities of their competitors is still an ongoing debate among practitioners and researchers in the marketing literature. This issue has also attracted substantial attention in the business press as the dominant view supports that an emphasis on customers should come first (Bonchek and Cornfield 2016; Nelson 2017), while the alternative perspective stresses the importance of focusing on competitors (Hyken 2021). Similarly, academic literature discusses the potential benefits and drawbacks of a firm's customer centricity (Christensen 1997; Christensen and Bower 1996; Lee et al. 2015) and competitor centricity (Day and Wensley 1983; Luo, Rindfleisch, and Tse 2007). Moreover, prior research also highlights the tension between customer and competitor centricity and related trade-offs (Armstrong and Collopy 1996; Armstrong and Green 2007). Nevertheless, Day and colleagues emphasize the merits of both approaches and the need to maintain a balance between the firm's customer centricity and competitor centricity (Day and Nedungadi 1994; Day and Wensley 1988).

Customer centricity and competitor centricity are fundamental concepts in marketing that represent the two fundamental facets of an organization that adopts the marketing concept (Shapiro 1988).[1] A firm's *customer centricity* refers to the strategic orientation of the firm that is

[1] I use the terms "centricity" and "orientation" interchangeably when referring to specific firm strategic orientations throughout this paper, consistent with Fader (2020) and Lee et al. (2015).

centered on customer needs and interests (Deshpandé, Farley, and Webster 1993; Narver and Slater 1990). On the other hand, *competitor centricity* refers to a firm that prioritizes understanding and responding to the actions of competitors (Narver and Slater 1990). Oftentimes, firms pursue one of these strategic orientations or try to implement them both based on how senior managers view the relative importance of these strategic orientations in achieving firm objectives, existing organizational capabilities, or the current market situation (Day and Nedungadi 1994). Firms' proclivity to focus on customers or competitors impacts various facets of the company's operations. Specifically, it influences the type of information managers are exposed to, which ultimately affects their beliefs, mindsets, and decision-making (Armstrong and Collopy 1996; Day and Nedungadi 1994).

Companies constantly make choices related to the allocation of limited organizational resources and establish ways to compete via identification and implementation of specific firm strategic orientations (Slater, Olson, and Hult 2006). Both customer centricity and competitor centricity are important for firm performance. However, the simultaneous implementation of these strategic orientations, and maintaining a balance between them, could be a hardly attainable target for many companies (Day and Nedungadi 1994). Respectively, the following questions still remain actively discussed but unanswered in both academic literature and business press: How should firms maintain the balance between customer centricity and competitor centricity? Is one of these strategic orientations more important than the other? In which situations should firms prioritize customer and competitor centricity?

Customer and competitor centricity have been traditionally operationalized as two dimensions of a firm's market orientation (Narver and Slater 1990). However, over time marketing literature drifted away from a broad concept of market orientation to a more focused

concept of customer centricity of the firm (Crecelius et al. 2019; Fader 2020; Jayachandran et al. 2005; Shah et al. 2006). In addition, customer centricity and competitor centricity are often examined separately providing a one-sided perspective. However, academic literature stresses the importance of joint examination of different strategic orientations (Grinstein 2008b; Hakala 2011; Noble, Sinha, and Kumar 2002; Schweiger et al. 2019). Thus, a joint investigation of customer centricity and competitor centricity can offer a more complete and nuanced perspective. A series of studies examined both customer centricity and competitor centricity simultaneously (Atuahene-Gima 2005; Gatignon and Xuereb 1997; Noble, Sinha, and Kumar 2002; Ozkaya et al. 2015; Saboo and Grewal 2013). The insights suggest that while these strategic orientations are usually beneficial for firms, there are certain conditions when one of them could be more advantageous. On the one hand, competitor-centric firms may be preoccupied with matching their rivals and as a result sacrifice company profits (Armstrong and Collopy 1996). On the other hand, firms that predominantly focus on customers may overlook the development of emerging market trends and fail to track competitors' actions (Christensen and Bower 1996). Still, research on this issue remains scattered and this marketing phenomenon has not been sufficiently explored. Specifically, marketing literature lacks an understanding of the relative impact of these firm strategic orientations that could guide scholars and practitioners.

A comprehensive meta-analytic assessment can help to fill this research gap and extend our understanding of the relative impacts of customer centricity and competitor centricity on firm performance and innovativeness. While there are several meta-analytic studies of the broader concept of market orientation as a standalone phenomenon (e.g., Cano, Carrillat, and Jaramillo 2004; Kirca, Jayachandran, and Bearden 2005) or jointly with other strategic orientations (e.g., Grinstein 2008b; Schweiger et al. 2019), I could trace only a few meta-analyses that provide

insights into customer centricity and competitor centricity. As summarized in Table 1.1, these studies examined the relationship between market orientation and its components on innovation outcomes (Grinstein 2008a), the antecedents and consequences of new product innovation (Calantone, Harmancioglu, and Droge 2010), and drivers of new product performance (Tsai, Huang, and Tsai 2013).

---- *Insert Table 1.1 about here* ----

Notwithstanding the benefits of the meta-analytic work described above, these studies are different from the current study in several ways. First, these meta-analyses were structured to answer related but different research topics regarding the impacts of various strategic orientations on innovation and new product performance, but they do not focus on customer and competitor centricity as their focal constructs. As such, these studies do not offer insights into the impact of customer and competitor centricity on firm performance. Second, some of these studies were conducted more than a decade ago, included a relatively small number of effect sizes related to customer centricity and competitor centricity, or had methodological limitations. Finally, the relative impact of customer centricity and competitor centricity on firm outcomes was not explored.

My paper aims to address the debate regarding the relative importance of firms' customer centricity versus competitor centricity via a meta-analytic assessment of existing academic literature. I leverage the meta-analytic structural equation modeling (MASEM) approach. This technique combines structural equation modeling (SEM) and meta-analysis (Cheung 2015). Specifically, I employ an advanced TSSEM (two-stage structural equation modeling) MASEM approach that has several advantages over other meta-analytic techniques (Cheung 2015; Cheung and Chan 2005). By using the weighted least squares (WLS) estimation method, this approach

corrects the limitations of conventional approaches, like generalized least squares (GLS) estimation. I estimate the model with 583 effect sizes from 179 independent samples obtained from 171 studies. This meta-analysis covers studies published until the beginning of 2020.

This paper makes three contributions to the marketing literature. First, I integrate several decades of marketing literature on customer centricity and competitor centricity. In doing so, I provide a comprehensive analysis of prior research findings concerning these firm strategic orientations. This paper traces the historical development of the marketing concept, distinguishing between different approaches and conceptualizations, and highlights the importance of balancing between customer centricity and competitor centricity. While both strategic approaches are important and usually beneficial for firms, sometimes companies cannot afford to develop customer centricity and competitor centricity simultaneously. Moreover, academics and practitioners should be aware that various internal and external situations could make the adoption of one of these strategic orientations more important than the other.

Second, leveraging the resource-based view (Barney 1991) and the VRIO framework (Barney and Hesterly 2015), I assess and compare how customer centricity and competitor centricity impact firm innovativeness, market position, and financial position. By applying an advanced meta-analytic technique (TSSEM MASEM; Cheung 2015; Cheung and Chan 2005), I distinguish the impact of each strategic orientation while controlling for the role of the other. Previous meta-analytic studies provide limited insights related to the relationship between these strategic orientations and firm innovation. I extend this knowledge via advanced methodology and a much larger sample size. In addition, I examine the impact of customer centricity and competitor centricity on different aspects of firm performance: market position and financial position (Rubera and Kirca 2012).

Third, my investigation of moderators helps delineate the effects of theoretically relevant contextual factors that affect the relationships involving the effects of customer centricity and competitor centricity. Specifically, I extend the understanding of contextual moderators related to the impact of customer centricity and competitor centricity on innovativeness, market position, and financial position: firm size, firm type, industry type, and state of the country's economic development. In addition, I reconcile conflicting findings related to the moderating role of firm type (products vs. services; Calantone, Harmancioglu, and Droge 2010; Grinstein 2008a). Thus, my insights will help scholars and managers better understand the variation of business results across companies, industries, and countries. Overall, the findings of this paper should be beneficial to marketing academics investigating firm strategic orientations and industry practitioners who aim to maximize the efficiency and productivity of the firms.

Literature Review

Firm Strategic Orientations

Firm strategic orientation is a pivotal aspect of the company's operations. It has a major impact on multiple aspects of firm activities, organizational performance, and the development of the firm competitive advantage in the market. As a part of organizational culture (Deshpandé, Farley, and Webster 1993; Deshpandé and Webster 1989), a firm's strategic orientation reflects organizational norms, values, and beliefs, and guides firm employees on appropriate behaviors and overall approach to doing business. Strategic orientations both guide and help explain the decision-making process in organizations (Deshpandé, Farley, and Webster 1993).

Prior literature reveals the important role of firm strategic orientations in directing specific business actions of a company. Strategic orientations influence a company's marketing strategy (Noble, Sinha, and Kumar 2002), help achieve superior business performance (Slater,

Olson, and Hult 2006), and reflect broader strategic priorities of the firm (Gatignon and Xuereb 1997). Scholars examined various strategic orientations, including competitor orientation, customer orientation, employee orientation, engagement orientation, entrepreneurial orientation, innovation orientation, interaction orientation, learning orientation, market orientation, production orientation, selling orientation, and technology orientation (Gatignon and Xuereb 1997; Grinstein 2008b; Hakala 2011; Kirca, Jayachandran, and Bearden 2005; Kumar and Pansari 2016; Narver and Slater 1990; Noble, Sinha, and Kumar 2002; Ramani and Kumar 2008). However, among the multiplicity of strategic orientations developed over past decades, market orientation is probably the one most frequently studied in the marketing literature and adopted by firms.

Marketing Concept Evolution

Drucker (1974) indicates that the creation of a customer is the ultimate business purpose of a firm, while a customer is created through two basic functions of a company: marketing and innovation. These firm functions are also the only ones that ultimately generate firm performance (Drucker 1974). Marketing research has also shown that a combination of customer centricity and innovativeness are the characteristics of the best-performing firms (Deshpandé, Farley, and Webster 1993). Kirca, Jayachandran, and Bearden (2005) demonstrated that market orientation is positively related to innovation and firm performance. I plan to extend these findings considering the latest theoretical and methodological developments as well as capturing studies conducted since 2005.

A firm's market orientation (Kirca, Jayachandran, and Bearden 2005) has long been among the most widespread organizational strategic orientations (Kumar and Pansari 2016). Although the marketing concept was introduced in the 1950s, market orientation was

systematically and formally theorized only at the beginning of the 1990s. Two leading approaches emerged in the marketing literature (Homburg and Pflesser 2000; Jaworski and Kohli 2017): one is focused on behavioral attributes (i.e., Kohli and Jaworski 1990), while the other follows a cultural perspective (i.e., Narver and Slater 1990).

Kohli and Jaworski (1990) define market orientation as "the organizationwide *generation* of market intelligence pertaining to current and future customer needs, *dissemination* of the intelligence across departments, and organizationwide *responsiveness* to it" (Kohli and Jaworski 1990, p.6, emphasis in original). To note, while this approach represents *market* orientation, the conceptualization is focused on *customer* needs. Relatedly, the following studies often treated market orientation and customer orientation synonymously with 'market' being defined as a representation of potential customers of the firm (e.g., Deshpandé, Farley, and Webster 1993).

Narver and Slater (1990) propose an alternative conceptualization with three components of market orientation: customer orientation, competitor orientation, and interfunctional coordination. The first two aspects are focused on a thorough understanding of the firm's customers and competitors. The third component is closely connected to the first two and reflects the need for coordinated integration of firm resources targeted at the creation of superior customer value. While this approach is traditionally labeled as cultural, Narver and Slater (1990) note the importance of both cultural and behavioral aspects and define market orientation as the organizational *culture* that creates certain necessary *behaviors*.

The beneficial outcomes of market orientation are widely accepted by scholars (Cano, Carrillat, and Jaramillo 2004; Grinstein 2008a; Kirca, Jayachandran, and Bearden 2005; Schweiger et al. 2019). For many years market orientation was considered a source of sustainable competitive advantage that can safeguard superior firm performance (Sett 2018).

Consequently, market orientation remains among the most widespread organizational strategic orientations (Kumar and Pansari 2016) and is also among the top three most relevant topics for practitioners (Jedidi et al. 2021). However, driven by the rapidly changing business environment, the understanding of market orientation is still evolving (Sett 2018). Moreover, as more companies adopt this orientation, it no longer remains a source of competitive advantage, but rather becomes a cost of doing business (Hunt and Morgan 1995; Kumar et al. 2011). The ubiquitous firms' adoption of the marketing concept propelled scholars to consider alternative approaches and conceptualizations of this phenomenon. In recent years, marketing literature drifted away from a broad concept of market orientation to a more focused concept of customer centricity of the firm (Crecelius et al. 2019; Fader 2020; Jayachandran et al. 2005; Shah et al. 2006). These developments warrant a more thorough analysis of customers' and competitors' perspectives of the marketing concept.

Balancing the Focus on Customers and Competitors

The meaningful distinction between customer centricity and competitor centricity was brought up several decades ago (Day and Wensley 1983). Scholars point out the importance of both addressing customer needs and managing the pressure from rivals and claim that these two strategic directions are the fundamental aspects of business organizations' effective operations. Day and colleagues theorize about the benefits and challenges of pursuing customer centricity and competitor centricity and highlight the importance of both approaches (Day and Nedungadi 1994; Day and Wensley 1988). The choice of specific firm orientations may be driven by firm priorities, capabilities, and expenditures that the company is ready to carry out to handle related activities.

Nelson (2017) suggests that if competitors follow the actions of a certain company, while this firm keeps focusing on customers, the focal company will maintain an advantageous position and remain ahead of the competition. Similarly, Slater and Narver (1995) argue that firms should be able to change faster than their competitors to achieve sustainable competitive advantage. Such an approach could be necessary to survive in fast-paced and competitive markets. Companies need to have excellent customer-related intelligence as well as a permanent ability and willingness to change and innovate to remain ahead of their competitors. However, firms that develop customer centricity recognize that the process of obtaining customer-related information is among the most difficult and expensive (Day and Nedungadi 1994). Moreover, driven by the fast advances in the modern economy (Autio, Mudambi, and Yoo 2021), a company's gains due to superior customer insights might be short-lived as competitors can often copy firm strategies undermining its competitive advantage (Christensen, Cook, and Hall 2005).

Day and Wensley (1988) discuss the importance of balancing the focus of the company on customers and competitors. They also present the limitations brought by leveraging only one of the approaches. When firms are predominantly customer-centric, some of their customer-targeted objectives might be loosely related to everyday business activities. In addition, companies might be unaware of potential competitor actions and be unable to cope with rivals' customer-focused strategic moves. Alternatively, firms that rely too heavily on competitor centricity might miss meaningful market opportunities related to changing market structure and customer preferences. Such an approach usually limits experimentation and the introduction of innovative strategies that might change the nature of competition and help establish a firm's competitive advantage. In addition, companies might follow competitors which are inefficient and repeat their mistakes. Ultimately, neither approach alone provides a comprehensive

perspective that could successfully guide business leaders. Specifically, the current understanding of the field could benefit from further exploration of the comparative influence of customer centricity and competitor centricity on company outcomes.

Theoretical Development

The Relative Impact of Customer Centricity and Competitor Centricity

According to the resource-based view firms achieve a sustainable competitive advantage over their rivals to establish a leading position in the market (Barney 1991; Kozlenkova, Samaha, and Palmatier 2014). This competitive advantage is achieved via the utilization of the firm strategic resources and capabilities. However, it is not sufficient to acquire unique and valuable resources. Companies should also possess capabilities to efficiently leverage these resources and transform them into internal competencies and specific actions. An in-depth and up-to-date understanding of customer needs, wants, and aspirations, as well as the knowledge of competitors' latest moves and potential future actions, serve as an important basis for firm strategic actions.

The resources and capabilities of a firm can be categorized into four broad groups: financial, physical, individual, and organizational (Barney and Hesterly 2015). Due to firm resource heterogeneity, some companies may possess larger amounts of certain resources and thus be more proficient in accomplishing certain activities than other firms. Barney and Hesterly (2015) propose to analyze firm resources and capabilities with the help of the VRIO framework,[2] which captures the four characteristics of resources and capabilities that create sustainable competitive advantage: Value, Rarity, Imitability, and Organization. The value dimension

[2] The VRIO framework was introduced instead of the previously used VRIN framework (i.e., valuable, rare, inimitable, and non-substitutable) to acknowledge that firms should not only possess but also effectively leverage resources (Kozlenkova, Samaha, and Palmatier 2014).

reflects the degree to which a resource enables a company to exploit existing opportunities or minimize threats. The rarity dimension considers the number of companies that control a resource. Imitability captures the extent to which challenges associated with obtaining or developing a given resource result in firms' cost disadvantage. Finally, the organizational factor reflects the presence and efficiency of company's policies and procedures that enable a firm to exploit valuable, rare, and inimitable resources.

The firm's focus on customers or competitors is likely to have meaningful implications for company resources and capabilities and related market competitive advantage. As it is more difficult to obtain information related to customers than intelligence related to competitors (Day and Nedungadi 1994), the former will be rarer and more valuable than the latter. While there is usually a certain number of companies competing in the market, there is a multiplicity of customer segments, needs, and insights. Moreover, some of this customer information is tacit, making it difficult for both firms and customers to express, process, and comprehend. It might be easier to determine firm(s) that have leading market positions and focus market intelligence on these companies. However, it is a more demanding task to uncover which customer segments to focus on and how to gain related consumer insights. Choosing the best ways to exploit these insights is another challenge for firms. If the firm has a strong customer centric organization that ensures both a constant pull of new valuable information and internal capabilities to process this information, it becomes both a valuable (i.e., information) and an inimitable (i.e., internal capability) resource providing a more sustainable competitive advantage in the market. Such a firm would enjoy an ongoing advantage over competitors. Even if rivals manage to copy the firm's products or services over time, the focal firm will have more innovative solutions by that time, diminishing the efforts of competitor centric rivals and maintaining market competitive

advantage. Overall, firms that are focused on customers should enhance their performance more strongly than their competitor-centric rivals, despite the higher costs required to maintain customer centric organizational structures (Lee et. al 2015). Thus, customer centricity should enhance firm productivity by enabling them to focus on more profitable and high potential market segments faster and more effectively than their competitors (Sheth, Sisodia, and Sharma 2000).

In addition, the capabilities of a company depend on the firm's interaction with the market and how managers interpret and utilize external information based on various cues (Atuahene-Gima 2005). Driven by the firm's internal and external environment, managers adopt different mental models that reflect their understanding of the firm's competitive position and the potential to achieve competitive advantage (Day and Nedungadi 1994). The types of previously adopted firm strategic orientations may also impact the mental models of business leaders. However, what might seem to be the right action might turn out to be a suboptimal decision. For example, managers who focus on beating the competition are not always doing what is best for their firm (Armstrong and Collopy 1996). When a company prioritizes customer centricity over competitor centricity, managers focus on the generation and dissemination of specific information related to customers over competitors, respectively. The type of information that managers are exposed to (i.e., customer-focused versus competitor-focused) impacts their actions and priorities. For example, when employees are frequently exposed to the performance metrics of their competitors, managers might be willing to sacrifice company profits when they pursue the objective to outperform the rivals. Thus, excessive focus on competitor information and its utilization as a performance indicator could be detrimental to firm financial performance (Armstrong and Collopy 1996; Armstrong and Green 2007).

Furthermore, companies that adopt competitor centricity are often focused on establishing a competitive advantage in the market via direct comparison with their rivals (Day and Wensley 1983, 1988). Competitor centric firms sometimes treat the battle for customers as an ultimate prize they achieve by beating other companies. Such a target may become an obsession and hinder other firm performance indicators. While competitor understanding is important for the development of sound firm strategy and unique positioning, the hyper-competition blurs the distinction between the firms in the market. Porter (1996, p. 64) notes that "the more benchmarking companies do, the more they look alike." Although competitor centricity helps firms produce novel products, such market offerings are often not meaningful as they result in imitation instead of innovation (Im and Workman 2004). Finally, the downsides of excessive competitor centricity also include the issue that firms may overestimate their ability to match the activities of other organizations. Companies may successfully copy selected activities of their rivals, though, it is unlikely that they will be able to match the whole ecosystem of their competitors (Porter 1996). Overall, following the resource-based view, I hypothesize the following:

Hypothesis 1: Customer centricity is more positively associated with innovativeness (1a), market position (1b), and financial position (1c) than competitor centricity.

Contextual Moderators

In addition to examining the direct impact of customer centricity and competitor centricity on their outcomes, I also explore the role of contextual moderators. I expect that the magnitude of relationships will vary across different environments because the value of customer- and competitor-related resources depends on the context in which these resources are employed (Barney 1991; Barney and Hesterly 2015). Below, I provide the theoretical arguments leading to

my hypotheses related to the moderating role of firm size (large vs. small), firm type (services vs. products), industry type (high-tech vs. low-tech), and country context (emerging vs. developed). Based on the discussion in support of Hypothesis 1, I also predict that these moderating effects will be stronger for relationships involving customer centricity and its consequences than for relationships involving competitor centricity and its consequences.

Firm size. I predict that the impact of customer centricity and competitor centricity on their consequences will be more positive for large firms than for small and medium enterprises (SMEs). The development of new products is a complex and costly process. Not all firms have the resources required for the development of new innovative solutions efficiently. However, large companies have substantial financial resources and technological capabilities that small firms cannot match (Chandy and Tellis 2000). They benefit from economies of scale and can spread the costs and risks related to the development of new products and services across a large innovation portfolio. Large firms can also afford to have multiple innovation projects and be more willing to experiment leading to radical innovations that are especially risky (Sorescu and Spanjol 2008). As most innovations fail (Sharma, Saboo, and Kumar 2018), smaller firms with limited resources might be more cautious about developing risky breakthrough innovations that have the highest failure rate. Thus, large firms will be more predisposed and willing to experiment with new ideas that result in the development of innovative products.

The abundant financial resources of large firms enable them to employ and leverage appropriate organizational policies and procedures to efficiently manage various resources (VRIO framework; Barney and Hesterly 2015). Thus, for example, larger firms can afford the implementation of costly customer centric organizational structures, which nevertheless are beneficial for companies (Lee et. al 2015). Furthermore, as large firms often own multiple brands

(Morgan and Rego 2009), usually within the same product categories, customer and competitor information could be leveraged more efficiently, representing another beneficial aspect of the economy of scale for large companies. Based on the above, I state:

Hypothesis 2: Firm size moderates the relationships between customer centricity and its consequences (H2a) and competitor centricity and its consequences (H2b) such that these relationships are stronger for large firms than for SMEs.

Hypothesis 3: The moderating effects of firm size (large firms vs. SMEs) are stronger for the relationships between customer centricity and innovativeness (H3a), market position (H3b), and financial position (H3c) than for the relationships between competitor centricity and their consequences.

Firm type. The type of company output – tangible goods or intangible services – also has meaningful implications for the impact of customer centricity and competitor centricity on their outcomes. The differences between service offerings and manufactured goods include intangibility, inseparability (i.e., they are produced and consumed simultaneously), heterogeneity of quality and service standards, and perishability (Zeithaml, Parasuraman, and Berry 1985). It is relatively easy to evaluate the quality of tangible products and compare them with other offerings in the market. However, the quality evaluation of intangible services is a more complex process (Parasuraman, Zeithaml, and Berry 1985). When customers are choosing and evaluating services, they have fewer tangible cues to compare them with other solutions available in the market. In addition, service quality is evaluated not only based on the outcome of service as customers also consider the process of service delivery. A more complex nature of service offerings provides more opportunities for innovative solutions that firms may implement empowered by customer and competitor insights. That also makes the whole complex service

proposition a more inimitable resource according to the VRIO framework (Barney and Hesterly 2015). Thus, I expect a more meaningful impact of customer centricity and competitor centricity on their outcomes in service industries and state the following hypothesis:

Hypothesis 4: Firm type moderates the relationships between customer centricity and its consequences (H4a) and competitor centricity and its consequences (H4b) such that these relationships are stronger for service companies than for manufacturing firms.

Hypothesis 5: The moderating effects of firm type (service vs. manufacturing) are stronger for the relationships between customer centricity and innovativeness (H5a), market position (H5b), and financial position (H5c) than for the relationships between competitor centricity and their consequences.

Industry type. Industry affiliation presents another important dimension that might impact the role and importance of customer centricity and competitor centricity in the firm. Innovativeness is essential for high-technology companies to remain competitive (Dutta, Narasimhan, and Rajiv 1999; Rubera and Kirca 2012). High-technology markets are characterized by a high level of dynamism and a constant need for the introduction of innovative products and services. The ability to innovate fast and efficiently results in a pool of new customer offerings that often define a firm's market position and brand reputation (Aaker and Jacobson 2001). Firms operating in high-technology markets are critically dependent on the ability to capture the latest market trends and relevant information about customer needs and actions of their competitors as previously accumulated knowledge may become obsolete soon. This constant pool of up-to-date market knowledge becomes the basis for the development and

introduction of new technological products in a high-paced competitive environment. Driven by limited organizational resources, it also shifts organizational emphasis toward value creation (i.e., investments related to innovativeness) (Mizik and Jacobson 2003). Furthermore, according to the resource-based view, the complexity of high-technology propositions is more difficult to replicate leading to the establishment of firms' competitive advantage.

Market information is a more valuable resource in high-technology markets (VRIO framework; Barney and Hesterly 2015). The importance of customer and competitor information increases in technologically intensive industries as companies must replenish market knowledge that is deteriorating fast (Saboo and Grewal 2013). Prior research suggests that firms providing effective customer solutions are more efficient in high-profit industries (Lee et al. 2015). Less profitable industries are closer to commodity markets with firms providing standardized offerings and customers looking for the lowest price. Customers in the high-profit market, such as the high-technology industries, are more willing to pay for product novelty and customization. That further strengthens the importance of permanent monitoring of customer needs and competitor activities for the development of high-technology offerings to reflect the latest market dynamics and stay ahead of the competition with innovative propositions. Respectively, I predict that firms that thoroughly understand customers and competitors will be more innovative and have a stronger firm performance than their competitors in high-technology markets. More formally, I state:

Hypothesis 6: Industry type moderates the relationships between customer centricity and its consequences (H6a) and competitor centricity and its consequences (H6b) such that these relationships are stronger for high-tech companies than for low-tech firms.

Hypothesis 7: The moderating effects of industry type (high-tech vs. low-tech) are stronger for the relationships between customer centricity and innovativeness (H7a), market position (H7b), and financial position (H7c) than for the relationships between competitor centricity and their consequences.

Country context. I also expect the impact of customer centricity and competitor centricity to differ across countries based on the level of their economic development. Firms are increasingly operating globally covering both developed and emerging markets in a modern interconnected world (Autio, Mudambi, and Yoo 2021). The reflection of business differences across markets, and specifically the understanding of emerging countries' specifics and the ways to succeed there, is becoming the question of survival for many firms around the world (Burgess and Steenkamp 2013). This is especially important given the fact that emerging markets are expected to surpass developed markets and deliver the most economic growth in the coming years.

Emerging economies are radically distinct from mature markets (Sheth 2011). The cultural, regulative, and socioeconomic environment of emerging countries differs significantly from those of developed economies. Specifically, emerging markets are often characterized by rapid economic, political, and social changes; young and growing populations; and substantially different cultural and political systems (Burgess and Steenkamp 2006). While developed economies usually have stable demand, the market situation in emerging marketing is usually more uncertain. A firm's ability to generate innovative products in response to turbulent market conditions is critical for company success (Im and Workman 2004). Companies that can timely capture and leverage customer and competitor insights might gain a competitive edge in these

unstable markets (Jaworski and Kohli 1993). Following the VRIO framework (Barney and Hesterly 2015), an up-to-date understanding of customers and competition is a rarer resource in emerging economies. In addition, emerging markets allow firms to develop efficient business solutions at a lower cost (Burgess and Steenkamp 2006). Thus, companies may create and introduce innovative products and services faster and cheaper than similar offerings in developed markets. I therefore hypothesize:

Hypothesis 8: Country type moderates the relationships between customer centricity and its consequences (H8a) and competitor centricity and its consequences (H8b) such that these relationships are stronger for emerging countries than for developed countries.

Hypothesis 9: The moderating effects of country type (emerging vs. developed) are stronger for the relationships between customer centricity and innovativeness (H9a), market position (H9b), and financial position (H9c) than for the relationships between competitor centricity and their consequences.

Research Method

A meta-analysis is a dominant approach to synthesizing research findings and an essential research tool that can integrate and advance the knowledge base of the field (Aguinis et al. 2011; Grewal, Puccinelli, and Monroe 2018; Hulland and Houston 2020; Hunter and Schmidt 2004). Thus, meta-analytic assessment could be a valuable approach for such an important but scattered research domain as customer centricity and competitor centricity.

Literature Search

I conducted a multi-step procedure to search literature and identify relevant published and unpublished studies. In doing so, I followed approaches recommended by the literature and the procedures applied in previous meta-analyses to ensure the representativeness of my sample (Cooper, Hedges, and Valentine 2009; Rubera and Kirca 2012). First, I thoroughly examined and reviewed relevant strategic orientation literature examining firm focus on the market, customers, and competitors (Kirca, Jayachandran, and Bearden 2005; Kohli and Jaworski 1990; Narver and Slater 1990; Sett 2018; Varadarajan 2017) to determine the meaningful concepts and valid boundaries for my research. In the second step, I conducted a search in academic research databases ABI/Inform (PROQUEST) and EBSCO Business Source Complete. I have searched for the following terms in publication abstracts: "market orientation", "marketing orientation", "customer orientation", "customer centricity", "customer centric", "competitor orientation", and "competitor centricity". I have considered the publications since 1990 as this is the year when related constructs were operationalized, consistent with Kirca, Jayachandran, and Bearden (2005). The search was limited to studies written in English and included scholarly journal articles, conference proceedings, dissertations, or working papers. The initial search in ABI/Inform (PROQUEST One Business database) delivered 5,249 results. I examined the abstracts of these papers – and if needed the whole papers – to determine the relevance of the articles for my study.

The third step of my literature search involved conducting manual issue-by-issue searches of the leading marketing and management journals. I examined abstracts of the articles published in the following journals: *Journal of Marketing, Journal of Marketing Research, Journal of the Academy of Marketing Science, International Journal of Research in Marketing,*

Journal of Business Research, *Strategic Management Journal,* and *Academy of Management Journal*. Fourth, I applied the snowballing approach to detect additional studies by examining the references of the articles identified during the previous stages. Fifth, using the lists of studies included in other meta-analyses on similar topics ensured that all the relevant studies are included in my sample (Calantone, Harmancioglu, and Droge 2010; Grinstein 2008b; Kirca, Jayachandran, and Bearden 2005). I completed the search process at the beginning of 2020.

I applied several criteria to select primary studies for my data set. First, I checked that the articles conceptualized and measured strategic orientations at the firm level. Thus, for example, I excluded studies investigating the customer centricity of salespeople. Second, I retained studies that reported necessary statistics (i.e., sample size, correlation coefficients) suitable for further meta-analytic assessment. Thus, I removed conceptual papers and empirical studies that do not report correlations for the variables of interest. Third, I checked for the presence of articles with substantially overlapping samples and selected the ones that provided the most appropriate information. I removed the other publication(s) that used the same variables or very similar samples. My database included 212 studies that I coded to use in this meta-analysis.

Coding Procedures

To minimize coding error, I developed a coding protocol that specified the information to be extracted from each study, as well as a description of key variables of interest (Lipsey and Wilson 2001; Rubera and Kirca 2012). Table 1.2 summarizes the variables included in this study. I trained a graduate research assistant, who coded the entire sample of studies according to the coding protocol. Then, I independently coded 40 studies (19% of the sample) with concurrence on more than 95% of the coded data. The discrepancies were discussed and resolved through discussion. I extracted the following information for each study: the sample size, the

correlations for the variables of interest, the reliability of each variable, and study characteristics. The coding resulted in 597 effect sizes capturing the relationships between customer centricity and competitor centricity and their outcomes.

---- *Insert Table 1.2 about here* ----

Outliers

I leveraged the sample-adjusted meta-analytic deviancy (SAMD) statistic to detect outlier coefficients in my dataset (Huffcutt and Arthur 1995). The SAMD technique calculates the difference between the mean sample-weighted effect size and the effect size of each primary study. It then corrects that difference for the sample size of the study. The elimination of extreme values by the SAMD statistic makes the meta-analytic data sets more representative (Huffcutt and Arthur 1995). Specifically, this procedure helps reduce "residual variabilities and a corresponding increase in the percentage of variance accounted for by statistical artifacts after removal of outlier study coefficients" (Huffcutt and Arthur 1995, p. 327). Following the SADM procedure, I identified and removed 14 outliers that constitute 2.3% of the original dataset of 597 effect sizes.[3] Ultimately, the final dataset for bivariate analysis includes 583 effect sizes from 179 independent samples obtained from 171 studies. Customer centricity consisted of 352 effects that relate to innovativeness (n = 153) and firm performance (n = 199). Customer centricity consisted of 231 effects that relate to innovativeness (n = 88) and firm performance (n = 143).

[3] I eliminated seven effect sizes for customer centricity - innovativeness (4.4 %), two effect sizes for customer centricity - firm performance (1.0 %), two effect sizes for competitor centricity - innovativeness (2.2 %), three effect sizes for competitor centricity - firm performance (2.1 %). The proportion of eliminated effect sizes is below those reported in other meta-analyses that use this approach (Blume et al. 2010; Huffcutt and Arthur 1995; O'Boyle Jr. et al. 2012).

Data Analysis

Data analysis was performed following the recommended guidelines for meta-analyses (Lipsey and Wilson 2001). These approaches were also applied in previous meta-analyses (Good et al. 2022; Rubera and Kirca 2012). After collecting and aggregating individual study results, I adjusted the effect sizes for measurement error. In doing so, I divided the correlation coefficient by the product of the square root of the reliabilities of the two constructs (Lipsey and Wilson 2001). When reliability scores were not available, I used average reliability for that variable across all studies. Then, the reliability-corrected correlations were transformed into Fisher's z-coefficients. As a next step, z-coefficients were averaged and weighted by an estimate of the inverse of their variance (N – 3). This approach ensures that a greater weight is assigned to more precise estimates with larger sample sizes. After that, z-scores were transformed back to obtain the revised correlation coefficients (Lipsey and Wilson 2001). I also calculated 95% confidence intervals around the estimate to reflect the degree of precision of the effect size estimate.

In the following steps of my analysis, I aimed to address the 'file drawer problem' which refers to the situation when studies are conducted but not reported (Rosenthal 1979). I calculated fail-safe N which estimates the number of non-reported studies with the null hypothesis that would make the estimated results non-significant (Lipsey and Wilson 2001). In other words, a fail-safe N of 1,000 would mean that the estimated result would be insignificant if there were 1,000 other unknown empirical studies. This static is also called availability bias.

Meta-Analytic Structural Equation Modeling (MASEM)

I examined the unique impact of customer centricity and competitor centricity on their consequences (innovativeness, market position, financial position) using the meta-analytic structural equation modeling (MASEM) approach (Cheung 2015; Cheung and Chan 2005). This

approach combines structural equation modeling (SEM) and meta-analysis and allows researchers to estimate each individual relationship after controlling for the impact of other variables in the model (Cheung 2015). General MASEM conceptualization, the advantages of this approach in testing complex models, and the key steps in its implementation were presented by Viswesvaran and Ones (1995). Cheung (2015) summarizes three MASEM methods that have emerged over time: the univariate approach (Hedges and Olkin 1985; Hunter and Schmidt 2004), the generalized least squares (GLS) approach (Becker 1992, 1995), and the two-stage structural equation modeling (TSSEM) approach (Cheung 2015; Cheung and Chan 2005).

There is consensus that multivariate approaches (GLS, TSSEM) are preferable to univariate approaches as the latter do not take into account the dependence among the correlation matrices in MASEM (Cheung 2015). Among the multivariate approaches, the TSSEM approach is superior to the GLS approach. TSSEM leverages the weighted least squares (WLS) estimation method and addresses the limitations of the GLS technique. Specifically, Cheung (2015, p. 223, emphasis in original) describes the following advantages of the TSSEM technique over the GLS approach: "First, a single *correct* sample size is used.[4] Second, the correlation matrix can be correctly analyzed. Third, it includes the sampling variations of the pooled correlation matrix in the stage 2 analysis." Comparing the results of different MASEM approaches Cheung and Chan (2005, p. 53) summarize that "the TSSEM approach was found to be the best among all the methods." Thus, the TSSEM technique is considered an advanced MASEM technique that offers several advantages over conventional approaches (Cheung 2015; Jak 2015). I leverage this advanced approach in my study.

[4] Conventional MASEM approaches use the arithmetic mean, the harmonic mean, or the median for sample size calculation (Cheung 2015; Cheung and Chan 2005).

To construct the meta-analytic aggregate correlation matrix, I coded primary studies for 21 pairs of correlations among seven constructs of interest: customer centricity, competitor centricity, innovativeness, market position, financial position, firm size, and competitive intensity, as presented in Table 1.3. Consistent with meta-analyses published in prior research, I constructed a large (seven by seven) correlation matrix reflecting zero-order correlation coefficients between the variables of interest (Viswesvaran and Ones 1995). In my meta-analytic correlation matrix, the lowest number of effect sizes was acquired for the market position-competitive intensity relationship (n = 6), while I have obtained a large number of effect sizes for key relationships investigated in this study. Ultimately, I constructed the pooled average correlation matrix reported in Table 1.3 that was used as an input for MASEM analysis. The analysis was conducted using webMASEM, a web application for conducting MASEM analysis (Jak et al. 2021).

---- *Insert Table 1.3 about here* ----

Moderation Analysis

I assessed moderating effects first by using sub-group analysis (Good et al. 2022; Kirca et al. 2011). First, I estimated the homogeneity of the population by leveraging Q-statistic (Hedges and Olkin 1985). Q- statistic is calculated as $Q = \sum (n_i - 3) (z_i - \bar{z})^2$ with chi-square distribution at (k-1) degrees of freedom (Hedges and Olkin 1985). A significant Q-value demonstrates statistical heterogeneity and indicates that the search for potential moderating effects is appropriate. I examined the moderating effects of firm size, firm type, industry type, and county type.

Results

Table 1.4 presents the bivariate correlations between firm strategic orientations (customer centricity and competitor centricity) and their consequences (innovativeness and firm performance). I summarized the number of effect sizes, total sample size, mean-corrected correlations, standard errors, and 95% confidence intervals around the average-corrected correlations for each pairwise relationship. I also present the availability bias for each relationship and Q-statistics, which is a test of the homogeneity of population correlations. When a Q-value is significant, it indicates that the effect size estimates at the study level do not reflect the common population effect size. Therefore, further examination is required to identify the potential moderating effects.

---- *Insert Table 1.4 about here* ----

The bivariate results show that customer centricity (r = .480, 95% CI = 0.470 to 0.491) is less strongly associated with innovativeness than competitor centricity (r = .515, 95% CI = 0.500 to 0.530), as the confidence intervals around the mean effect size do not overlap. The fail-safe sample sizes (i.e., publication bias) for these relationships were 6,957 and 2,967, respectively. This indicates that the results of my meta-analysis are unlikely to be influenced by unpublished studies (Rosenthal 1979). Notwithstanding, I find the opposite impact of firm strategic orientations on performance. Customer centricity (r = .351, 95% CI = .342 to .360) was more strongly associated with firm performance than competitor centricity (r = .324, 95% CI = 0.312 to 0.336). Likewise, I did not identify a publication bias issue, as the fail-safe sample sizes for these relationships were 7,322 and 3,744, respectively. Thus, the bivariate analysis shows that customer centricity and competitor centricity impact firm outcomes differently. While the former

has a stronger impact on firm performance, the latter is more efficient at developing innovativeness.

I found no significant difference between the impact of customer centricity and competitor centricity on different types of firm performance. The confidence interval of the relationship between the strategic orientations of interest on financial position (CI = .256 to .289; CI = .235 to .278) and market position (CI = .153 to .194; CI = .131 to .189) overlapped. Similarly, there was no statistically significant difference between the impact of customer centricity (CI = .493 to .538) and competitor centricity (CI = .448 to .510) on new product performance. Nevertheless, customer centricity (r = .530, 95% CI = .497 to .563) has a stronger impact on the quality of products and services than competitor centricity (r = .354, 95% CI = .303 to .406).

Meta-Analytic Structural Equation Modeling (MASEM)

I leverage the advanced TSSEM MASEM technique (Cheung 2015; Cheung and Chan 2005) that can efficiently estimate the relationships, minimize the methodological issues of alternative approaches, and provide consistent results across all models, as shown in Table 1.5. This approach also allows for the estimation of the individual impact of each variable, controlling for other factors in the model. Specifically, I aim to differentiate the individual impacts of customer centricity and competitor centricity, as these firm strategic orientations are highly correlated (.50) and are often conceptualized as parts of market orientation. First, I tested Model 1 capturing hypothesized relationships. The model did not have a good fit with SRMR > 10. Then, I estimated Model 2 with additional relationships between innovativeness and firm performance, following literature suggestions (Rubera and Kirca 2012). Finally, I estimated Model 3 with additional controls for firm size and competitive intensity. Model 3 fits the data

well (χ^2 (6) = 38.834, RMSEA = 0.010, c = 0.043, CFI = 0.942) and I use it for my analysis presented below.

---- *Insert Table 1.5 about here* ----

My analysis further confirms the complex nature of the roles of customer centricity and competitor centricity in the firm. In particular, the results indicate that, after controlling for the effects of other variables in the model, the effects of both customer centricity (β = .214, p < .001) and competitor centricity (β = .264, p < .001) on innovativeness are statistically significant. Importantly, competitor centricity is more strongly associated with innovativeness than customer centricity, which is the opposite of what I predicted in Hypothesis 1a. However, in support of Hypotheses 1b and 1c, I found a statistically significant relationship between firm performance and customer centricity, but not competitor centricity. Specifically, customer centricity is positively associated with financial position (β = .126, p < .01), while the relationship between competitive centricity and financial position is positive but not significant (β = .042, *n.s.*). I found a similar pattern for the relationships between firm strategic orientation and marker position. Customer centricity is positively associated with market position (β = .120, p < .05), while the impact of competitive centricity on market position is positive but not significant (β = .062, *n.s.*). My analyses also showed that, controlling for the impact of customer centricity and competitor centricity, the innovativeness-firm performance relationship is significant for financial position (β = .208, p < .05), but not for market position (β = .026, *n.s.*).

Moderation Analysis

I examined the impact of contextual effects using subgroup analysis (Kirca et al. 2011). To analyze the moderating effects, I grouped the study samples into separate categories based on different study characteristics. The results are presented in Table 1.6 (firm size; Hypotheses 2-3),

Table 1.7 (firm type; Hypotheses 4-5), Table 1.8 (industry type; Hypotheses 6-7), and Table 1.9 (county type; Hypotheses 8-9).

---- *Insert Table 1.6 about here* ----

---- *Insert Table 1.7 about here* ----

---- *Insert Table 1.8 about here* ----

---- *Insert Table 1.9 about here* ----

As presented in Table 1.6, customer centricity was more strongly associated with market position ($r = .272$ vs. $r = .084$, $p < .01$) and financial position ($r = .252$ vs. $r = .202$, $p < .01$) for large companies (vs. SME) but less strongly associated with innovativeness ($r = .472$ vs. $r = .539$, $p < .01$). As for competitor centricity for large (vs. small) firms, it was more strongly associated with innovativeness ($r = .500$ vs. $r = .493$, $p < .01$) but less strongly associated with financial position ($r = .202$ vs. $r = .284$, $p < .01$). I also identified that for large firms the impact of customer centricity (vs. competitor centricity) was stronger on financial position ($r = .252$ vs. $r = .202$, $p < .01$), but weaker on innovativeness ($r = .472$ vs. $r = .500$, $p < .01$). I had a different pattern for SMEs. Customer centricity (vs. competitor centricity) in small companies had a stronger impact on innovativeness ($r = .539$ vs. $r = .493$, $p < .01$) but a weaker impact on market position ($r = .084$ vs. $r = .101$, $p < .01$) and financial position ($r = .202$ vs. $r = .284$, $p < .01$). Thus, hypotheses 2 and 3 received partial support, except for H3b which I could not properly test due to data limitations.

Table 1.7 presents results for the moderating effects of firm type. I supported H4b, H5a, H5c and received partial support for the other hypotheses. Specifically, customer centricity is more strongly associated with innovativeness ($r = .653$ vs. $r = .444$, $p < .01$) and market position ($r = .188$ vs. $r = .137$, $p < .01$) for service (vs. manufacturing) firms, but not with financial

position ($r = .280$ vs. $r = .309$, $p < .01$). Competitor centricity is more strongly associated with all three outcomes for service firms: innovativeness ($r = .530$ vs. $r = .390$, $p < .01$), market position ($r = .391$ vs. $r = .101$, $p < .01$), and financial position ($r = .276$ vs. $r = .223$, $p < .01$). For service firms, the impact of customer centricity (vs. competitor centricity) was stronger on innovativeness ($r = .653$ vs. $r = .530$, $p < .01$) and financial position ($r = .280$ vs. $r = .276$, $p < .01$), but weaker on market position ($r = .188$ vs. $r = .391$, $p < .01$). For manufacturing companies, customer (vs. competitor) centricity had a stronger impact on innovativeness ($r = .444$ vs. $r = .390$, $p < .01$), market position ($r = .137$ vs. $r = .101$, $p < .01$), and financial position ($r = .309$ vs. $r = .223$, $p < .01$).

The moderating effects of industry type are presented in Table 1.8. Due to data limitations, I could conduct only some analyses related to market position and financial position. I reveal that both customer centricity ($r = .498$ vs. $r = .401$, $p < .01$) and competitor centricity ($r = .486$ vs. $r = .385$, $p < .01$) were more strongly associated with innovativeness for high-tech (vs. low-tech) companies. For high-tech firms, the impact of customer centricity on innovativeness was stronger than the impact of competitor centricity ($r = .498$ vs. $r = .486$, $p < .01$). For low-tech companies, the impact of customer (vs. competitor) centricity was stronger on innovativeness ($r = .401$ vs. $r = .385$, $p < .01$), but weaker on market position ($r = .076$ vs. $r = .124$, $p < .01$) and financial position ($r = .142$ vs. $r = .155$, $p < .01$). Thus, H7a is supported, H6a and H6b are partially supported, H7b and H7c are not supported.

Table 1.9 presents results for the moderating effects of country context. As predicted in H8a, customer centricity is more strongly associated with innovativeness ($r = .561$ vs. $r = .422$, $p < .01$), market position ($r = .253$ vs. $r = .158$, $p < .01$), and financial position ($r = .421$ vs. $r = .180$, $p < .01$) for emerging (vs. developed) markets. I also found support for H8b. Customer

centricity is also more strongly associated with innovativeness ($r = .670$ vs. $r = .386$, $p < .01$), market position ($r = .304$ vs. $r = .095$, $p < .01$), and financial position ($r = .334$ vs. $r = .227$, $p < .01$) for emerging (vs. developed) markets. Results show that in emerging markets the impact of customer (vs. competitor) centricity was stronger on financial position ($r = .421$ vs. $r = .334$, $p < .01$), but weaker on innovativeness ($r = .561$ vs. $r = .670$, $p < .01$) and market position ($r = .253$ vs. $r = .304$, $p < .01$). The situation with developed markets was different. The impact of customer (vs. competitor) centricity was stronger on innovativeness ($r = .422$ vs. $r = .386$, $p < .01$) and market position ($r = .158$ vs. $r = .095$, $p < .01$), but weaker on financial position ($r = .180$ vs. $r = .227$, $p < .01$). Thus, H9a-c received partial support.

Overall, five of my moderating hypotheses received full support, eleven hypotheses had partial support, and three hypotheses were not supported.[5] The summary results of hypotheses 2-9 are visualized in Table 1.10.

---- *Insert Table 1.10 about here* ----

Discussion

This study strengthens my understanding of the role of customer centricity and competitor centricity. Building on aggregated results from 179 samples published in 171 studies, I meta-analytically summarize more than three decades of research on these firm strategic orientations. I scrutinize the complex nature of customer centricity and competitor centricity through the lens of a resource-based view (Barney 1991) and the VRIO framework (Barney and Hesterly 2015). Then, I empirically test their individual and relative role in driving innovativeness and firm performance via an advanced MASEM approach (Cheung and Chan

[5] Hypotheses H2b, H3a, H3b, H6a, H6b, H7b, and H7c could not be fully tested due to data limitations (i.e., a limited number of observations for some of the sub-groups).

2005). I also study contextual moderators that strengthen the impact of these firm strategic orientations.

Scholars have long discussed both the meaningful differences between customer centricity and competitor centricity and the importance of balancing both strategic orientations (Day and Nedungadi 1994; Day and Wensley 1983, 1988). Each of these strategic orientations is important for firm performance, however, the simultaneous implementation of customer centricity and competitor centricity, and maintaining a balance between them, could be a hardly attainable target for many companies (Day and Nedungadi 1994). Firms that aim to simultaneously deliver superior customer offerings and match other players in the market are likely to face growing organizational complexity and associated high operating costs. Moreover, the implementation of customer centricity may impede the development of competitor centricity (and vice versa) given the conflicting priorities of these strategic orientations. Thus, the understanding of the relative impact of customer centricity and competitor centricity on firm outcomes could enable a more efficient distribution of limited organizational resources. The awareness of various contextual situations that could strengthen the impact of firm strategic orientations could further improve firm efficiency and performance outcomes.

Theoretical Contributions

First, this research illustrates the complex role of customer centricity and competitor centricity. My results indicate that while the former is more important in driving market position and financial position, the latter is more impactful in strengthening firm innovativeness. Thus, firms should prioritize the focus on customers over competitors if they plan to develop their market and financial performance. In addition, my study suggests that controlling for customer centricity and competitor centricity, innovativeness positively impacts financial position but not

market position. This further strengthens the importance of customer centricity as I did not identify a statistically significant impact of either competitor centricity or innovativeness on market position.

At the same time, the relative impact of firm strategic orientations on innovativeness was opposite of the hypothesized direction; the focus on competitors is more impactful. There could be several explanations for this outcome. Firm rivalry adds urgency to firm actions. Faced with immediate or upcoming competitive moves, companies have to adjust their internal processes and speed up innovation to remain competitive (Atuahene-Gima 2005). In addition, customer centric firms may address expressed customer needs but omit the latent ones (Slater and Narver 1998). Relatedly, customer insights might lead to limited innovation improvements as marketers empowered by this information focus on satisfying existing customer needs and overlook major market shifts driven by competitive moves (Christensen, Cook, and Hall 2005).

Second, my study indicates that the effects of customer and competitor centricity on innovativeness, market position, and financial position are context dependent and that various internal and external factors could strengthen these relationships. In this regard, prior research presents a mixed picture. For example, Grinstein (2008a) demonstrates that the impact of market orientation on innovation outcomes varies across firm product types. However, analyzing customer and competitor centricity, Calantone, Harmancioglu, and Droge (2010) hypothesize the absence of moderation between products and services. I examine the moderating role of firm type and extend the learnings into new contexts. I also examine the moderation between customer centricity and competitor centricity and firm performance. The findings point to the importance of considering the role of firm strategic orientations across firm, industry, and country contexts.

Finally, the advanced MASEM methodological approaches (i.e., TSSEM; Cheung and Chan 2005) should be considered for future meta-analytic studies investigating complex structural equation models. MASEM models are used to estimate the relationships of interest while controlling for other variables in the model. TSSEM technique provides several advantages over conventional approaches. Specifically, it applies the appropriate sample size, correctly analyzes the correlation matrix, and includes the sampling variations of the pooled correlation matrix. Scholars may choose from a variety of software applications ranging from R to user-friendly webMASEM (Jak et al. 2021).

Managerial Implications

My research provides several insights for business leaders considering the adoption and development of firm strategic directions. Company executives face the dilemma of choosing strategic priorities for their firms given limited organizational resources. Ultimately, companies do not adopt a single strategic orientation, but rather different strategic orientations gradually evolve and compete within the organizations (Gebhardt, Carpenter, and Sherry 2006; Noble, Sinha, and Kumar 2002). Day and Nedungadi (1994) discuss the importance of the balance between customer centricity and competitor centricity. However, such a balance is potentially neither attainable nor desirable for *every* firm, and the ideal situation may vary based on individual circumstances. Driven by internal and external constraints, firms may choose the optimal balance that would fit their objectives and organizational resources and ultimately lead to superior performance (Slater, Olson, and Hult 2006). Business leaders should understand the specifics of both approaches to develop the equilibrium of customer centricity and competitor centricity according to their organizational objectives. Managers should also consider specific

business circumstances when the impact of customer centricity and competitor centricity is more prominent (i.e., SMEs, services firms, high-technology companies, and emerging markets).

Furthermore, firm strategic orientation impact managerial mindsets or mental models. As managers are exposed to different information, it shapes their mindsets and priorities (Armstrong and Collopy 1996; Day and Nedungadi 1994). Managerial mental models prompt specific organizational focuses, including customer-oriented, competitor-centered, or both. As customers and competitors are the two most prominent characteristics of a competitive market (Day and Nedungadi 1994), each of these groups becomes a dimension along which managers can assess the competitive advantage of their firms. When companies balance the focus on both dimensions, it allows them to better understand both rivals and clients and consider both perspectives in organizational decision-making. As an outcome, such firms have the most stable strategies that both help control costs and strengthen customer-related performance indicators.

Limitations and Future Research

Despite study contributions, it has several limitations that should be considered during the interpretation of the research findings. First, as with any meta-analysis, my study is constrained by the subject matter and parameters of the original studies that serve as its basis (Hunter and Schmidt 2004). Specifically, my research was limited to exploring the effects present in existing published studies. The lack of data or limited descriptions provided in the original research limited my ability to code or include specific studies. Second, most original studies in my sample are cross-sectional in nature, which limits the ability to make causal inferences regarding the relationships between customer and competitor centricity and their consequences. Still, by aggregating a substantial amount of data over several decades and founded on the theoretical support provided by this body of research summarized in the

theoretical development section, I can provide evidence regarding the causal directions of the focal relationships investigated in this study. Third, I only examined such firm outcomes as innovativeness and firm performance because I could obtain a sufficient number of effect sizes for these relations. This means that few studies considered other important customer and firm level outcomes. Specifically, future research should examine other customer outcomes such as brand equity, customer satisfaction, customer loyalty, customer acquisition and retention, word of mouth, and customer lifetime value using primary data (Katsikeas et al. 2016). Fourth, I could not fully test some of my moderation hypotheses due to data limitations (i.e., a limited number of observations for some of the sub-groups). Future scholars may also explore other potential moderators for the relationships between customer centricity and competitor centricity and their consequences.

Despite the limitations, my study presents a novel perspective on the relative impact of firm strategic orientations and identifies future research opportunities in this domain. For example, marketing researchers may scrutinize the role of adaptive marketing capabilities (Day 2011). The accelerating complexity of markets brings forward the need to re-consider marketing capabilities as companies have limited ability to respond to fast-changing market demands. The exploration of the interplay and balance of customer centricity and competitor centricity presents another potential area for future investigations. Prior research suggests that at least a minimum level of customer centricity should be present for competitor centricity to have a positive impact on firm outcomes (Grinstein 2008a). Considering the competitors' perspective firms may perform an additional 'reality check' and ultimately strengthen customer centricity (Christensen and Bower 1996). Thus, companies should develop both strategic orientations in parallel, despite associated organizational complexity and financial constraints. Moreover, the most successful

firms balance the focus on both dimensions (Day and Nedungadi 1994). That allows companies to better understand rivals and clients and consider both perspectives in organizational decision-making. As an outcome, such firms have the most stable strategies that both help control costs and strengthen customer-related performance indicators. Nevertheless, Day and Nedungadi (1994) note that only a limited number of firms can efficiently maintain this equilibrium due to multiple challenges associated with achieving and maintaining the balance between the focus on customers and competitors.

Future researchers may also explore the interplay of customer centricity and competitor centricity with organizational inter-functional relationships (Chernetsky, Hughes, and Schrock 2022). Specifically, as marketing and sales departments are the two functions directly dealing with customers and competitors, scholars may explore how different firm strategic orientations impact inter-functional dynamics. Additionally, which organizational functions play the key role in promoting specific firm strategic orientations in the organization or maintaining their balance? Future meta-analytic research may also examine potential mediators of the impact of customer centricity and competitor centricity on firm outcomes.

Finally, investigating firms' focus on customers and competitors, future research may consider the role of coopetition, which is defined as a situation when rival firms simultaneously compete and collaborate (Devece, Ribeiro-Soriano, and Palacios-Marqués 2019; Gernsheimer, Kanbach, and Gast 2021). Marketing literature suggests that coping with competition is not a zero-sum game and examines the positive aspects of collaboration with rivals through cooperative alliances (Luo, Rindfleisch, and Tse 2007; Wu et al. 2015). Notwithstanding the potential benefits of coopetition, collaboration with competitors may backfire long term. Prior research has demonstrated that when companies are extensively involved in collaborative

alliances with rivals, they become less customer-oriented over time (Rindfleisch and Moorman 2003).

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APPENDIX A: TABLES

Table 1.1. Meta-Analytic Studies Investigating Customer Centricity and Competitor Centricity

Article	Focus of the article	Period	# of effect sizes *	CuC/CoC impact on innovation	CuC/CoC impact on performance	The relative impact of CuC/CoC	Contextual moderators *	MASEM approach
This research	**The relative impact of customer centricity and competitor centricity on innovativeness and firm performance.**	**1990 – 2019**	**583**	✓	✓	✓	✓	**WLS**
Grinstein (2008a)	The impact of market orientation and its components on innovation consequences.	1994 – 2006	41	✓	--	--	--	--
Calantone, Harmancioglu, and Droge (2010)	Antecedents and consequences of innovation in new product development.	1970 – 2006	132	✓	--	--	✓	GLS
Tsai, Huang, and Tsai (2013)	Market drivers of new product performance.	until 2011	21	✓	--	--	--	GLS

* related to customer/competitor centricity.

Notes: CuC = customer centricity; CoC = competitor centricity; MASEM = meta-analytic structural equation modeling; GLS = generalized least squares; WLS = weighted least squares.

Table 1.2. List of Variables

Variable	Definition
Customer centricity	Firm's strategic orientation focused on the understanding of current and future customers (Narver and Slater 1990).
Competitor centricity	Firm's strategic orientation focused on the understanding of current and potential competitors (Narver and Slater 1990).
Innovativeness	Firm's adoption of new ideas which impacts the development and introduction of new products (Rubera and Kirca 2012).
New product performance	Market performance of firm's new products.
Service/product quality	Quality of firm's products and services.
Market position	Firm performance measures that are focused on revenues (i.e., sales, sales growth, market share) (Rubera and Kirca 2012).
Financial position	Firm performance measures that are focused on the cost of operations (i.e., profit, ROA, ROI) (Rubera and Kirca 2012).
Large firms	Firms with 500 and more employees.
SMEs	Firms with less than 500 employees.
Services firms	Companies that have primarily intangible output (e.g., banks, hospitality, consulting).
Manufacturing firms	Companies that produce primarily physical products (e.g., electronics, industrial equipment, furniture).
High-tech industry	Industries with a high level of technological intensity (e.g., biotechnology, semiconductors, aircraft).
Low-tech industry	Industries with a low level of technological intensity (e.g., food products, wholesale trade, sporting goods).
Emerging country	Developing economies and economies in transition (2020 UN country classification; e.g., China, Russia, Pakistan, Ghana).
Developed country	Developed economies (2020 UN country classification; e.g., USA, Germany, Japan, Australia).

Table 1.3. Meta-Analytic Correlation Matrix

	1	2	3	4	5	6	7
1. Customer centricity	1.0	111 (24,084)	53 (13,133)	25 (10,546)	73 (24,002)	33 (15,157)	60 (19,234)
2. Competitor centricity	.504	1.0	42 (8,591)	17 (3,691)	44 (11,205)	26 (5,967)	28 (6,571)
3. Financial position	.221	.184	1.0	15 (4,012)	16 (3,104)	7 (1,420)	17 (3,743)
4. Market position	.164	.142	.395	1.0	9 (5,952)	6 (5,380)	12 (7,189)
5. Innovativeness	.347	.373	.270	.093	1.0	12 (6,485)	27 (10,891)
6. Competitive intensity	.108	.135	-.134	.062	.072	1.0	18 (8,225)
7. Firm size	.043	.033	.078	.351	.041	.031	1.0

Notes: Average sample-size-weighted correlation (r) values are reflected below the diagonal. The number of studies per correlation coefficient (k) and total sample size per correlation coefficient (N, in parentheses) are reflected above the diagonal.

Table 1.4. Overview of Consequences of Customer Centricity and Competitor Centricity

Relationships		No. of Effects	Total Sample Size	Corrected Mean[a] r	SE	95% Confidence Interval	Availability Bias[b]	Q-Statistic[c]
Innovativeness	**CuC**	**153**	**36,416**	**.480 ****	**.005**	**.470 to .491**	**6,957**	**2,895**
	CoC	**88**	**17,718**	**.515 ****	**.008**	**.500 to .530**	**2,967**	**1,698**
New product performance	CuC	37	7,536	.515 **	.012	.493 to .538	801	543
	CoC	22	4,070	.479 **	.016	.448 to .510	318	360
Service/product quality	CuC	18	3,606	.530 **	.017	.497 to .563	272	450
	CoC	9	1,480	.354 **	.026	.303 to .406	53	100
Performance	**CuC**	**199**	**45,152**	**.351 ****	**.005**	**.342 to .360**	**7,322**	**3,707**
	CoC	**143**	**27,407**	**.324 ****	**.006**	**.312 to .336**	**3,744**	**2,440**
Financial Position	CuC	62	14,302	.272 **	.008	.256 to .289	960	999
	CoC	47	8,476	.256 **	.011	.235 to .278	514	470
Market Position	CuC	36	9,172	.174 **	.011	.153 to .194	268	393
	CoC	25	4,638	.151 **	.015	.131 to .189	113	283

** $p < .01$

[a] The corrected mean correlation coefficients (r) are the sample size weighted, reliability-corrected estimates of the population correlation coefficients.

[b] Availability bias indicates the number of unpublished studies reporting null results needed to reduce the aggregate effect size across studies to the point of non-significance (Lipsey and Wilson 2001).

[c] Q-statistic provides a test of the homogeneity of the population correlations. The significant Q-value suggests that study-level effect size estimates do not estimate a common population effect size, and the subsequent search for the moderating effects is warranted.

Notes: CuC = customer centricity; CoC = competitor centricity

Table 1.5. Results of Meta-Analytic Structural Equation Modeling

	Model 1	**Model 2**	**Model 3**
Customer Centricity → Innovativeness	.217 ***	.214 ***	.214 ***
Competitor Centricity → Innovativeness	.265 ***	.264 ***	.264 ***
Customer Centricity → Financial Position	.173 ***	.127 **	.126 **
Competitor Centricity → Financial Position	.104 *	.042	.042
Customer Centricity → Market Position	.131 *	.120 *	.120 *
Competitor Centricity → Market Position	.083	.064	.062
Customer Centricity ↔ Competitor Centricity	.503 ***	.504 ***	.503 ***
Innovativeness → Financial Position		.213 *	.208 *
Innovativeness → Market Position		.052	.026
Firm Size → Financial Position			1.156
Firm Size → Market Position			5.121
Competitive Intensity → Financial Position			-.752
Competitive Intensity → Market Position			.337
χ^2	17.504	12.173	38.834
df	3	1	6
RMSEA	0.010	0.014	0.010
SRMR	0.123	0.108	0.043
CFI	0.972	0.978	0.942

* $p < .05$
** $p < .01$
*** $p < .001$

Notes: df = degree of freedom; RMSEA = root mean square error of approximation; SRMR = standardized root mean squared residual; CFI = comparative fit index

Table 1.6. Moderating Effects of Firm Size

Dependent Variable	Levels	No. of Effect Sizes	95% Confidence Interval	Corrected Mean[a] r	Summary of Results
Innovativeness	a. customer centricity x large firms	27	.446 to .499	.472 **	a < c **
	b. competitor centricity x large firms	12	.464 to .537	.500 **	b > d **
	c. customer centricity x SMEs	42	.518 to .560	.539 **	a < b **
	d. competitor centricity x SMEs	30	.468 to .517	.493 **	c > d **
Market Position	a. customer centricity x large firms	5	.227 to .317	.272 **	
	b. competitor centricity x large firms [b]	–	–	–	a > c **
	c. customer centricity x SMEs	12	.052 to .116	.084 **	c < d **
	d. competitor centricity x SMEs	8	.049 to .154	.101 **	
Financial Position	a. customer centricity x large firms	12	.210 to .294	.252 **	a > c **
	b. competitor centricity x large firms	7	.148 to .256	.202 **	b < d **
	c. customer centricity x SMEs	16	.171 to .233	.202 **	a > b **
	d. competitor centricity x SMEs	13	.244 to .324	.284 **	c < d **

** $p < .01$

[a] The corrected mean correlation coefficients (r) are the sample size weighted, reliability-corrected estimates of the population correlation coefficients.

[b] Groups with less than three observations were excluded from the analyses to avoid misrepresentation.

Table 1.7. Moderating Effects of Firm Type

Dependent Variable	Levels	No. of Effect Sizes	95% Confidence Interval	Corrected Mean[a] r	Summary of Results
Innovativeness	a. customer centricity x services	20	.618 to .687	.653 **	a > c **
	b. competitor centricity x services	14	.487 to .573	.530 **	b > d **
	c. customer centricity x manufacturing	50	.426 to .462	.444 **	a > b **
	d. competitor centricity x manufacturing	25	.363 to .418	.390 **	c > d **
Market Position	a. customer centricity x services	9	.148 to .227	.188 **	a > c **
	b. competitor centricity x services	6	.311 to .470	.391 **	b > d **
	c. customer centricity x manufacturing	5	.087 to .188	.137 **	a < b **
	d. competitor centricity x manufacturing	4	.047 to .154	.101 **	c > d **
Financial Position	a. customer centricity x services	17	.246 to .315	.280 **	a < c **
	b. competitor centricity x services	12	.220 to .331	.276 **	b > d **
	c. customer centricity x manufacturing	15	.281 to .337	.309 **	a > b **
	d. competitor centricity x manufacturing	11	.185 to .262	.223 **	c > d **

** $p < .01$

[a] The corrected mean correlation coefficients (r) are the sample size weighted, reliability-corrected estimates of the population correlation coefficients.

Table 1.8. Moderating Effects of Industry Type

Dependent Variable	Levels	No. of Effect Sizes	95% Confidence Interval	Corrected Mean[a] r	Summary of Results
Innovativeness	a. customer centricity x high-tech	31	.472 to .523	.498 **	a > c **
	b. competitor centricity x high-tech	17	.449 to .523	.486 **	b > d **
	c. customer centricity x low-tech	18	.368 to .434	.401 **	a > b **
	d. competitor centricity x low-tech	10	.337 to .434	.385 **	c > d **
Market Position	a. customer centricity x high-tech [b]	–	–	–	c < d **
	b. competitor centricity x high-tech [b]	–	–	–	
	c. customer centricity x low-tech	11	.037 to .115	.076 **	
	d. competitor centricity x low-tech	8	.051 to .198	.124 **	
Financial Position	a. customer centricity x high-tech [b]	–	–	–	c < d **
	b. competitor centricity x high-tech [b]	–	–	–	
	c. customer centricity x low-tech	18	.103 to .180	.142 **	
	d. competitor centricity x low-tech	15	.105 to .204	.155 **	

** $p < .01$

[a] The corrected mean correlation coefficients (r) are the sample size weighted, reliability-corrected estimates of the population correlation coefficients.

[b] Groups with less than three observations were excluded from the analyses to avoid misrepresentation.

Table 1.9. Moderating Effects of Country Context

Dependent Variable	Levels	No. of Effect Sizes	95% Confidence Interval	Corrected Mean[a] r	Summary of Results
Innovativeness	a. customer centricity x emerging	68	.545 to .577	.561 **	a > c **
	b. competitor centricity x emerging	42	.648 to .692	.670 **	b > d **
	c. customer centricity x developed	69	.407 to .438	.422 **	a < b **
	d. competitor centricity x developed	40	.365 to .407	.386 **	c > d **
Market Position	a. customer centricity x emerging	12	.207 to .299	.253 **	a > c **
	b. competitor centricity x emerging	9	.250 to .358	.304 **	b > d **
	c. customer centricity x developed	21	.134 to .181	.158 **	a < b **
	d. competitor centricity x developed	14	.059 to .131	.095 **	c > d **
Financial Position	a. customer centricity x emerging	21	.395 to .447	.421 **	a > c **
	b. competitor centricity x emerging	17	.298 to .370	.334 **	b > d **
	c. customer centricity x developed	38	.158 to .203	.180 **	a > b **
	d. competitor centricity x developed	27	.198 to .255	.227 **	c < d **

** $p < .01$

[a] The corrected mean correlation coefficients (r) are the sample size weighted, reliability-corrected estimates of the population correlation coefficients.

Table 1.10. Summary Results of Hypotheses 2-9

	Firm size					Firm type				
	H2a	H2b *	H3a	H3b *	H3c	H4a	H4b	H5a	H5b	H5c
Supported							✓	✓		✓
Partially supported	✓	✓	✓		✓	✓			✓	
Not supported				✓						

	Industry type					Country context				
	H6a *	H6b *	H7a	H7b *	H7c *	H8a	H8b	H9a	H9b	H9c
Supported			✓			✓	✓			
Partially supported	✓	✓						✓	✓	✓
Not supported				✓	✓					

* The hypothesis could not be fully tested due to data limitations (i.e., a limited number of observations for some of the sub-groups).

ESSAY TWO:

NETWORK CENTRICITY: AN EMERGING FIRM STRATEGIC ORIENTATION AND ITS FIRM PERFORMANCE OUTCOMES

Abstract

The development of digital technologies and connected consumers in this digital, global business environment lead to the evolution of new business models. Increasingly, a firm's ability to engage in strategic partnerships to compete with other firm networks determines the success and failure of firms in the marketplace. I identify this phenomenon as network centricity and define it as a set of company-wide values, norms, and beliefs that foster firm's long-term multilateral partnerships with other organizations. I offer conceptualization and operationalization of the firm's network centricity and explore the theoretical foundations of this emerging strategic orientation. To gain a better understanding into the phenomenon of interest and its firm performance consequences, I leverage data from multiple sources. Specifically, I utilize firm partnership data from Medtrack, a leading pharmaceutical industry business intelligence database, text analysis of the letters to shareholders in firm annual reports, and firm financial data from Compustat. Covering 126 firms during the 2005-2017 period, I examine the individual performance outcomes of network centricity as well as the role of its interplay with customer centricity and competitor centricity to explore the complementarity among these strategic orientations.

Keywords: *network centricity; customer centricity; competitor centricity; firm strategic orientation; firm performance; conversion ability*

Introduction

After a century of technological rivalry between Mercedes and BMW (Grobalt 2016), two leading automakers announced the development of the joint mobility company. Daimler, the producer of Mercedes-Benz, and BMW signed a $1.1 billion partnership and announced the development of five different divisions to compete with technology companies such as Uber (Reid 2019). Recently, BP, a leading global energy firm, entered into a joint venture to create innovative charging infrastructures for customers (BMW Group 2021). Relatedly, the COVID-19 pandemic reaffirmed the importance of inter-firm partnerships in delivering innovative solutions quickly (Druedahl, Minssen, and Price 2021; Nature 2021). Top quality vaccines were developed in record time due to collaboration between biotechnology companies (i.e., Pfizer-BioNTech vaccine), as well as collaboration between industry and academia (i.e., Oxford-AstraZeneca vaccine) (Bourla 2021; Nature 2021).

The global economic order created in the middle of the twentieth century is undergoing major structural changes (Petricevic and Teece 2019). Digitalization and globalization of markets change business landscape and transform the way companies create, deliver, and capture value (Autio, Mudambi, and Yoo 2021; Borah et al. 2022) and give rise to new business models, processes, and structures (Alcácer, Cantwell, and Piscitello 2016). Digitalized interactions, consumer co-creation, and new interactive platforms shift our understanding of the value creation process from a traditional transactional, exchange-based perspective to value creation through complex interactions (Ramaswamy and Ozcan 2018). Firm interactions with other companies are no longer limited by the constraints of collocation and transportation (Autio, Mudambi, and Yoo 2021). Companies can now create and capture value "beyond the boundaries of a given firm" (Alcácer, Cantwell, and Piscitello 2016, p. 506) and develop knowledge

networks instead (Cano-Kollmann et al. 2016). Increasingly, a firm's ability to engage in strategic partnerships to compete with other firm networks determines the success and failure of firms in the marketplace. As these intangible, relational assets play a growing role in the world economy, firms need to develop appropriate mindsets to manage these assets (Mudambi 2008; Srivastava, Fahey, and Christensen 2001), which is especially important for knowledge-intensive industries (Powell, Koput, and Smith-Doerr 1996). Technological innovation can no longer be considered a sustained source of competitive advantage, as usually it can be imitated at a lower cost (Alvarez and Barney 2001).

In addition to technological developments and digitalization, rapid global changes present additional challenges for firms: how to properly frame the boundaries of their businesses (cf. Alcácer, Cantwell, and Piscitello 2016)? New digital technologies and business models, like that of Uber, Tesla, or Netflix, shift firm boundaries and blur the borders between industries and competitors (Cano-Kollmann et al. 2016; Christensen, Raynor, and McDonald 2015). Firms that used to be major competitors in one industry are forming partnerships to jointly face the emerging challenges of new market entrants and enter new business segments. The most innovative companies are extensively leveraging technology platforms and ecosystems as a foundation for the development of new business offerings domestically and across borders (BCG 2019). Increasingly, firms have to look for new ways to compete efficiently in the changing world and adjust business approaches to the fast-evolving environment (MSI 2022). Driven by the changing economic order, firms increasingly collaborate with other organizations and operate as networks of firms.[6]

[6] Following Provan, Fish, and Sydow (2007), I differentiate firm networks from firm alliances. The former represents complex multilateral long-term partnerships, while the latter involves simpler and short-term dyadic relationships.

Inter-organizational networks emerge from dyadic interfirm ties (Novoselova 2022) and their impact is larger than the sum of their components. As such, they affect multiple outcomes, such as firm strategies, resources, innovativeness, and customers. Ultimately, these networks impact "organizational competitive advantage, performance, and survival" (Novoselova 2022, p. 874). Some firms adjust their strategic priorities and the way they operate focusing on building networks with other companies as a way to establish their market advantage in competing with the other networks. I call this phenomenon network centricity. More formally, I define network centricity as the extent to which a company values/emphasizes the development of firm's long-term multilateral partnerships with other organizations and considers these partnerships as a source of competitive advantage.

Network centric firms create value in collaboration with their network partners through their joint or relational assets in efforts to compete with other networks. As such, network centricity reflects socio-economic changes when firms establish partnerships in a networked economy or "quasi-corporations" (Achrol 1991). Given a continuing shortage of research helping define and explain this phenomenon (Borah et al. 2022), our understanding of a network organization can be improved in three ways. First, what are the key characteristics of network organizations and how can they be measured? Answering this question can extend prior work dedicated to the evolution of marketing organization (Achrol 1991), value creation in the networks (Frels, Shervani, and Srivastava 2003; Swaminathan and Moorman 2009), and the emergence of network type of organization (Achrol 1997; Achrol and Kotler 1999; Powell 1990). Specifically, we need a better understanding of the organizational mindset or a set of specific values, norms, and beliefs of a network organization. I present network centricity as firm strategic orientation, or a reflection of the firm's philosophy guiding key business decisions

(Zhou, Yim, and Tse 2005).[7] This study explores this emerging phenomenon and offers the conceptualization and operationalization of the firm's network centricity.

Second, I leverage complementarity approach (Hakala 2011) to investigate the interplay between network centricity, customer centricity, and competitor centricity. As detailed subsequently, network centric firms incorporate a focus on customers (i.e., customer centricity) and multi-level interactions with competitors (i.e., competitor centricity) – collaboration with competitors within the network and competition with other networks. These two strategic orientations are critical to better understand the concept of network centricity because network centricity inherently incorporates a dual focus on both customers and competitors.

Third, I explore the consequences of network centricity. The results suggest that firms adopting network centricity should still maintain the focus on customers (i.e., customer centricity) and the focus on competitors (i.e., customer centricity). Moreover, without proper reflection of customer and competitor perspectives, network centricity may be necessary but not sufficient condition for successful firm operations. In addition, network centricity plays an important role in a firm's ability to successfully convert research ideas into commercialized products, a critical factor that can determine the success of innovative companies (Chandy et al. 2006).

I examine these relationships in the context of the biotechnology industry leveraging data from Medtrack, a leading business intelligence database that tracks the drug development process in pharmaceutical industry. This database provides access to information on more than 44,000 company profiles, 143,000 deals, and 181,000 drugs, along with patents, indications, and

[7] Firm strategic orientation is a part of a more fundamental corporate culture, which captures "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization" (Deshpandé and Webster 1989, p. 4).

drug delivery technologies. I supplement this data with the analysis of letters to shareholders in firm annual reports (Noble, Sinha, and Kumar 2002) and firm financial data from Compustat. Overall, my panel dataset covers 126 companies over the 2005-2017 period. Given the novelty of network centricity phenomenon – and in-line with recent research (Kirca et al. 2020; Talay, Pauwels, and Seggie 2023) – I adopt an "empirics first" approach (Golder et al. 2023; Graebner et al. 2023) for this study to identify the complementarities involving network centricity, customer centricity, and competitor centricity.

Conceptual Development

Networked Economy and Quasi-Corporations

The development of digital technologies and connected consumers in this digital, global business environment lead to the evolution of new business models, or specific ways by which a firm generates and delivers value to customers (Teece 2010). Digitalization and globalization of markets simplify technology duplication at a fast pace, while the decrease in coordination costs enables the creation of ever-complex business configurations. However, innovative business models do not provide a firm's competitive advantage by themselves, but rather require the selection and implementation of appropriate business strategies. Corporations must develop long-term strategies reflecting major geopolitical changes in the world and collaborate with other firms in a new way (Teece 2022). Interfirm networks are predicted to redefine how business operates in the information-rich environment of the 4th Industrial Revolution (Achrol and Kotler 2022).

Firms' move to partnerships in a networked economy was predicted long ago as an evolutional step of the exchange relationships (Achrol 1991). Kotler (1992, p. 52) states that partnership is "the ultimate form of relationship marketing." Day (2000, p. 24) views

collaborative exchanges as the final stage of the relationship spectrum and defines them as such that "feature very close information, social, and process linkages, and mutual commitments made in expectation of long-run benefits." These researchers consider a firm's ability to create and maintain relationships with other actors to be a strong basis for competitive advantage. This approach is founded on the principles of organizational culture and thus substantially differs from a "transaction mentality" that dominates the bilateral relationships involving firms and their customers/competitors (Day 2000). However, Day (2000) limited what he called "relationship orientation" to the firm's relationship with its most important customers. Nevertheless, Kotler (1991, in Day 2000) and Achrol (1991) were among the first marketing researchers who viewed close relationships between firms as the basis for a new emerging paradigm of networks.

Scholars have long envisioned the "organization of the future" and predicted that firms evolve from hierarchical structures into "quasi-firms" (Eccles 1981) or "quasi-corporations" (Achrol 1991) that will manage complex exchange relationships between partner companies via the distribution of valuable skills and resources. Drucker (1988) posited that a future company will be "knowledge-based" and will probably resemble a hospital or a research university. He called it an "information-based organization." Miles and Snow (1984) coined the term "dynamic network organization" as the evolving organizational firm of the future. They envisioned that, driven by highly complex and constantly changing environmental factors outside of the firm's control, organizations of the future will be temporary and "vertically disintegrated." Such companies will have the ability to quickly reshape whenever needed, adjusting to changing external circumstances. There was a wave of firm restructurings in the 1980s reflecting organizational revolution (Miles and Snow 1992). Companies downsized, focused on their core

competencies, implemented flexible structures, and moved from vertical integration toward alliances with other organizations.

The network perspective is receiving close attention across "virtually all of the sciences from anthropology to physics" (Borgatti and Li 2009, p. 5). Houston et al. (2004, p. 247) define a network as "a group of actors or social entities connected by a set of linkages through which they exchange information or resources, or both." Achrol (1991, 1997) analyzed the role of marketing in the network organization. He posits that the environment of the future is likely to have high levels of diversity, knowledge richness, and turbulence, so large vertically integrated organizations are no longer efficient (Achrol and Kotler 1999). Achrol (1997, p. 58) suggests that future marketing firms to be "integrators… rather than inventors or producers of technologies". This notion goes in-line with Thorelli (1986), who states that the role of marketing is central in network management.

An early analysis of the network organization was developed by Powell (1990). He contrasted network organization to market and hierarchy forms of organization and presented a network form of organization characterized by interdependent actors operating in a mutually beneficial climate. Powell (1990) indicates that this organizational setup is preferred to the hierarchical organizational design, which makes employees less enthusiastic and motivated as the work tasks are usually driven by their superiors. At the same time, employees of network-oriented companies have more flexibility and operate under the shared social norms of trust, reciprocity, and mutual dependency. He argues that market transactions are more suitable for the exchange of resources, while networks are better suited for knowledge-intensive activities and facilitate sharing of specific competencies, such as skills or knowledge. Unlike traditional exchange relationships, partnerships may facilitate the transfer of tacit knowledge, which is

difficult to codify and pass on. In addition, networks provide an opportunity for "learning by doing".

Achrol and Kotler (1999) define network organization as a coalition of specialized economic entities that operates without hierarchical control. The actors are connected by shared values of reciprocity and mutuality. The idea of network organization is centered on "creating new knowledge", rather than knowledge utilization (Achrol and Kotler 2012). Network organization is expected to create new value via "value conversion" (Allee 2009). The network form of the organization might foster a shift to a "market-driving model of marketing as an alternative to the market-driven" (Achrol and Kotler 1999, p. 153). Salancik (1995) considers networks beyond the interaction of companies and proposes that networks are formed by the interaction of individuals, either "organizations or humans."

Among other actors, networks may also include competitors (Thorelli 1986). Cooperation between firms within networks could be more beneficial than firms' competition. Indeed, there is a trend of forming cooperative partnerships focused on the development of new product and service solutions. Increasingly, firms are engaged in such partnerships as one company can no longer have necessary capabilities or control the necessary resources. Importantly, such partnerships feature both collaboration and competition simultaneously (Dean, Griffith, and Yalcinkaya 2023). Moreover, Humphreys and Carpenter (2018, p. 157) argue that "firms can actually enhance their competitive advantage by *sharing* unique resources with rivals" (emphasis in original). Specifically, the firm's market advantage could be enhanced via the reinforcement of its leadership position and status. Cooperation, as compared to competition, fosters organizational flexibility, knowledge transfer, and higher productivity (Deutsch 1949). The development of partnerships, alliances, and other types of cooperative agreements between the

firms gives rise to “strategic network competition” (Hunt and Morgan 1994). Firms enter a new format of competition: from competition between individual companies to “competition between networks” (Thorelli 1986).

The network perspective spreads across different research fields and multiple facets of firm operations (Borgatti and Li 2009) as a “salient determinant of firm performance” (Kumar, Liu, and Zaheer 2022, p. 1435). Literature presents numerous benefits of firm networks, such as availability of novel, reliable, and timely information; opportunity to substitute the lack of technological expertise; ability to accumulate additional financial resources (Borah et al. 2022; Kumar, Liu, and Zaheer 2022), and “other important outcomes reflected in organizational competitive advantage, performance, and survival” (Novoselova 2022, p. 874). Still, this domain suffers from a continued shortage of empirical research (Borah et al. 2022). Furthermore, while prior research examined the societal changes that lead to the development of network organizations and their structural characteristics (Achrol 1991, 1997; Achrol and Kotler 1999, 2012, 2022), the organizational mindset or a set of specific values, norms, and beliefs of a networked organization remains a gap in the literature. To the best of my knowledge, this study is the first attempt to investigate network paradigm from a new viewpoint: network centricity as firm strategic orientation.

Firm Strategic Orientations and Their Prevalence

A firm’s strategic orientation represents its organizational culture (Deshpandé, Farley, and Webster 1993; Deshpandé and Webster 1989) and directs specific business actions of the company (Slater, Olson, and Hult 2006). Firms identify and implement specific firm strategic orientations and accordingly make choices related to the allocation of limited organizational resources (Slater, Olson, and Hult 2006). The development of digital technologies and the

evolution of traditional marketing processes bring new realities to the way firms compete in the third millennium. For example, market orientation (Kirca, Jayachandran, and Bearden 2005) gradually transformed from being the firm's competitive advantage to a necessary failure prevention condition (Kumar et al. 2011). Recent research also indicates the progression of traditional conceptualization as there is a shift from a broad market orientation concept to a more targeted concept of firm's customer centricity (Crecelius et al. 2019; Fader 2020; Jayachandran et al. 2005; Shah et al. 2006).[8]

Over the past 15 years marketing scholars proposed several alternative strategic orientations to reflect the organizational cultures firms adopt in response to environmental changes and the evolution of marketing science and society at large. For example, the interaction orientation approach (Lee and Griffith 2019; Ramani and Kumar 2008) considers value cocreation during the process of firm-customer interactions. This strategic orientation is focused on the establishment of effective firm-customer relationships via interactions with individual customers. As customers are increasingly interested in customization of products and services, firms strengthen customer relationships and obtain valuable information via customer-firm and customer-customer interactions. As such, interaction orientation captures the dyadic nature of the firm-customer relationship and it represents four unique dimensions: customer concept, customer empowerment, interaction response capacity, and customer value management.

Engagement orientation (Kumar and Pansari 2016) reflects organizational efforts targeted at the engagement of firm customers and employees. The authors consider both internal (i.e., employees) and external (i.e., customers) stakeholders of the firm. Similarly, Hillebrand, Driessen, and Koll (2015) argue that marketing scholars should move away from focus on

[8] The terms "centricity" and "orientation" are used interchangeably throughout this paper when referring to specific firm strategic orientations.

customers toward multiple stakeholder perspective. Thus, stakeholder marketing (Hult et al. 2011) considers multiple stakeholders and their role in activities and processes that facilitate exchange relationships. The authors identify six primary stakeholders – such as customers, employees, shareholders, suppliers, regulators, and the local community – and a set of secondary stakeholders. However, the business world constantly evolves bringing new realities, challenges, and opportunities. In spite of availability of approaches above mentioned, firms still keep looking for new strategic orientations that could help them gain competitive advantage in a fast changing world (Kumar and Pansari 2016).

In this study, I present network centricity as an organizational culture that helps firms to achieve competitive advantage in this global network economy. Table 2.1 compares and contrasts network centricity with different firm strategic orientations investigated in prior marketing literature with their definitions, the type of relationships, and how firms adopting these strategic orientations create value. Specifically, we observe that firms are increasingly involved in more complex relationships. The 1990s and early 2000s (i.e., market orientation, customer centricity, competitor centricity) were characterized by *unilateral* relationships. Companies were focused on generation and utilization of market information as well as understanding of their customers and competitors. However, the development of marketing paradigm changed the nature of relationships and prior unilateral approach was not sufficient (Ramani and Kumar 2008). Starting from the end of the 2000s, organizations move to *bilateral* relationships and start interacting with different stakeholders, including employees and customers (i.e., interaction orientation, stakeholder marketing, engagement orientation). Network centricity reflects the realities of the 2020s and examines *multilateral* relationships between different organizations. I define this phenomenon as the extent to which a company

values/emphasizes the development of firm's long-term multilateral partnerships with other organizations and considers these partnerships as a source of competitive advantage.

---- *Insert Table 2.1 about here* ----

Interplay of Firm Strategic Orientations

The socio-economic changes brought by globalization and digitalization (Autio, Mudambi, and Yoo 2021; Borah et al. 2022) present both new business challenges and opportunities. Network centricity shifts market rivalry from the competition between individual firms to the competition between firm networks. Firms that adopt network centricity develop long-term multilateral partnerships with other companies. These partnerships serve as a source of value creation and a joint asset in the competition with other networks. Networks of firms aggregate idiosyncratic firm assets, resources, and knowledge which enables the development of unique capabilities and customer solutions. The resource-based view (Barney 1991; Barney, Ketchen, and Wright 2021) considers the utilization of firm strategic resources as a way to achieve a company's sustained competitive advantage. Organizations can achieve a sustained competitive advantage when other firms cannot replicate the outcomes of their activities. Firm networks have a higher level of strategic resource heterogeneity due to the complexity of relationships and value creation processes within the network. An individual company can hardly match the resource capabilities of the network of firms long-term. Respectively, companies that adopt network centricity will be more competitive in the market and outperform other firms.

Yet, these firm networks still serve customers and are still involved in competitive activities. Moreover, they are often formed with competitors. The nature of these relationships gets more complex, and companies need to carefully select partners with which they create firm networks. On the one hand, these new partnerships are formed to strengthen joint capabilities and

better serve customers. On the other hand, these partnerships often include competitors, and organizations need to ensure that new partnerships do not undermine the individual competition between these companies at the firm level. Ultimately, as firms adopt network centricity, the focus on both customers and competitors remains relevant and important. In other words, network centricity is likely to co-exist with customer centricity and competitor centricity.

As companies gradually evolve from vertically integrated organizations to highly specialized economic entities (Achrol and Kotler 1999; Miles and Snow 1992), the increased firm specialization expands the capabilities of individual companies to serve their customers. At the same time, company specialization narrows the subset of customers the firm may serve and its respective target market. Such firms would be interested in joining firm networks that open new markets and expand their prospective customer base. However, firms should possess a high level of customer understanding to be attractive partners for firm networks. Companies set up networks of firms to combine individual capabilities and jointly generate customer value. Networks of highly specialized firms aggregate the individual capabilities of companies and their in-depth understanding of target customers.

Relatedly, competitor centricity has important implications for firms pursuing network centricity. Firms within a network share knowledge, assets, and capabilities. Competitor centric organizations have a thorough understanding of their competitors, including competitors' strengths and weaknesses, both from short-term and long-term perspectives (Narver and Slater 1990). This comprehensive understanding of the competitive landscape, along with long-term predictions of market development, allows for a meticulous selection of network partners. Firms create networks with other companies – including competitors – when new partnerships supplement focal firm assets and capabilities. At the same time, these partnerships with

competitors should not jeopardize market positions of individual firms and competition at the firm level. Thus, network centricity should be considered jointly with customer centricity and competitor centricity, given the interconnectedness and complementary of these firm strategic orientations.

Indeed, scholars emphasize that while different firm strategic orientations are often conceptually distinct, they are also interrelated. Respectively, they suggest a complementarity approach to study them jointly (Hakala 2011; Schweiger et al. 2019). The complementary approach considers that companies may have several strategic orientations simultaneously and allows researchers to obtain a more definite understanding of the phenomena. As a result, "organizations may not need to choose between orientations, but may stretch their resources and thus, adopt a bespoke pattern of orientations" (Hakala 2011, p. 206). Hakala (2011, p. 210) further explains the specifics of the complementary approach:

> *"The starting point for the view of a complementary combination of orientations is that different orientations support each other in some way. It may be that one precedes another in the sequence of development (sequential) or that one is required to transmit the effects of the other (mediation) or to change those effects (moderation). The orientations may also be complementary in the sense that they provide a toolbox of adaptation mechanisms (alternatives) for the firm to use, depending on its goals or situation. The core of the complementary approach is that the relationship between orientations is also considered, and that the pattern, rather than the orientations separately, create the desired effects in the dependent variable."*

Thus, firms adopting network centricity should still maintain the focus on customers (i.e., customer centricity) and the focus on competitors (i.e., customer centricity). Moreover, without proper reflection of customer and competitor perspectives, network centricity may be necessary but not sufficient condition for successful firm operations.

Converting Ideas into Products

Powell, Koput, and Smith-Doerr (1996) predicted that market complexity and dispersion of expertise will shift the locus of innovation from individual firms to networks of organizations. As firms create, deliver, and capture value in new ways due to digitalization and globalization (Autio, Mudambi, and Yoo 2021; Borah et al. 2022), new business processes appear. Combined with the increased specialization of individual companies, these processes alter the value creation processes and make them more complex (Ramaswamy and Ozcan 2018). Increasingly, firms are engaged in new product development partnerships as one company can no longer have the necessary capabilities or control the necessary resources (Griffith, Dean, and Yalcinkaya 2021).

However, new product development partnerships face adversity as more than half of such partnerships fail to achieve their objectives (Chakravarty, Zhou, and Sharma 2020). Specifically, firms struggle to convert numerous research ideas into commercialized products (Chandy et al. 2006). Product conversion ability often becomes a determinant of success or failure. While there is a significant variance in firms' ability to convert initial ideas into final products, two factors hurt companies the most: the generation of too many ideas and the focus on bringing products to market too fast (Chandy et al. 2006). The abundance of firm resources, and specifically resources focused on research and development (R&D), may be particularly salient in this context. The more resources companies have, the more ideas they are likely to be able to generate and attempt to implement. Firm network centricity may serve as a balancing factor here.

R&D intensity, or the ratio of R&D expenditure to firm's sales, is an important characteristic of network firms. Increased R&D expenditures strengthen firm's technological capabilities and shift firm's strategic emphasis toward value creation (Mizik and Jacobson 2003). Importantly, the R&D capabilities and R&D intensity of partner firms reinforce each other. Firms with high R&D intensity benefit from interaction with other R&D-active companies as external and internal R&D efforts are complementary (Teece 1998). On top of that, network centric firms might better manage the whole process of new product development. The presence of multiple partners in the network might prevent excessive focus on some aspects of the process (i.e., focusing on idea generation only and generating too many ideas). At the same time, the need to collect input and consider perspectives of different partners within the network is likely to prevent too fast product development. Thus, network centricity, and specifically the combination of network centricity and R&D intensity, could be a meaningful aspect of firm's product conversion ability.

Study Approach

Given the novelty of the investigational phenomenon (i.e., network centricity as firm strategic orientation) and the diversity of theoretical perspectives that could be considered in analyzing the interactions of network centricity with other firm strategic orientations (cf. Hakala 2011; Schweiger et al. 2019), I employ an "empirics-first" approach (Golder et al. 2023) or "empirical inquiry without hypotheses" (Graebner et al. 2023, p. 3). Marketing and management literature suggests this approach to investigate novel real-world phenomena and/or causally complex relationships. Specifically, this approach "refers to research that (1) is grounded in (originates from) a real-world marketing phenomenon, problem, or observation, (2) involves obtaining and analyzing data, and (3) produces valid marketing-relevant insights without

necessarily developing or testing theory" (Golder et al. 2023, p. 319). One of the principles of this approach is to explore the research domain without preconceptions.

The domain in question presents an appropriate context for the application of empirics-first approach due to the following reasons. First, this is a real-world phenomenon that we observe: increasingly companies create networks of firms to compete with other networks. Second, this is an underexplored phenomenon, given that this study represents the first attempt to investigate network centricity as firm strategic orientation. Third, the investigation of this phenomenon can be considered from multiple theoretical perspectives. Network centricity could be studied as a standalone firm strategic orientation. However, multiple strategic orientations usually co-exist (Hakala 2011; Schweiger et al. 2019). Moreover, the interplay of these strategic orientations can be complex with a questionable determination of the causality in the relationships between orientations (Hakala 2011). Moreover, multiple theoretical perspectives could be considered for the analysis of network centricity: resource-based view (Barney 1991) to consider the utilization of firm strategic resources within the network; resource-advantage theory (Hunt and Morgan 1995) to reflect how comparative advantage is achieved in firm networks as a bundle of resources; organizational learning and information processing (Huber 1991); institutional theory (DiMaggio and Powell 1983); or strategic choice theory (Child 1972), among others.

While an empirics-first concept was formulated recently, this type of research "occurs across all parts of the field" (Golder et al. 2023, p. 321) and was leveraged over the past few decades (e.g., Bolton, Warlop, and Alba 2003; Gebhardt, Carpenter, and Sherry 2006; Golder and Tellis 1993; Stahl et al. 2012). It has also been implemented in recent marketing studies (e.g., Kirca et al. 2020; Talay, Pauwels, and Seggie 2023; Rust et al. 2021). Thus, in-line with an

empirics-first approach, I do not state formal hypotheses, but instead adopt an exploratory investigation of performance outcomes of network centricity as well as its various interaction with customer centricity and competitor centricity. In the following sections, I provide information related to the sample and data used in this research.

Sample and Data

Sample

I study the firms' network centricity in the context of the biotechnology industry. Partnerships play an important role in this industry as biotechnological firms often cooperate with large pharmaceutical companies during the development of new products (Stremersch and Van Dyck 2009). Powell, Koput, and Smith-Doerr (1996) were among the first to study the "networks of learning" among biotechnological companies. The authors stress the important role of various ties in the industry, specifically, ties with the scientific community, venture capitalists, and large pharmaceutical companies. The biotechnological industry was also previously studied by marketing scholars investigating various aspects of innovation in the firm (e.g., Fang, Lee, and Yang 2015; Rao, Chandy, and Prabhu 2008; Saboo et al. 2017; Wuyts, Dutta, and Stremersch 2004).

Innovation is among the key business drivers of the pharmaceutical industry. However, the development of new drugs is research-intense and extremely expensive, with development expenses exceeding $100 million per product (Powell, Koput, and Smith-Doerr 1996). Moreover, it is a lengthy process with a low success rate. While the drug development process can exceed 10 years (Chandy et al. 2006; Powell, Koput, and Smith-Doerr 1996), only a fraction of all inventions makes it to the market. Less than one out of 5,000 new drug developments reaches the stage of market introduction (Stremersch and Van Dyck 2009) and only one out of

60,000 new inventions is considered highly successful (Sharma, Saboo, and Kumar 2018). Thus, I consider the biotechnology industry to be a suitable context for the investigation of the firm's network centricity and its firm performance and innovation outcomes. In addition, the study of a single industry allows for the elimination of cross-industry factors that might impact the investigated outcomes (Sharma, Saboo, and Kumar 2018).

Data Collection and Measures

Table 2.2 presents the description of variables and measures used in this study. I leverage data from multiple sources – Medtrack pharmaceutical business intelligence database, text analysis of the letters to shareholders in firm annual reports, and Compustat financial database – as detailed below. After combining data from these sources and dropping firm-years with missing data on the focal variables, my final panel data sample consists of 126 firms over 13 years (2005-2017), for a total of 640 firm-year observations.

---- *Insert Table 2.2 about here* ----

Medtrack Database

I use Medtrack, a leading business intelligence database that tracks the drug development process in the biopharmaceutical and pharmaceutical industry, as a data source for evaluation of the firms' network centricity and product portfolio as well as product portfolio conversion ability. This database provides access to information about more than 44,000 company profiles, 143,000 deals, and 181,000 drugs, along with patents, indications, and drug delivery technologies. Medtrack database is managed by Pharma Intelligence, the same company that provides Pharmaprojects, a database well accepted in the previous marketing studies of the pharmaceutical industry (e.g., Chandy et al. 2006; Grewal et al. 2008; Prabhu, Chandy, and Ellis 2005; Rao, Chandy, and Prabhu 2008).

I use a composite variable to measure firm's network centricity as an average of two variables: number of partnerships and diversity of partnerships. I estimate nine separate categories of firm deals (i.e., R&D, manufacturing, marketing) and calculate the diversity of partnerships following the approach proposed by Powell, Koput, and Smith-Doerr (1996). The range of deals that a company is engaged in at a given time reflects a portfolio of firm's partnerships. Partnerships diversity is computed for each company in each year as follows. For firm *i* in year *t*, I denote the number of deals of type *j* as $n_{it,j}$ and the total number of deals aggregated over all types ($j = 1\ldots J$; $J = 9$) as n_{it}. The proportion of firm *i*'s deals of type *j*, out of the total number of deals, is denoted $p_{it,j}$ and given by $p_{it,j} = n_{it,j} / n_{it}$. Each $p_{it,j}$ is squared and then the sum is taken over all *j*'s and subtracted from 1, resulting in the index of diversity, y_{it}, so that:

$$y_{it} = 1 - \sum_{j=1}^{J} p^2_{it,j}$$

This is equivalent to Blau's index of heterogeneity (Blau 1977). Diversity can be treated as a continuous random variable, though bounded in the interval [0, 8/9]. In addition, I measure the number of partnerships, which captures the total number of firm's deals for firm *i* in year *t*. This measure was then rescaled to zero to one range to be comparable to the scale of diversity of partnerships. Ultimately, an average of two measures was calculated to form the composite variable that allows to reduce the number of parameters to be estimated in the model. I also leverage the Medtrack database to measure firm's conversion ability in product development (Chandy et al. 2006) as the proportion of investigational drugs beyond stage three.

Letters to Shareholders

I measure customer centricity, competitor centricity, and international scope via text analysis of the letters to shareholders in corporate annual reports (Noble, Sinha, and Kumar

2002; Saboo and Grewal 2013). I developed a dictionary of phrases that captures constructs of interest (Saboo and Grewal 2013) and use LIWC (Linguistic Inquiry and Word Count) text analysis software (Nath et al. 2019; Pennebaker et al. 2022). Table 2.3 presents dictionary word lists to capture customer centricity, competitor centricity, and international scope. For customer centricity and competitor centricity, I relied on the dictionary by (Homburg, Theel, and Hohenberg 2020), which was based on the work of other scholars investigating these strategic orientations (Narver and Slater 1990; Saboo and Grewal 2013; Zachary et al. 2011). Given the specifics of the pharmaceutical industry, I implemented some dictionary modifications as selected words are used with different connotations in this context. Table 2.4 presents the modifications implemented for specific words and sample phrases to illustrate how these words are used in the letters to shareholders in biotech industry.

---- *Insert Table 2.3 about here* ----

---- *Insert Table 2.4 about here* ----

I also developed a new dictionary to capture firm's international scope following the procedures applied in prior research (Zachary et al. 2011). International scope captures the geographical dispersion of firm activities (Feng, Patel, and Sivakumar 2020). I started by developing a deductively generated list of keywords based on extant international business and marketing literature (Kirca et al. 2011). Then, I also searched for potential synonyms of the words identified during the first stage. As a next step, I extended the list of keywords by an inductive approach. I analyzed the list of words extracted from my data and identified relevant words that were not captured during the deductive word search. I also randomly pulled sample letters to shareholders and verified if coded words reflected the constructs of interest. The final list of the dictionary words was discussed with scholars knowledgeable in this research domain.

Compustat

I use S&P Compustat annual database to capture firm profit, firm revenue, number of employees, and R&D intensity (i.e., the ratio of R&D expenditures to sales). I also capture the cost of coordination as the location of the firm headquarter (Lu et al. 2022), and firm industry (SIC code number). I focus on profit as a measure of firm performance as "maximizing the amount of profit… is a firm's superordinate performance objective" (Bhattacharya, Morgan, and Rego 2022, p. 78).

Empirical Approach

I developed two models to estimate the impact of network centricity on firm performance and product portfolio conversion ability.

Firm Performance

In my panel data setting, I observe the performance of 126 firms over 13 years. I seek a robust assessment of the effects of network centricity and its interaction with customer centricity and competitor centricity on firm performance. I implemented the following measure to address potential concerns regarding endogeneity, serial correlation, heteroskedasticity, and unobserved heterogeneity that may bias my results (Wooldridge 2016). First, to address potential firm-specific omitted variable endogeneity, I included a set of relevant control variables, such as firm size, international scope, R&D intensity, and a distinguishment between developed and early-stage companies (i.e., presence of positive revenues). Second, to account for time-invariant sources of unobserved heterogeneity, that might cause an endogeneity bias, I used fixed effects (FE) model estimation, which is appropriate for my data as suggested by the Hausman test. Third, to account for unobservable time effects, I included year fixed effects in all my estimations. Fourth, I use year dummies to help address potential concerns regarding

heteroskedasticity and unobserved heterogeneity. Fifth, I included a one-period lagged dependent variable (i.e., revenue) to alleviate serial correlation concerns. It also helps address the potential omitted variable bias as well persistence and dependence on observations from prior periods. Finally, I used robust standard errors to allow for possible heteroskedasticity. I specify my model as follows:

$$
\begin{aligned}
(1)\quad FP_{it} &= \beta_0 + \beta_1 NC_{it} + \beta_2 CUC_{it} + \beta_3 COC_{it} + \beta_4 NC_{it} * CUC_{it} \\
&+ \beta_5 NC_{it} * COC_{it} + \beta_6 CUC_{it} * COC_{it} + \beta_7 NC_{it} * CUC_{it} * COC_{it} \\
&+ \beta_8 INTS_{it} + \beta_9 RDI_{it} + \beta_{10} FSD_{it} + \beta_{11} REVD_{it} + \beta_{12} GP_{it-1} \\
&+ \sum_{k=2005}^{2017} \beta_{13k} TIME_{kit} + \alpha_i + \varepsilon_{it},
\end{aligned}
$$

where i represents the individual firm, and t represents time (the year of observation); β_0 captures the intercept term; FP is firm performance (measured in terms of gross profit); NC is network centricity; CUC = customer centricity; COC = competitor centricity, INTS is international scope; RDI is R&D intensity; FSD is firm size (dummy, SME = 1); REVD is revenue (dummy, firms with positive revenue = 1); TIME is a set of mutually exclusive dummies for 2006-2017, with 2005 as the base year; α are firm-specific errors or firm fixed effects (fixed unknown constants); ε represents the error term capturing the unexplained variation in FP. Table 2.5 presents the correlation matrix and descriptive statistics of this study. All of the correlations are below 0.5, except for the correlation between revenue and revenue $_{(t-1)}$ (r = 0.982), which indicates a low multicollinearity threat.

---- Insert Table 2.5 about here ----

Conversion Ability

While the key variables in the panel dataset are available for 2005-2017, some variables are cross-sectional. Specifically, the firm's product portfolio data that is used for estimation of conversion ability is available for 2019 only. Respectively, I apply ordinary least squares (OLS) regression estimate to measure the impact of network centricity on conversion ability and use the future period (t+2) for the latter. This should adequately capture firm's conversion ability given that drug development is a multi-year process (Chandy et al. 2006). I specify the model as follows:

$$(2)\quad CA_{it+2} = \beta_0 + \beta_1 NC_i + \beta_2 RDI_i + \beta_3 NC_i * RDI_i + \beta_4 FSD_i + \beta_5 REV_i + \beta \sum CCRD + \beta \sum IND + \varepsilon_i,$$

where i represents the individual firm, and t represents time (the year of observation); β_0 captures the intercept term; CA is conversion ability; NC is network centricity; RDI is R&D intensity; FSD is firm size (dummy, SME = 1); REV is revenue; CCRD is cost of coordination (the dummy for HQ location); IND is industry (the dummy for SIC); ε represents the error term capturing the unexplained variation in CA.

Results

Firm Performance

My first research question concerns the impact of network centricity on firm performance, both individually and in interaction with customer centricity and competitor centricity. I tested several models to estimate main effects and the interaction among the variables of interest (see Table 2.6). I first ran a model with control variables only (Model 1). Then, I tested Model 2 which presents the main effect of network centricity on firm performance.

Model 3 included two-way interaction (i.e., NC * CUC, NC * COC). The results discussed below are based on final Model 4, which adds a three-way interaction (i.e., NC * CUC * COC). The results demonstrate that the individual impact of network centricity is not statistically significant (β = -215.857, *n.s.*). As for two-way interactions, the relationship between NC * CUC and performance is positive and not significant (β = 626.139, *n.s.*), while the relationship between NC * COC and performance is negative and marginally significant (β = -1989.225, $p > .10$). However, the firm performance impact of the three-way interaction between network centricity, customer centricity, and competitor centricity is positive and significant (β = 1396.339, $p > .05$). This suggests that network centricity is a necessary but not sufficient condition for stronger firm performance.

---- *Insert Table 2.6 about here* ----

Conversion Ability

The results concerning my second research question – the impact of network centricity on conversion ability – are presented in Table 2.7. I tested several models to estimate main effects and the interaction among the variables of interest. I first ran a model with control variables only (Model 1). Then, I tested Model 2 which estimates main effects. Model 3, which results are discussed below, included a two-way interaction between network centricity and R&D intensity. The results demonstrate that network centricity is not associated with firm's conversion ability (β = -.058, *n.s.*). However, R&D intensity diminishes the speed with which companies convert ideas into products (β = -.001, $p > .001$). At the same time, the interaction between network centricity and R&D intensity has a positive and significant impact (β = .003, $p > .01$). Thus, these results suggest that companies that develop network centricity may not only diminish the

negative impact of R&D intensity on conversion ability, but also speed up their pace of idea-product conversion.

---- *Insert Table 2.7 about here* ----

Robustness Checks

To establish the robustness of my findings, I conducted a series of additional analyses.

Variable operationalization. I measure network centricity as a composite of two highly correlated variables (r = .68): number of partnerships and diversity of partnerships. To ensure that my results were not an artifact of measurement specification, I have conducted a robustness check to estimate the potential excess impact of sub-elements that are used to measure network centricity. I have created three dummies based on the median splits to reflect high-high, high-low, and low-high levels of these variables, with low-low as the base level. Then, I re-run my models with this set of dummies. The impact of dummies is not significant; the addition of dummies does not alter the substantive results regarding other variables.

Observation period. I also conducted a panel model estimate using a different observation period (i.e., 2006–2015; cf. Kirca et al. 2020). The results of these additional analyses are presented in Table 2.8 and support my empirical findings presented in Table 2.6. Consistent with my findings, the impact of the three-way interaction of NC x CUC x COO on firm performance is positive and significant ($\beta = 2739.624$, $p > .01$).

---- *Insert Table 2.8 about here* ----

Number of R&D projects. Firms with just a few product development projects may have extreme levels of product conversation. I have conducted a robustness check to eliminate the potential impact of firms with a small number of R&D projects on conversion ability. In doing so, I have identified three outliers. These firms had conversion ability equal to one and a very

small number of R&D projects (ranging between two and four). I eliminated these firms and re-run my analyses. The remaining companies with conversion ability > .5 had at least 15 R&D projects. The elimination of outliers does not alter the substantive results regarding other variables.

Discussion

This paper presents network centricity as a new firm strategic orientation that is critical to developing a competitive advantage in today's digitally connected, global business environment given the expansion of the marketing paradigm (cf. Achrol and Kotler 2012). Digitalized interactions and new interactive platforms shift the fundamentals of the value creation process from a traditional transactional, exchange-based perspective to value creation through complex interactions (Ramaswamy and Ozcan 2018). Respectively, marketing literature gradually shifts from the dominant dyadic perspective of interfirm relationships to a network perspective (Borah et al. 2022). However, while there is theoretical support for the network organization (Powell 1990) and the role of marketing within the network organization (Achrol 1991, 1997; Achrol and Kotler 1999), there is a continued shortage of research helping define and explain this phenomenon (Borah et al. 2022). This study extends this work by considering specific norms, values, and beliefs of a network firm. The conception of network centricity as the emerging strategic orientation presents novel insights that improve the understanding of how firms compete in the XXI century (cf. Achrol and Kotler 2022).

This study provides conceptualization and operationalization of network centricity. Driven by globalization and digitalization, firms transform the way they operate, create value, and compete (Autio, Mudambi, and Yoo 2021; Borah et al. 2022). New business models and processes emerge (Alcácer, Cantwell, and Piscitello 2016). Firms that adopt a network centricity

approach can strengthen their competitive advantage and performance (Novoselova 2022). It may even be a question of organizational survival. As the locus of innovation shifts from individual companies to networks of firms (Powell, Koput, and Smith-Doerr 1996), the locus of competition also gradually moves from individual companies to firm networks (Thorelli 1986). I introduce the concept of network centricity, an emerging firm strategic orientation that reflects recent changes in the global business environment. This study examines the key characteristics of network organization and proposes a way to measure network centricity based on the analysis of firm partnerships.

In addition, this research extends our understanding of the complementarity of firm strategic orientations (Hakala 2011; Schweiger et al. 2019). I investigate the interplay of network centricity with two other established firm strategic orientations: customer centricity and competitor centricity. Prior research emphasizes the importance of having *both* customer centricity and competitor centricity (Day and Nedungadi 1994), a characteristic of best performing companies. At the same, the authors note that the "emphasis on the customer and competitor dimensions is not intended to preclude the possibility that other dimensions also underlie the representational structure" (Day and Nedungadi 1994, p. 42). This research brings a network perspective of firm relationships into strategic orientation literature. To account for the interrelatedness of various strategic orientations (Schweiger et al. 2019), I follow the complementarity approach (Hakala 2011), which considers situations when companies have several strategic orientations simultaneously. Firm capabilities to align different strategic orientations is a key to superior firm performance via creation of synergies that "surpass the effects of individual strategic orientations" (Schweiger et al. 2019, p. 1822). As network

centricity inherently incorporates a dual focus on both customers and competitors, companies that incorporate all three strategic orientations may strengthen their competitive positions.

Finally, this research examines the consequences of network centricity to illustrate why and how this strategic orientation matters from a managerial perspective. Results indicate that network centricity is beneficial to financial performance when firms develop it simultaneously with customer centricity and competitor centricity. In addition, I explore the role of network centricity in improving the conversion of research ideas into marketable products. Conversion ability is a major challenge and critical factor that determines success of innovative companies (Chandy et al. 2006). My results indicate that while excess R&D resources may hamper conversion ability, the interaction of network centricity and R&D intensity can reverse this impact. This could be driven by a more balanced approach toward new product development across different stages of the R&D process in network firms due to shared competencies and involvement of multiple partners preventing the excessive shift of resources toward initial stages. Combined, the learnings of this study should help scholars better understand the network centricity phenomenon, its performance outcomes, and specifics of its interactions with other firm strategic orientations.

Managerial Implications

Firms that adopt advanced strategic orientations outperform companies that follow preceding strategic orientations (Ramani and Kumar 2008). Over time, companies gradually transitioned from one dominant strategic orientation to another: from product orientation to sales orientation, from sales orientation to market orientation, and so on. Firms are gradually involved in more complex relationships. Specifically, after the *unilateral* relationships (i.e., market orientation, customer centricity, competitor centricity), companies shifted to *bilateral*

relationships (i.e., interaction orientation, stakeholder marketing, engagement orientation). Mirroring recent trends in globalization and digitalization, network centricity reflects the *multilateral* relationships between companies. Companies that pioneer the adoption of network centricity are likely to outperform firms focusing on preceding – and sometimes outdated – strategic orientations, which became a cost of doing business and can no longer provide a source of sustained competitive advantage.

Still, senior executives considering or developing network centricity in their organizations should be conscious that this strategic orientation is necessary but not sufficient. Network centricity reflects the shifts in global business approach. However, to fully reveal its potential, companies need to acknowledge the complementarity of different business approaches and develop network centricity in addition to other critical strategic orientations. The focus on customers (i.e., customer centricity) and the focus on competitors (i.e., competitor centricity) are still relevant and important. Moreover, without proper reflection of customer and competitor perspectives, network centricity alone may not help achieve and maintain sustainable competitive advantage. The understanding of the network centricity's interaction with other firm strategic orientations will have meaningful managerial implications and can guide senior executives in the selection of appropriate firm strategic orientations for their companies.

Finally, company leaders should acknowledge the changing nature of competition. Digitalization and globalization of markets not only change the way companies create, deliver, and capture value (Autio, Mudambi, and Yoo 2021; Borah et al. 2022), but also transform the global economic order which existed over the past several decades (Petricevic and Teece 2019). As companies are no longer limited by the constraints of collocation and transportation (Autio, Mudambi, and Yoo 2021), new business models and processes emerge (Alcácer, Cantwell, and

Piscitello 2016). Top executives should go beyond traditional perceptions of businesses, markets, and competitors. New technologies and business models blur the boundaries between firms and industries (Cano-Kollmann et al. 2016; Christensen, Raynor, and McDonald 2015). Companies are forming partnerships with their traditional rivals to jointly enter new business segments and compete with new market entrants. Firm rivalry shifts from competition of individual companies to competition of networks.

Limitations and Future Research

As the first attempt to investigate network centricity as a firm strategic orientation, this research has some limitations which should be considered when interpreting the findings. At the same time, this study suggests multiple potential avenues for future research in this domain. First, I study the impact of network centricity on two outcomes: firm performance and product conversion ability. Thus, future researchers may investigate other potential consequences of network centricity. Second, I present the consequences of network centricity but do not explore its antecedents. The examination of the drivers of network centricity may bring valuable insights to academia and practice. Third, I explore the interplay of network centricity with two strategic orientations: customer centricity and competitor centricity. Scholars may also explore the interaction of network centricity with other firm strategic orientations, such as engagement orientation (Kumar and Pansari 2016), entrepreneurial orientation (Atuahene-Gima and Ko 2001), interaction orientation (Ramani and Kumar 2008), learning orientation (Hurley and Hult 1998), or technological orientation (Gatignon and Xuereb 1997). Fourth, I utilize firm partnership data from the Medtrack pharmaceutical database to measure network centricity. It might be relevant to investigate other potential data sources that could help capture and examine network centricity. Finally, I study network centricity in the context of biotechnology industry. I

believe that future research may consider other industries as well as study network centricity across several industries. That should provide valuable insights for researchers and managers.

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APPENDIX A: TABLES

Table 2.1. Comparison of Firm Strategic Orientations

Orientation	Definition	Source of value creation	Relationships
Market orientation	"the organizationwide *generation* of market intelligence pertaining to current and future customer needs, *dissemination* of the intelligence across departments, and organizationwide *responsiveness* to it" (Kohli and Jaworski 1990, p. 6).	generation and utilization of market information	
Customer centricity	organizationwide "understanding of one's target buyers to be able to create superior value for them continuously" (Narver and Slater 1990, p. 21).	customer understanding	unilateral
Competitor centricity	organizationwide understanding of "the short-term strengths and weaknesses and long-term capabilities and strategies of both the key current and the key potential competitors" (Narver and Slater 1990, p. 21-22).	competitor understanding	
Interaction orientation	"a firm's ability to interact with its individual customers and to take advantage of information obtained from them through successive interactions to achieve profitable customer relationships" (Ramani and Kumar 2008, p. 27).	firm-customer interactions	
Stakeholder marketing	"activities and processes within a system of social institutions that facilitate and maintain value through exchange relationships with multiple stakeholders" (Hult et al. 2011, p. 44).	exchange relationships with multiple stakeholders	bilateral
Engagement orientation	"the process of embedding engagement in the organization as a policy decision and ensuring that all strategies of the organization focus on engaging the customers and the employees, along with value maximization for all stakeholders" (Kumar and Pansari 2016, p. 511).	customer and employee engagement embedded in the organization	
Network centricity	the extent to which a company promotes the development of firm's long-term multilateral partnerships with other organizations and considers these partnerships as a source of value creation and a joint or relational asset in the contest with other networks.	long-term multilateral partnerships with other organizations	multilateral

Table 2.2. List of Variables

Variable	Description	Data source
Network centricity (composite)	(i) number of partnerships: total number of firm's deals (ii) diversity of partnerships: the range of different partnership types (Powell, Koput, and Smith-Doerr 1996)	Medtrack Medtrack
Customer centricity	customer centricity of the firm	letters to shareholders in firm annual reports
Competitor centricity	competitor centricity of the firm	letters to shareholders in firm annual reports
International scope	geographical dispersion of firm activities (Feng, Patel, and Sivakumar 2020)	letters to shareholders in firm annual reports
Firm performance	Firm profit	Compustat
R&D intensity	R&D expenditures / sales	Compustat
Revenue	Firm revenue	Compustat
Firm size	Number of employees	Compustat
Cost of coordination	Firm HQ location of as proxy (Lu et al. 2022)	Compustat
Firm industry	SIC code number	Compustat
Conversion ability	the proportion of investigational drugs beyond stage three (adapted from Chandy et al. 2006)	Medtrack

Table 2.3. Dictionaries Employed for LIWC Text Classification

Construct	Dictionary Word List
Customer centricity	attendee*, buyer*, buying, client*, clientele, consume*, customer*, emptor*, habitue, patron*, shopper*, spectator*, subscribe*, user*, vend, vended, visitor*, outpatient*, patient*
Competitor centricity	advantage*, adversary, adverse*, aggression, aggressor, ambition*, ambitious, antagonist*, antagonize*, aspirant, assail, barricade, beat*, bid*, challenge*, clash*, collide*, compete*, competing, competit*, conflict*, confront*, conquer*, contend*, contentious, contest*, counteract*, cutthroat, disputant*, enemies, entrant*, fight, foe*, formidable, fought, grapple*, imitator*, jockey, jockied, match*, opponent*, oppose*, opposition*, outclass*, outmatch*, outrank*, outrate*, resist, rival*, spar, sparing, strive*, struggle*, superior*, surpass*, vied, vying, war
International scope	abroad, export, foreign, global*, import, intercontinental*, international*, multinational*, offshore, overseas, transcontinental*, transnational*, worldwide

Table 2.4. Dictionary Modifications

Dictionary	Comments	Words	Examples of phrases from Letter to Shareholders
Customer centricity	Added words that are used to reflect customers/clients	patient	- "transformed the lives of an increasing number of patients" - "first and foremost, focused on patients"
	Removed words that are used to reflect irrelevant contexts	purchase	- "enter into… stock purchase agreement" - "that includes conditional purchase order"
		purchasing	- "including purchasing the Shire vaccine business" - "after purchasing all of … remaining options"
Competitor centricity	Removed words that are used to reflect irrelevant contexts	battle	- "people who are fighting a battle against cancer" - "they battle together with their child"
		block	- "block harmful immune responses" - "antibody to block infection"
		blockade	- "androgen receptor blockade" - "blockade of cancer networks"
		combat	- "combat the complexities of diseases" - "combat some of the most aggressive forms of cancer"
		engage	- "engage me in a consulting contract" - "company broadly engaged in discovery research"
		participant	- "medical records from 500,000 volunteer participants" - "neither the participant nor the investigator will know which treatment each individual is assigned"

Note: modification of dictionaries by Homburg, Theel, and Hohenberg (2020) to measure customer centricity and competitor centricities

Table 2.5. Descriptive Statistics and Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Network centricity									
(2) Customer centricity	-.109**								
(3) Competitor centricity	.083*	-.127***							
(4) Gross profit	.289***	.074*	.116***						
(5) International scope	.234***	.138***	-.056	.218***					
(6) R&D intensity	-.022	-.015	.066	-.018	-.048				
(7) Gross profit $_{(t-1)}$	.296***	.048	.109**	.982***	.217***	-.017			
(8) Revenue (dummy)	.173***	-.050	.085*	.068***	.117***	.007	.067***		
(9) Firm size (dummy)	-.331***	-.073*	-.084*	-.401***	-.408***	-.029	-.386***	-.175***	
Mean	.116	.766	.161	208.091	.168	52.523	198.713	.796	.887
Standard deviation	.167	.582	.195	1581.691	.194	575.735	1546.191	.403	.315

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Notes: Correlations between measures pooled across 640 firm years (unbalanced panel of 126 firms observed over 13 years).

Table 2.6. The Impact of Network Centricity on Gross Profit

	Model 1	Model 2	Model 3	Model 4
Network centricity		138.194 (118.527)	-478.710 (465.12)	-215.857 (429.729)
Network centricity x Customer centricity x Competitor centricity				1396.339 (557.615)*
Network centricity x Customer centricity			913.627 (641.247)	626.139 (603.465)
Network centricity x Competitor centricity			-720.813 (832.511)	-1989.225 (1093.525)†
Customer centricity x Competitor centricity				-51.858 (125.094)
Customer centricity	117.618 (99.394)	116.603 (100.278)	-24.311 (32.506)	-11.711 (33.163)
Competitor centricity	-11.662 (51.989)	-16.759 (50.614)	76.000 (123.747)	126.558 (129.329)
International scope	-478.892 (306.018)	-481.665 (304.904)	-465.843 (286.118)	-452.960 (283.532)
R&D intensity	.009 (.004)*	.009 (.004)*	.006 (.003)†	.005 (.003)†
Gross profit (t-1)	.951 (.035)***	.949 (.034)***	.951 (.031)***	.952 (.032)***
Firm size (SME dummy)	-66.304 (34.647)†	-60.334 (33.195)†	-51.849 (37.730)	-54.860 (38.095)
Revenue (positive revenue dummy)	-130.564 (84.300)	-133.848 (86.610)	-37.562 (67.094)	-22.384 (62.600)
Constant	246.233 (78.564)**	218.395 (80.530)**	224.796 (87.585)*	192.919 (78.035)*
Firm fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
Lagged DV	yes	yes	yes	yes
#Observations (firm-years)	646	640	640	640
#Firms	131	126	126	126
R^2	.957	.958	.958	.958

Note: fixed effects panel model, robust standard errors
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.1$, standard errors in parentheses

Table 2.7. The Impact of Network Centricity on Conversion Ability

	Conversion Ability (t+2)		
	Model 1 Controls Only	Model 2 Main Effects	Model 3 Interaction Effects
Network centricity		.005 (.125)	-.058 (.127)
R&D intensity		-.000 (.000) †	-.001 (.000)***
Network centricity x R&D intensity			.003 (.001)**
Firm size (SME dummy)	-.102 (.050) *	-. 085 (.058)	-.101 (.058)†
Revenue	-.000 (.000)	-.000 (.000)	.000 (.000)
Constant	.213 (.056)***	.060 (.160)	.099 (.157)
Control for cost of coordination (HQ location)	yes	yes	yes
Control for industry (SIC code number)	yes	yes	yes
#Observations (firm-years)	107	107	107
#Firms	107	107	107
R^2	.218	.308	.331

Note: OLS regression, robust standard errors
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.1$, standard errors in parentheses

Table 2.8. The Impact of Network Centricity on Gross Profit Using 2006-2015 as the Observation Period

	Model 1	Model 2	Model 3	Model 4
Network centricity		-82.546 (109.470)	-588.870 (344.118)†	-57.659 (192.561)
Network centricity x Customer centricity x Competitor centricity				2739.624 (998.046)**
Network centricity x Customer centricity			400.560 (280.699)	-161.262 (124.694)
Network centricity x Competitor centricity			1071.266 (703.495)	-1435.647 (820.585)†
Customer centricity x Competitor centricity				-192.219 (185.989)
Customer centricity	105.449 (65.467)	107.112 (66.143)	35.848 (41.122)	71.571 (36.324)†
Competitor centricity	124.817 (103.289)	126.357 (103.226)	-104.781 (94.945)	69.681 (117.432)
International scope	-37.275 (166.485)	-34.108 (165.375)	-19.616 (162.453)	.607 (165.252)
R&D intensity	.014 (.003)***	.014 (.003)***	.015 (.003)***	.013 (.003)***
Gross profit (t-1)	1.323 (.063)***	1.324 (.063)***	1.327 (.061)***	1.335 (.058)***
Firm size (SME dummy)	-30.199 (37.349)	-34.025 (36.849)	-26.442 (35.433)	-43.146 (30.388)
Revenue (positive revenue dummy)	-14.282 (36.329)	-12.182 (35.776)	-44.436 (55.656)	10.521 (38.794)
Constant	-72.094 (88.952)	-58.755 (78.024)	63.449 (127.467)*	-52.879 (60.025)
Firm fixed effects	yes	yes	yes	Yes
Year fixed effects	yes	yes	yes	Yes
Lagged DV	yes	yes	yes	Yes
#Observations (firm-years)	522	518	518	518
#Firms	121	118	118	118
R^2	.955	.955	.955	.954

Note: fixed effects panel model, robust standard errors
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.1$, standard errors in parentheses