

The influence of manager-centric competencies on the performance of micro and small enterprises in Latin America

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ABSTRACT

According to an OECD report, micro and small enterprises (MSEs) constitute 99.5% of all firms in Latin America and employ approximately 60% of the LATAM population. However, despite their economic and social importance, MSEs are subject to high failure rates, primarily stemming from low productivity, lack of managerial skills and poor demonstration of supply chain management expertise. Therefore, the focus of this study is to evaluate which business competencies and integrative practices lead to the successful development of MSEs in Latin America using quantitative models such as principal component analysis, ordinary least-squares regression, and analysis of variance. The results show that the competencies integrated in a firm have only marginal direct effect (positive/negative) on firm performance. Significant effect is observed from supplier integration, customer integration and proactive innovativeness. However, when taken in context with the behaviors and actions of the manager, all competencies that are integrated in a firm showcased a significant effect on the selected performance parameters. Therefore, the study shows that (1) the performance of MSEs in Latin America is highly dependent on the interaction between firm competencies and the personal characteristics of the enterprise manager, and (2) to achieve higher levels of profitability and sales, managers must adjust their behaviors based on the different stakeholders they engage with. Effectively, managers must be conscious of their influence on firm performance as this significantly affects business growth in the long-term.

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1. INTRODUCTION

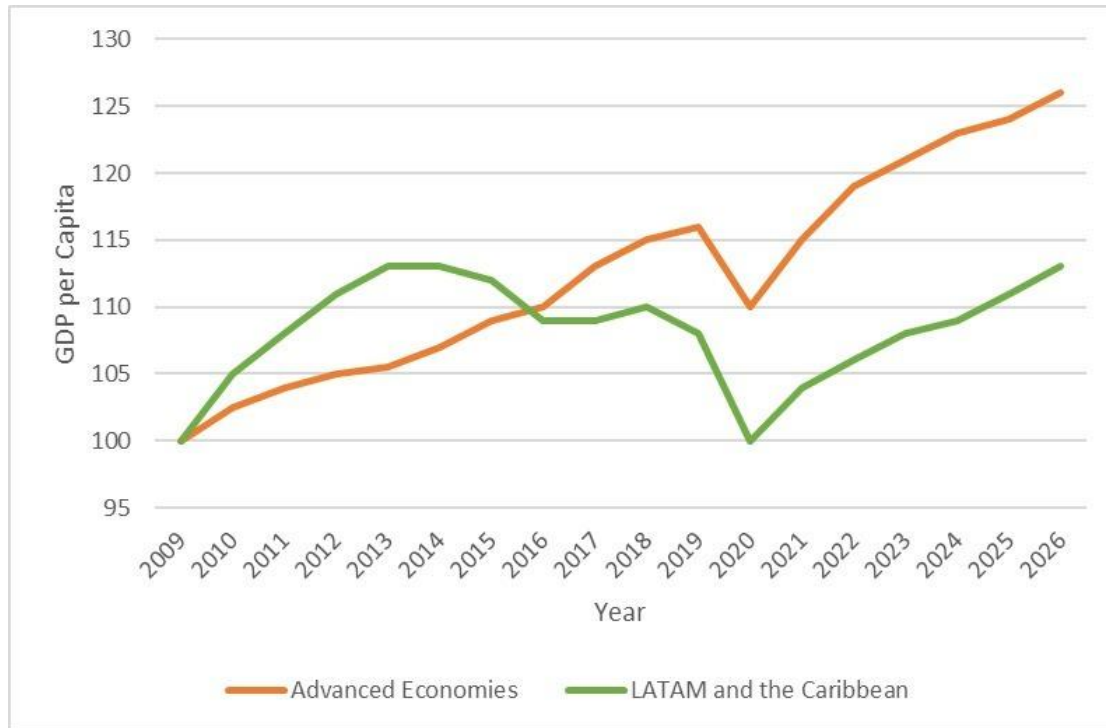
1.1 Research Background

Micro and small enterprises (MSEs) are at the forefront of economic development and innovation activities around the globe (Keskin et al., 2010; Mboniyane, 2006). These firms maintain dual importance to both the individual and to the nation, not only by providing employment opportunities and thereby raising the standard of living, but by “complement[ing] large scale modern sector enterprises,” (Kamunge et al., 2014), utilizing resources in unique ways, and cultivating communal experiences. Although small in size, the value that micro and small firms possess is formidable. There is little question that these enterprises will continue to serve as a pillar of economic development, innovation, and transformative growth for generations to come (Kamunge et al., 2014).

Micro and small enterprises are particularly valued in developing countries due to their “significant contribution to gratifying various socio-economic objectives, such as higher growth of employment, output, promotion of exports and fostering entrepreneurship” (Keskin et al., 2010). According to an Organization for Economic Cooperation and Development (OECD) and Development Bank of Latin America (CAF) report published in 2019, MSEs constitute 99.5% of all firms in Latin America and the Caribbean, accounting for approximately 60% of formal productive employment in that region (OECD et al., 2019). However, Latin American microenterprises only “account for about 3.2% of [total] production,” falling far below the percentage contributions to GDP made by other economies with similar labor force participation (OECD et al., 2019). To illustrate this, Figure 1 plots the Latin American GDP per capita versus the GDP per capita of other advanced economies.

Figure 1

GDP per Capita of Latin America (LATAM) and the Caribbean vs. Other Advanced Economies



Note. Assumes a 2017 USD value. Adapted from OECD et al. (2021), “Latin American Economic Outlook 2021: Working Together for a Better Recovery” by OECD et al. (2021). Copyright 2021 by OECD Publishing.

The categorization of MSEs “generally changes according to [the] economic size of countries” (Keskin et al., 2010). Other factors such as employee turnover, employment rate, revenue and asset availability can also differentiate a micro, small or medium-sized enterprise from that of a larger-scale enterprise (Zevallos, 2003). However, for consistency, this capstone adopts the OECD definition of micro and small enterprises as those with fewer than 10 employees and those with fewer than 50 employees, respectively (OECD et al., 2019; Chacra & Rocha, 2019).

1.2 Relevance, Motivation and Problem Statement

The economic importance of micro and small enterprises (MSEs) in Latin America is evidenced by the number of jobs they create and by the proportion of businesses they account for (OECD/ECLAC, 2012). However, while MSEs “are an essential component of the Latin American

business fabric” (OECD/ECLAC, 2012), they are disadvantaged by many factors such as “heterogeneous production structure[s]” (OECD/ECLAC, 2012) yielding lower-than-average outputs, “specialisation in low value-added products” (OECD/ECLAC, 2012), lack of managerial skills and insufficient supply chain management expertise (OECD/ECLAC, 2012; Velázquez-Martínez & Tayaksi, 2020; MIT LIFT Lab, 2022). “As a result, many firms perform dismally and fail to grow” (Kamunge et al., 2014), not only affecting the economy of the region, but condemning millions of families to poverty (Velázquez-Martínez & Tayaksi, 2020; MIT LIFT Lab, 2022). To exemplify this, “[a] 2005 study conducted by the Global Entrepreneurship Monitor (GEM) found that the survival rates for [MSEs] beyond 42 months were only ~33% for Latin American countries such as Argentina, Venezuela, Chile, and Mexico” (von Broembsen et al., 2005, as cited in Chacra & Rocha, 2019). Unless micro and small enterprises can overcome the difficulties working against them, a “vicious cycle of sluggish economic growth, poverty and slow structural change” will persist (OECD/ECLAC, 2012). With that, “it becomes vital to research the factors required to enable the MSEs to survive and indeed progress to the growth phase of the organizational life cycle” (Kamunge et al., 2014). This mission becomes even more important considering that increasing productivity is a fundamental step towards closing the existing standard of living gap in developing countries.

Evidence suggests that there is a significant relationship between business competencies and the performance of micro and small enterprises (Sidek & Mohamad, 2014). Additionally, the dynamics of micro and small enterprises may be significantly impacted by the attributes and behaviors of their owners (Palmer et al., 2019). As such, the primary objective of this research is to generate new insights into how business competencies, integrative practices and supply chain management capabilities affect the performance of micro and small enterprises. This capstone derives practical and long-lasting benefits for small firm owners in Latin America by answering the following questions: (1) what business and supply chain management competencies contribute to the growth of micro and small firms in Latin America?, and (2) how does integration with suppliers, customers and internal employees impact micro and small firms in Latin America?

A fair amount of research has already been conducted regarding the influence of entrepreneurial factors on small business success (Velázquez-Martínez & Tayaksi, 2020; MIT LIFT Lab, 2022).

However, these studies do not specifically apply to micro and small enterprises in Latin America. Additionally, “[t]here are only a limited number of studies on the influence of managerial competencies on small business growth” (Sidek & Mohamad, 2014), which is the primary focus of this capstone. Furthermore, there is scant research on how business and managerial competencies affect an MSEs’ relationship with customers, suppliers, and internal partners. In conclusion, the failure of existing literature to address the relationship between business competencies and firm performance presents an evident gap that this research addresses.

1.3 Methodology & Hypothesis Generation

This research applies quantitative models to empirical data on micro and small enterprises (MSEs) within the context of Latin America. The data used in this analysis is derived from a questionnaire that was distributed to and completed by 45 firm owners (i.e., “decision-makers”) from various MSEs across Latin America. The intent of the questionnaire is to measure the existence of business and supply chain competencies within each of the surveyed MSEs. Prior to implementation, we conducted a scientific literature review to build the theoretical concepts and measurement scales for each competency analyzed in the questionnaire.

Grounded in the findings from existing research, this capstone tests the following hypotheses:

1. **Hypothesis for Direct Effect (H1):** There is a *direct relationship* between firm and manager competencies and the performance of micro and small firms in Latin America.
2. **Firm Dynamics Hypothesis (H2):** The existence of business and firm-centric competencies positively impacts the performance of micro and small firms in Latin America. This relationship is further amplified by the *moderating effect* (i.e., having a multiplicative effect on the direct relationship between two variables) of internal integration and the *mediating effect* (i.e., having an additive effect on the direct relationship between two variables) of supplier integration, customer integration, and innovativeness.
3. **Manager Dynamics Hypothesis (H3):** The existence of manager-centric competencies positively impacts the performance of micro and small firms in Latin America. This relationship is further amplified by the *moderating effect* (i.e., having a multiplicative effect on the direct relationship between two variables) of supplier integration, customer integration, internal integration, and innovativeness.

In our analysis, we use statistical modeling techniques such as principal component analysis (PCA), multivariate linear regression and analysis of variance (ANOVA) to test our hypotheses. The results of these models reveal the competency mix leading to the successful development, performance, and growth of small and micro firms in Latin America.

This research is conducted on behalf of the Low Income Firms Transformation (LIFT) Lab at MIT; an initiative devoted to alleviating poverty in Latin America (MIT LIFT Lab, 2022). At the time of this research, the MIT LIFT Lab is aligned with 20 partner universities across Latin America, an annual average of 800 students and approximately 400 micro and small enterprises.

Our capstone report proceeds as follows: Chapter 2 examines the existing literature on the importance of micro and small enterprises in a global context and the parameters with which these firms are evaluated. Chapter 3 reviews the methodology we follow to collect, analyze, and interpret our data. Chapter 4 summarizes the findings of our analyses. And lastly, Chapter 5 concludes with a discussion on the implications of our research and recommendations for future advancements.

2. LITERATURE REVIEW

Ultimately, our capstone answers the following research questions: (1) what business and supply chain management competencies contribute to the growth of micro and small firms in Latin America?, and (2) how does integration with suppliers, customers and internal employees impact the performance of micro and small firms in Latin America? This literature review is intended to formalize the concepts used to address our research objective. Moreover, this chapter (1) comments on the current landscape of micro and small enterprises in developing countries, and outlines the gaps present within existing literature, (2) identifies the parameters that can be used to measure the performance of micro and small enterprises in Latin America, (3) defines the terms *competency* and *skill* as they pertain to this capstone, and (4) outlines the business and managerial competencies that significantly influence the performance, growth and survival of micro and small enterprises in Latin America. Within Section 2.4, the competencies are discussed and presented as follows: Administrative Items & Record-Keeping Capability, Strategic-Managerial Competencies, Supply Chain Management Competency, Behavioral Competencies, Innovativeness, and Supply Chain Integration, which encompasses Supplier Integration, Customer Integration, and Internal Integration.

2.1 Current Landscape Evaluating Micro and Small Enterprises in Developing Countries

Our capstone studies the performance of micro and small enterprises (MSEs) in Latin America. Micro and small firms in Latin America, in particular, face an arduous situation “since [these] countries have fewer resources to face economic strains” (Illipronti, 2021). However, by identifying the mix of competencies and integrative practices that enable micro and small enterprises to grow, we consequently improve the survival rate of these firms.

The importance of MSEs is widely uncontested, largely due to their ability to generate employment, income, and other opportunities. However, until recently, “relatively little has been known about the dynamic contributions of MSEs” (Liedholm, 2002). That said, there has been a growing interest in studying the nuances of microenterprises over the last decade. Liedholm (2002) contends that this expanded interest “is an encouraging sign: markets are working, and people are finding opportunities to participate in ways that empower and nourish many, particularly including

those who are otherwise most disadvantaged.” Most significantly, micro and small enterprises contribute greatly to “the development of a country’s economy, it’s [sic] political stability as well as [its] social uplifting” (Tehseen & Ramayah, 2015). Therefore, it is vital to understand the factors that affect small business success to best nurture these operations and, ultimately, influence the greater social, political, and economic landscape of a nation or region.

While research on MSEs continues to grow, there are still gaps in this field of study. Existing research on the success or performance of MSEs is often outside of the context of Latin America. For example, Urban and Naidoo (2012) discuss insights into the operational skills required of micro and small manufacturing firms in South Africa. Similarly, Zhao et al. (2011) study micro and small enterprises in the Asian-Pacific region, specifically to uncover how external integration with customers and suppliers is simultaneously influenced by internal factors and the firms’ commitment to their customers and suppliers. The conclusions drawn from each example cannot necessarily be extended to a region beyond that which was studied, thereby necessitating new research that explores the behavior of micro and small firms in Latin America, specifically.

Furthermore, while some existing research explicitly evaluates MSEs in Latin America, the underlying purpose of these studies differs from our own. For example, Illipronti (2021) addresses the most effective time for microenterprises in Latin America to pay suppliers and collect from customers. However, Illipronti’s study does not evaluate general business competencies as this capstone does. Rather, his study focuses more broadly on customer relationship management (CRM) and supplier relationship management (SRM) best practices.

In conclusion, our capstone contributes to closing the existing research gap on how business and managerial competencies affect the performance of micro and small enterprises in Latin America.

2.2 Measuring the Performance of Micro and Small Enterprises in Developing Countries

As the pace of change continues to accelerate, it is imperative to find ways to help micro and small enterprises (MSEs) achieve higher levels of profitability and stability. An Organization for Economic Cooperation and Development (OECD)/Economic Commission for Latin America and the Caribbean (ECLAC) report highlights how micro and small enterprises experience great

difficulty participating in “the trade and production streams that characterise the globalised economy” since most MSEs only operate on a local scale. Microenterprises are largely disadvantaged because of the “goods they produce and the types of markets they serve” but also because of a gap in management capabilities (OECD/ECLAC, 2012). As such, we ground our research by identifying the parameters that can be used to measure and assess the performance of MSEs. These parameters will guide our analysis to understand how higher levels of growth and competitiveness in global markets can be achieved.

Sidek and Mohamad (2014) used the following response variables to assess small business growth in Malaysia: market share, sales, profitability, growth, productivity, product quality, number of employees and overall performance. Those measures were adapted from other literary sources published by Voola and O’Cass (2010) and Ar and Baki (2011). Correspondingly, another study conducted by Urban and Naidoo (2012) reinforced Sidek’s and Mohamad’s (2014) selection to use growth in profitability and number of employees as an objective way to measure firm performance. Heshmati (2001) shows evidence that the growth rate of MSEs is defined in terms of the number of employees, sales, and assets. Therefore, this capstone draws conclusions about the performance of micro and small enterprises in Latin America by measuring the following six variables: (1) Change in Sales, (2) Change in Revenue, (3) Change in Number of Total Employees, (4) Change in Number of Paid Employees, (5) Change in Customers, and (6) Change in Suppliers.

2.3 Competencies versus Skills

This capstone infers the existence of a competency by measuring the skills and activities observed within the firm. We use the interaction of these factors as a proxy to determine the degree to which a competency is present. Therefore, it is important to draw a distinction between *competencies* and *skills* to conceptualize the framework for this research.

While *competencies* and *skills* are often used interchangeably, the foundation of this research rests on the understanding that these terms refer to fundamentally different things. Existing literature supports this assumption. Gammelgaard and Larson (2001) argue that “competencies refer to experience-based and context-dependent knowledge” whereas “[s]kills cover general, context-independent knowledge.” Similarly, Derwik et al. (2016) notes that a “competence is not simply a

capacity or attribute of an individual, nor an attribute of a job, but the interaction between the individual and the job at hand (Collin, 1989; Ellström & Kock, 2008; Winterton, Delamare-Le Deist, & Stringfellow, 2006)". In summary, skills – the highly accessible “general tools and rules” used to guide decisions within the firm (Gammelgaard & Larson, 2001) – can be taught. On the contrary, a competency can only be acquired through practice, experience, and advancement in one's career.

Accordingly, this capstone contends that competencies are obtained when the relevant supporting skills have been mastered. “Dreyfus and Dreyfus (1986) argue that a competent practitioner makes decisions based upon rules and analysis, but with organizational experience can depart from rule-based analysis and make synchronic, intuitive, and holistic decisions” (Gammelgaard & Larson, 2001). With this understanding, the following sections of this review present the competencies defined in this research, accompanied by the key attributes – i.e., the skills – that we use to measure the existence of said competencies.

2.4.1 Administrative Items & Record-Keeping Capability

At the most rudimentary level, a successful business must effectively manage and retain records of various business transactions. These records may include items such as profit and loss statements, documentation of income and expenditures, sales transactions, or other related financial statements. Research suggests that “poor record keeping and...lack of experience and skills in basic business management are the major contributors to small business failures” (Tushabonwe-Kazooba, 2006, as cited in Sidek & Mohamad, 2014). Similarly, Muchira and Ambrose (2014) assert that “proper keeping of records of all business transactions is vital for the success of the business” (King & McGrath, 1998, as cited in Muchira & Ambrose, 2014). Without accurate and complete records, the firm is likely to fail (Muchira & Ambrose, 2014).

Research shows that there is a strong correlation between a firm's record-keeping activities and their performance (Bowen et al., 2009; Muchira & Ambrose, 2014). However, these same studies reveal that firm owners are often not equipped with the knowledge, tools, or time to keep complete financial and/or administrative records. This lack of knowledge inhibits entrepreneurs from “calculat[ing] their...profit efficiently” (Muchira & Ambrose, 2014) and maximizing the potential

of their business. Therefore, this capstone seeks to measure a firm's ability to establish an internal management routine where administrative tasks, such as thorough record keeping, are addressed with defined frequency.

Building on the literature presented in Section 2.4.1, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The existence of an established routine(s) for record keeping within the firm (Muchira & Ambrose, 2014; Derwik et al., 2016).
- ii. Demonstration of organized processes/records within the firm (Derwik et al., 2016).

2.4.2 Strategic-Managerial Competencies

The Strategic-Managerial Competencies refer to the owners' ability to establish, evaluate and execute the activities required by the firm (Tehseen & Ramayah, 2015). The Organization for Economic Cooperation and Development (OECD) and Economic Commission for Latin America and the Caribbean (ECLAC) jointly published a report which sheds light on the increasing importance of "non-cognitive socio-emotional skills" that are otherwise recognized as "soft skills" (OECD/ECLAC, 2012). The report suggests that education in traditional disciplines should be complemented by an understanding of the "new type of professional skills demanded by job markets" in Latin America (OECD/ECLAC, 2012). These "soft skills" are defined as "critical thinking, responsibility, teamwork, the ability to solve problems and handle change, oral and written communication, and the ability to understand and relate to one's environment" (OECD/ECLAC, 2012). As such, successful managers should possess both strong business acumen and "master a mix of basic skills in order to perform their roles effectively in business" (Sidek & Mohamad, 2014). A manager cannot be successful without demonstrating proficiency in the basic managerial skills – such as planning, directing, delegating, assessing, or controlling – that enable and yield successful outputs (Sidek & Mohamad, 2014).

Building on the literature presented in Section 2.4.2, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The owners' comfortability dividing work amongst team members (Sidek & Mohamad, 2014).

- ii. The owners' tendency or aversion to accepting risk (Sidek & Mohamad, 2014; Tehseen & Ramayah, 2015).
- iii. The owners' ability to grab new business opportunities (Sidek & Mohamad, 2014).
- iv. The owners' ability to develop a vision, mission and/or intent for the firm (Sidek & Mohamad, 2014).
- v. The owners' decision-making ability (Tehseen & Ramayah, 2015; Derwik et al., 2016).
- vi. The owners' proactive/reactive tendencies when it comes to problem solving (Sidek & Mohamad, 2014; Derwik et al., 2016).

2.4.3 Supply Chain Management Competency

Supply chain management and logistics is a critical component of any successful economy (Thai et al., 2012). This field, which has grown rapidly in the last decade, is vital to ensuring the deployment of larger scale business initiatives. "As business environments continue to change rapidly, logistics and supply chain sectors face many challenges, of which the need for well trained and skilled logistics managers is absolutely essential" (Thai et al., 2012). Relatedly, there are many studies which highlight the relevance of "best practices related to Supply Chain Management to enhance small and micro-enterprises productivity" (Silupú et al., 2020). With that, firm owners must demonstrate knowledge of topics related to supply chain management to accelerate the growth of their business.

Supply chain management expertise concerns the skills and general know-how that must be present in order for the firm to succeed operationally. This competency measures the firm's familiarity with, and application of, important supply chain management concepts that enable operations to run successfully. A study published by Derwik et al. (2016) synthesizes existing literature to create a "comprehensive framework" on manager competences in the field of logistics and supply chain management. This framework details the practical competencies and example behaviors that managers must possess to be successful. Derwik et al. (2016) argues that managers who leverage unique combinations of competences "may create unexplored synergies, thereby achieving greater potential to maximize L&SC manager performance."

Building on the literature presented in Section 2.4.3, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. Demand forecasting capability (Derwik et al., 2016).
- ii. Inventory management capability (Derwik et al., 2016, Silupú et al., 2020).
- iii. Order placement/purchasing capabilities (Derwik et al., 2016, Silupú et al., 2020).
- iv. Continuous improvement initiatives (Derwik et al., 2016).

2.4.4 Behavioral Competencies

The benchmark for success of a business, especially those of a micro or small scale, often extends beyond the traditional factors (e.g., financial viability, profit, job creation). In many cases, a successful business is categorized in part by the personal characteristics of the firm owner – measuring their inherent abilities, personality traits or familial tendencies. As noted by Sidek and Mohamad (2014), “business competencies are.... related to the characteristics of the entrepreneurs themselves” and, therefore, should not be overlooked when analyzing the overarching performance of micro and small enterprises. Successful entrepreneurs are self-aware, self-managed and self-motivated (Derwik et al., 2016), and research indicates that their behavioral choices or instincts have greater implications on firm success and survival rates. In conclusion, “the majority of MSEs consist of one person working alone” (Liedholm, 2002), and, therefore, measuring the owners’ inherent characteristics is important as research has proven these characteristics greatly influence sustained firm growth.

Building on the literature presented in Section 2.4.4, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The owners’ inherent ability to lead (Derwik et al. 2016).
- ii. The owners’ relative degree of motivation to work (Derwik et al., 2016; Tehseen & Ramayah, 2015).
- iii. The owners’ willingness to receive and implement constructive feedback (Tehseen & Ramayah, 2015).
- iv. The breadth of the owners’ social and professional network and the extent to which that network is leveraged (van der Merwe et al., 2020; Derwik et al., 2016).

2.4.5 Innovativeness

Innovation – of product/service offerings, of technological advancements or of process improvements – is a cornerstone of success for many firms. When a firm can innovate, they are well positioned to create a competitive and sustainable advantage. As noted by Walter et al. (2017), “[t]he key to longevity and business competitiveness lies in innovation”. Political, social, economic and environmental climates are changing so rapidly that businesses must innovate and adapt to withstand the pressure placed on them. Firms that recognize the power of innovation harness a unique ability to differentiate themselves from their competition or hedge against future challenges. This capability is especially critical for micro and small enterprises, as these firms often do not have access to the resources possessed by larger firms (Walter et al., 2017).

This research investigates MSEs ability to seize opportunity, adapt to unforeseen environmental circumstances, and devise new ways of approaching problems that arise. More concisely, the innovativeness competency tests the firms’ demonstrated ingenuity or originality when faced with challenges. Pereira et al. (2009) assert that “most MSE entrepreneurs associate innovation less with the differentiated elaboration of products and services and more as a business model” (Walter et al., 2017). This perspective suggests that micro and small firm owners embed innovation within their existing operations, as opposed to pursuing grander scale projects or “radical innovation activities such as investment in R&D” (OECD/ECLAC, 2012). As a result, “innovation in MSE[s] presents itself as the result of simple actions,” which may include “acquisitions of new equipment, adoption of innovation management practices and, usually, incremental innovations” that utilize the existing resources possessed by the firm (Walter et al., 2017). As such, our capstone holds that the concept of innovation in a Latin American context, specifically among MSEs, shall be used broadly “since most of the companies [in Latin America] operate in non-knowledge-intensive and non-technology-intensive industries” (OECD/ECLAC, 2012).

Building on the literature presented in Section 2.4.5, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The firms’ ability to adapt to unforeseen environmental circumstances (Dlugoborskyte, 2018).
- ii. The firms’ ability to devise new ways of approaching problems (Dlugoborskyte, 2018).

- iii. The firms' ability to embrace new product/service introductions (Dlugoborskyte, 2018).

2.4.6 Supply Chain Integration

Integration within and across supply chain partners assures proper alignment of objectives, a shared vision and streamlined communication channels. According to literature, “[s]upply [c]hain [i]ntegration (SCI) consists of internal integration of different functions within a company and external integration with trading partners” (Zhao et al., 2011). There are two primary types of supply chain integration – external integration and internal integration – both of which are defined in the ensuing sections.

External integration refers to the degree to which a firm can partner with key supply chain members (i.e. customers and suppliers) to structure their inter-organizational strategy, practices, procedures and behaviors in order to fulfill customer requirements (Chen and Paulraj, 2004; Stank et al., 2001). This type of integration encourages the use of synchronized processes and collaborative working environments to achieve mutually beneficial results. External integration promotes the use of alliances with suppliers and customers, in which the company builds strategic partnerships and jointly develops strategies to best address market opportunities (Narasimhan and Kim, 2002). On the contrary, internal integration refers to the degree to which a firm can structure its organizational practices, procedures, and behaviors into collaborative, synchronized and manageable processes in order to fulfill customer requirements (Cespedes, 1996; Chen and Paulraj, 2004; Kahn and Mentzer, 1996). A more thorough discussion of each integration concept is explored below.

2.4.6a External Integration: Supplier Integration

Research supports that micro and small enterprises benefit from integrating with upstream suppliers as this helps ensure a seamless flow of products/services and exchange of information between value chain partners. As noted by Koufteros et al. (2005), “[s]upplier integration leads suppliers to operate as strategic collaborators,” which in turn, benefits both the supplier(s) and the firm. A partnership of this nature is characterized by a long-term commitment between the involved entities, open communication, and mutual trust (Koufteros et al., 2005). The ability to easily exchange information and jointly resolve problems results in invaluable operational

synergies. Supplier integration also allows both the firm and the supplier to leverage their own core competencies to support the other partners' operations, consequently reducing transaction costs across the supply chain (Zhao et al., 2008).

Building on the literature presented in Section 2.4.6a, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The level of linkage with major suppliers through information networks (Flynn et al. 2010; Zhao et al., 2008).
- ii. The establishment of quick ordering systems with major suppliers (Flynn et al., 2010; Zhao et al., 2008).
- iii. The existence of an intent to maintain and continuously improve relationships with suppliers (Zhao et al., 2008).
- iv. The level of communication and feedback sharing with major suppliers (Mohr and Spekman, 1994).
- v. The creation of close relationships between employees of both parties (Rindfleisch and Moorman, 2001).
 - a. The development of trust with suppliers (Kaufman et al., 2006; Rodríguez et al., 2007).

2.4.6b External Integration: Customer Integration

Customer integration may be defined as determining customer requirements and tailoring internal activities to meet those requirements. When a firm is committed to their relationship with their customers, a strong and long-lasting bond is forged between the company and its clientele, thereby encouraging loyal buying habits on the part of consumers. Integration downstream is also critical to align the firm with the expectations of their customers. As noted by Koufteros et al. (2005), “[c]ustomer integration ensures that the voice of the customer plays a vital role in the innovation process within the organization”. As a result, MSEs that focus on developing meaningful customer relationships cultivate a strategic capability which positions the firm for fruitful growth.

Building on the literature presented in Section 2.4.6b, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The level of linkage with major customers through information networks (Flynn et al. 2010; Zhao et al., 2008).
- ii. The frequency of period contacts with major customers (Flynn et al. 2010; Zhao et al., 2008).
- iii. The level of communication and feedback sharing with major customers (Flynn et al. 2010; Zhao et al., 2008).
- iv. The level of commitment towards meeting major customers' needs (Flynn et al. 2010; Zhao et al., 2008).
- v. The existence of an intent to maintain and continuously improve relationships with customers (Flynn et al. 2010; Zhao et al., 2008).

2.4.6c Internal Integration

Internal integration is commonly perceived as relating to data and information systems; however, internal integration also addresses cross-functional collaboration. More formally, internal integration is defined as the degree to which a firm aligns its organization to a set of logical processes that ultimately fulfill customer requirements (Cespedes, 1996; Chen and Paulraj, 2004; Kahn and Mentzer, 1996). Koufteros et al. (2005) reinforces this idea by asserting that the different functions within a firm should not act as functional silos, but instead as part of a dynamic and integrated ecosystem.

Building on the literature presented in Section 2.4.6c, our study adapts and measures the following attributes within the context of micro and small firms in Latin America:

- i. The level of data integration among internal functions (Flynn et al., 2010).
- ii. The knowledge and domain of employees' roles within the firm (Mohr and Spekman, 1994).
- iii. The encouragement of employees to come with suggestions for improvements (Rindfleisch and Moorman, 2001).
- iv. The extent to which employees consider the business interest as well as their own when making decisions (Kaufman et al., 2006; Rodríguez et al., 2007).

- v. The level of trust with employees (Kaufman et al., 2006; Rodríguez et al., 2007).

The failure of micro and small enterprises poses a significant barrier for initiatives that attempt to alleviate poverty, increase the standard of living and create economic sustainment in developing nations. While other studies have contributed to the performance of micro and small enterprises in developing countries, little research has been conducted on micro and small firms in Latin America, in particular. In this capstone, we study the mix of competencies and integrative practices that foster survival and growth of micro and small enterprises. The preceding chapter (Chapter 3) will explore the methodology used to analyze the relationship between firm competencies and business performance.

3. RESEARCH METHODOLOGY

As previously stated, the primary objective of this capstone is to study how business and supply chain competencies interplay with external and internal integration factors to improve the survival rate of micro and small enterprises (MSEs) in Latin America. This chapter explores the methods used to collect, clean, and analyze the data required to support this objective. This chapter has five sub-sections: (1) Instrument Development and Data Collection, (2) Descriptive Statistics of Data Gathered from the Questionnaire, (3) Principal Component Analysis for Feature Variable Computation, and (4) Hypothesis Development and Testing.

3.1 Instrument Development and Data Collection

Our analysis uses local field research via a questionnaire as the primary method for data collection. In total, 196 students from 9 partner universities aligned with the MIT LIFT Lab administered the questionnaire to participants via the web-based Fulcrum application¹. Using virtual training webinars, student interviewers were briefed on proper data collection procedures. These training sessions eliminated the potential for subjective bias during questionnaire administration and ensured that data collection was performed under controlled circumstances. In addition to the trainings, students were also instructed to follow a standardized procedure to administer the questionnaire to research participants. Student interviewers were asked to adhere to the following guidelines:

- i. Please do not change the formulation or structure of the question while administering the questionnaire.
- ii. Remember to provide the [images depicting the] corresponding scale for each section.
- iii. Notify the interviewee that you have sent the scale and you will begin the questionnaire.
- iv. If necessary, you may read the question [to the survey participant] again taking care not to change the formulation/structure of the question.

One representative (i.e., “decision-maker” or “firm owner”) from each participating firm was asked to fill out the questionnaire. The terms “decision-makers” and “firm owners” are used interchangeably throughout this capstone. Decision-makers are personnel at the firm who are

¹ “Platform Overview.” Fulcrum. Accessed May 2, 2022. <https://www.fulcrumapp.com/platform/overview>.

responsible for the workforce, delegating tasks and/or overseeing many of the firms' operations. This person may not necessarily be the owner but holds great importance within the firm. Both the key decision-maker and/or the firm's owner were qualified to answer our questionnaire.

Given COVID-19 protocols and regulations, students were restricted to communicating with decision-makers via Zoom and WhatsApp. Only on a few occasions was the questionnaire administered to respondents in-person. During these meetings with decision-maker(s), the student(s) populated all responses directly into Fulcrum and saved each instance as a unique record. The data was then pulled from Fulcrum and exported locally into Microsoft Excel and Google Colaboratory² for analysis.

The survey was initially written in English and then translated into Spanish since most decision-makers' native language is Spanish. The survey was tested via a series of focus groups before final release to estimate expected completion times, verify translation accuracy, and ensure concision.

3.1.1 Format and Structure of Questionnaire

Our questionnaire consists of nine unique sections (Table 1). Section I identifies six performance parameters and prompts respondents to identify the relative change in each parameter over the last twelve months. Section I also contains a question regarding decision-makers' priorities when operating their business. Respondents are given three fixed choices (I want to support my family; I want to make a profit; I want to create jobs for others) and asked to rank each in order of importance.

Sections II, III, IV, V, VI and VII use a five-point Likert scale to evaluate the extent to which each participant agreed with the provided statement (1 - Strongly Disagree; 2 - Disagree; 3 - Undecided; 4 - Agree; 5 - Strongly Agree; 7 - I Don't Know / Not Applicable). A Likert scale is designed to measure attitudes or opinions of respondents by having each specify their level of agreement with a provided statement. Respondents may only select one statement from a continuum of possibilities.

² "Frequently Asked Questions." Google Colaboratory. Accessed May 2, 2022. <https://research.google.com/colaboratory/faq.html#:~:text=Colaboratory%2C%20or%20%E2%80%9Ccolab%E2%80%9D%20for,learning%2C%20data%20analysis%20and%20education.>

In Sections VIII and IX, respondents are presented with two opposing statements and are asked to specify which statement they resonate with more (1 - Strongly Describes Me; 2 - Somewhat Describes Me; 3 - Undecided; 4 - Somewhat Describes Me; 5 - Strongly Describes Me). Much like Sections II-VII (described above), Sections VIII and IX are also measured using a 5-point Likert scale.

The questionnaire was released to participants in October 2021 and remained open for approximately 30 days. We provide an English copy and Spanish translation in Exhibit A and Exhibit B of the Appendix, respectively.

3.1.2 Questionnaire Contents

Many competencies and statements included in our questionnaire were extracted from existing research on micro and small enterprises (MSEs) found in the literature review (Chapter 2). Some statements, questions and competencies were synthesized and/or rephrased to fit within the specific context of our research. Tables 2a-2e map each questionnaire statement with the literary source(s) that it was derived from.

Table 1*The Structure and Measurement Scale(s) of the Questionnaire*

Questionnaire Section	Variable(s) Measured	Number of Statements	Opening Statement in Questionnaire	Questionnaire Scale
I	Demographic and Performance Data	6	Please specify what change (if any) you noticed within the last year in....	5-point Likert scale
		1	What is the motivating intent behind running your business?	3-option prioritization
II	Supplier Integration	6	Please indicate the extent to which the respondent agrees with the following statements...	5-point Likert scale
III	Customer Integration	5	Please indicate the extent to which the respondent agrees with the following statements...	5-point Likert scale
IV	Administrative Items & Record-Keeping Capability	3	Please indicate the extent to which the respondent agrees with the following statements...	5-point Likert scale
V	Internal Integration	5	Please indicate the extent to which the respondent agrees with the following statements...	5-point Likert scale
VI	Supply Chain Management Competency	4	Please indicate the extent to which the respondent agrees with the following statements...	5-point Likert scale
VII	Innovativeness	5	Please indicate the extent to which the respondent agrees with the following statements...	5-point Likert scale
		1	If you agree to any of the aforementioned statements, please describe an example in few sentences.	Open-ended question
VIII	Strategic-Managerial Competencies	6	Please indicate the extent to which the following statements describe you...	5-point Likert scale with opposing statements
IX	Behavioral Competencies	5	Please indicate the extent to which the following statements describe you...	5-point Likert scale with opposing statements

Table 2a

Linkage Between Research Questionnaire and Statements from Existing Literature

No.	Competency	Statement from Questionnaire	Statement(s) from Literature	Source
1	Supplier Integration	The level of information exchange that the firm has with its major supplier(s) through information networks is 100% transparent.	1. The level of information exchange with our major supplier through information networks.	1. Flynn et al. (2010)
		The firm has managed to establish a quick ordering process in collaboration with its major supplier(s).	1. The establishment of quick ordering systems with our major supplier.	1. Flynn et al. (2010)
		The firm intends to maintain and continuously improve the relationship with its primary supplier(s).	1. It is very important for our organization to maintain the relationship with our major supplier.	1. Zhao et al. (2011)
		The firm asks its supplier(s) for advice and encourages them to come with suggestions for improvements.	1. We ask the supplier for advice and counsel. We encourage the supplier to come with suggestions for improvements.	1. Horn et al. (2014)
		The firm's employees share close social relationships with the employees from its supplier(s) (i.e., they like to spend time together).	1. Our employees share close social relationships with the employees from the supplier.	1. Horn et al. (2014)
		The firm can rely on its supplier(s) to fulfill the business requirements.	1. When an agreement is made, we can always rely on the supplier to fulfill requirements.	1. Horn et al. (2014)
2	Customer Integration	The level of information exchange that the firm has with its primary customers through information networks (including but not limited to ordering, customer service, POS (points of sale), inventory levels, and demand forecasting) is 100% transparent.	1. The level of linkage with major customer through information network.	1. Flynn et al. (2010) & Horn et al. (2014)
		Communication with the firm's major customers is done with periodic frequency (e.g., once a week, a few times a month, etc.).	1. The frequency of periodical contacts with our major customer.	1. Flynn et al. (2010) & Horn et al. (2014)
		The firm seeks feedback from its customers in order to improve and meet customers' needs.	1. Follow-up with our major customer for feedback.	1. Flynn et al. (2010) & Horn et al. (2014)
		The relationship that the firm has with its major customers is something that the firm is very committed to.	1. The relationship that our firm has with our major customer is something we are very committed to.	1. Horn et al. (2014)
		The firm intends to maintain and continuously improve the relationship with its primary customers.	1. The relationship that our firm has with my major customer is something our firm intends to maintain indefinitely.	1. Horn et al. (2014)

Table 2b

Linkage Between Research Questionnaire and Statements from Existing Literature (cont.)

No.	Competency	Statement from Questionnaire	Statement(s) from Literature	Source
3	Administrative & Record-Keeping Capability	The firm effectively perform general administrative tasks (i.e., record keeping, financial planning).	1. General administration practices. 2. Ability to develop, recommend, and execute activities resulting in fulfillment of plans and strategies.	1. Derwik et al. (2016) 2. Derwik et al. (2016)
		The firm has established an internal management routine where it takes care of administrative tasks with a defined frequency (i.e., financial record-keeping, inventory planning, sales transactions, bill payments, budgeting).	1. [Bookkeeping assists with] making accurate report of current spending and revenue to help compare actual results with projections in the business budget. 2. Accurate records ensure documentation to back up my tax deductions. 3. [Bookkeeping] ensures accuracy of each payroll period to make sure that each employee receives the proper amount.	1. Muchira & Ambrose, (2014) 2. Muchira & Ambrose, (2014) 3. Muchira & Ambrose, (2014)
		The firm has established and successfully maintains financial performance practices (i.e., budgeting, profit and loss evaluations, income/expenditure sheet).	1. Demonstrate basic accounting skills, manage budget, and control costs.	1. Derwik et al. (2016)
4	Internal Integration	The firm has managed to integrate its data in a way that information (e.g., transactional company data) is available at any time.	1. Data integration among internal functions. 2. Real-time searching of the level of inventory.	1. Zhao et al. (2011) 2. Flynn et al. (2010)
		The firm's employees know their role in the business in an extent that they proficiently perform this role.	1. Our departments help each other to accomplish their tasks in the most effective way.	1. Horn et al. (2014)
		The firm encourages its employees to share suggestions in order to constantly improve.	1. We encourage other departments to come with suggestions for improvements.	1. Horn et al. (2014)
		When making decisions, the firm's employees consider the business' interest on top of their own.	1. When making decisions, other departments consider our business interest as well as their own.	1. Horn et al. (2014)
		The firm trusts that its employees are honest with the business.	1. Other departments are sincere and honest with us.	1. Horn et al. (2014)

Table 2c

Linkage Between Research Questionnaire and Statements from Existing Literature (cont.)

No.	Competency	Statement from Questionnaire	Statement(s) from Literature	Source
5	Supply Chain Management Competency	The firm is able to predict demand for its products/services.	<ol style="list-style-type: none"> 1. Demonstrate understanding of the supply chain concept, synchronization challenges, and performance trade-offs. 2. Understand and profile customers and analyze patterns to identify market opportunities. 3. Measure customer satisfaction and ensure customer focus in all areas. Practice value-added customer relationship. 	<ol style="list-style-type: none"> 1. Derwik et al. (2016) 2. Derwik et al. (2016) 3. Derwik et al. (2016)
		The firm has processes that support inventory management by providing accurate registers.	<ol style="list-style-type: none"> 1. Demonstrate understanding of the supply chain concept, synchronization challenges, and performance trade-offs. 2. Know and use inventory systems for demand planning and inventory management. 	<ol style="list-style-type: none"> 1. Derwik et al. (2016) 2. Derwik et al. (2016)
		The firm has a routine order management and purchasing review (e.g., once a week, a few times a month, etc.).	<ol style="list-style-type: none"> 1. Demonstrate understanding of the supply chain concept, synchronization challenges, and performance trade-offs. 2. Order, monitor, review, and execute order flow and allocation. 	<ol style="list-style-type: none"> 1. Derwik et al. (2016) 2. Derwik et al. (2016)
		The firm can identify process and quality improvements needed and enact meaningful change to address such improvements.	<ol style="list-style-type: none"> 1. Demonstrate understanding of the supply chain concept, synchronization challenges, and performance trade-offs. 2. Understand and profile customers and analyze patterns to identify market opportunities. 3. Demonstrate knowledge of the criteria for assessing and evaluating suppliers. Undertake basic negotiations. 4. Be knowledgeable about quality systems, TQM, ISO 9000. Visualize a process and propose improvements. 	<ol style="list-style-type: none"> 1. Derwik et al. (2016) 2. Derwik et al. (2016) 3. Derwik et al. (2016) 4. Derwik et al. (2016)

Table 2d

Linkage Between Research Questionnaire and Statements from Existing Literature (cont.)

No.	Competency	Statement from Questionnaire	Statement(s) from Literature	Source
6	Innovativeness	The firm constantly looks for new ways to do things at work.	1. The team collectively generated new ideas.	1. Dlugoborskyte (2018)
		The firm often finds more than one solution to a problem.	1. The team created an appropriate number of new possible product versions/ process variations.	1. Dlugoborskyte (2018)
		The firm found a new way to adapt the main operations of the business (e.g., when faced with the problem, like COVID pandemic).	1. The team found new resource combinations that fundamentally rearranged the field of activity.	1. Dlugoborskyte (2018)
		The firm effectively combined available resources (e.g., labor, supplies, materials, money) in finding a new way of operating business, creating new product versions or introducing new services.	1. The team efficiently and inventively combined the available materials and ideas when creating a new product/process.	1. Dlugoborskyte (2018)
		The firm introduced a new product or service that was fundamentally new to its sector.	1. The team successfully implemented the innovation project.	1. Dlugoborskyte (2018)
7	Strategic-Managerial Competencies	I prefer to handle tasks on my own.	1. Dividing the right task to the worker. 2. Hire, schedule, train, motivate, and supervise subordinates to ensure carrying out of activities.	1. Sidek & Mohamad, (2014) 2. Derwik et al (2016)
		I feel more comfortable staying within the opportunities I already know.	1. Grabbing business opportunity; [o]ppportunity identification.	1. Sidek & Mohamad, (2014)
		I tend to stay within my comfort zone and avoid risks.	1. Risking propensity.	1. Sidek & Mohamad, (2014)
		I tend not to create long-term plans and instead, adjust based on the immediate situation.	1. Strategic planning. 2. Develop strategies based on the company's core values while considering risks. 3. Plan and organize to achieve targets involving relevant parties and considering constraints and hurdles.	1. Sidek & Mohamad, (2014) 2. Derwik et al. (2016) 3. Derwik et al. (2016)
		I tend to spend long periods of time weighing possible options before deciding.	1. Set goals; prioritize and make holistic decisions based on goal achievement. 2. Ability to develop, recommend, and execute activities resulting in fulfillment of plans and strategies.	1. Derwik et al. (2016) 2. Derwik et al. (2016)
		I solve problems when they emerge.	1. Recall and apply information to propose alternatives based on goal-oriented thinking. 2. Demonstrate analytical ability and numerical techniques, as well as qualitative data handling.	1. Derwik et al. (2016) 2. Derwik et al. (2016)

Table 2e

Linkage Between Research Questionnaire and Statements from Existing Literature (cont.)

No.	Competency	Statement from Questionnaire	Statement(s) from Literature	Source
8	Behavioral Competencies	I let my team members guide their own way.	1. Apt leadership qualities (ALQ). 2. Motivate others; create openness for others to develop; gain commitment; ensure support for proposed ideas.	1. van der Merwe et al. (2020) 2. Derwik et al. (2016)
		I look to others for motivation.	1. [A]bility to motivate self for performing performance at an optimum level while maintaining a high level of energy. 2. Show inner drive and ambition; take pride in a job well done and strive for results. Learn by curiosity.	1. Tehseen & Ramayah, (2015) 2. Derwik et al. (2016)
		I tend to avoid situations where my work or personality is criticized.	1. [A]bility to respond to criticism, maintain a positive attitude, identify strengths and weaknesses and match them with the threats and opportunities, and recognize own short comings and work on their improvements. 2. Know your shortcomings and act accordingly; accept criticism; be comfortable talking about your weaknesses.	1. Tehseen & Ramayah, (2015) 2. Derwik et al. (2016)
		I tend to avoid confrontation and often shut down in the face of adverse and uncertain situations.	1. [A]bility to respond to criticism, maintain a positive attitude, identify strengths and weaknesses, and match them with the threats and opportunities, and recognize own short comings and work on their improvements. 2. Control your emotions; avoid hasty judgment; show integrity and trustworthiness.	1. Tehseen & Ramayah, (2015) 2. Derwik et al. (2016)
		I tend to rely more on myself and have only a limited network.	1. Broad professional and social network (BPSN). 2. Maintaining a good relationship. 3. Develop and maintain long-term business relationships cross-functionally and inter-organizationally.	1. van der Merwe et al. (2020) 2. Sidek & Mohamad, (2014) 3. Derwik et al. (2016)

3.2 Descriptive Statistics of Data Gathered from the Questionnaire

A total of 45 questionnaires were returned for analysis. The questionnaire respondents were from six different countries: Chile, Colombia, Ecuador, Guatemala, Mexico, and Peru. The largest percentage of respondents were from Mexico and Peru at 33.33% and 24.4%, respectively (Figure 2). 44% of respondents were female, while the remaining 56% of respondents identified as male (Figure 3).

Figure 2

Total Questionnaire Respondents per Country

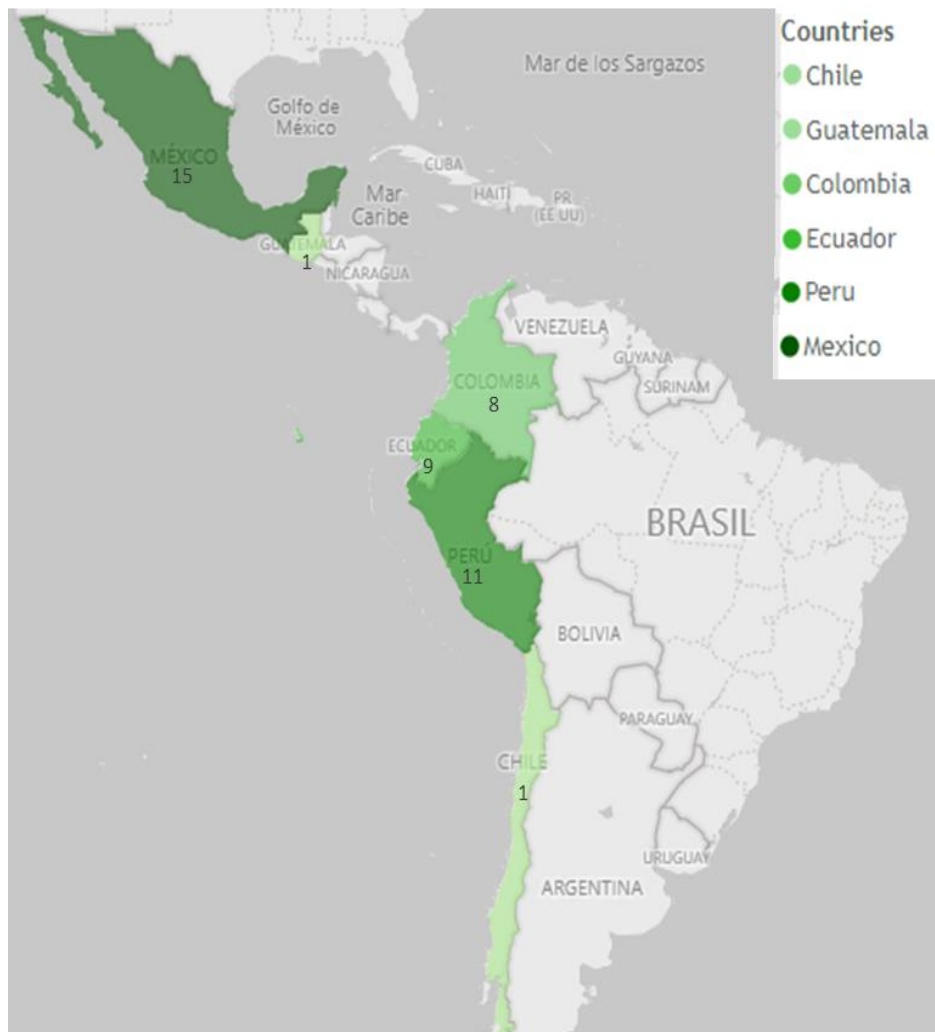
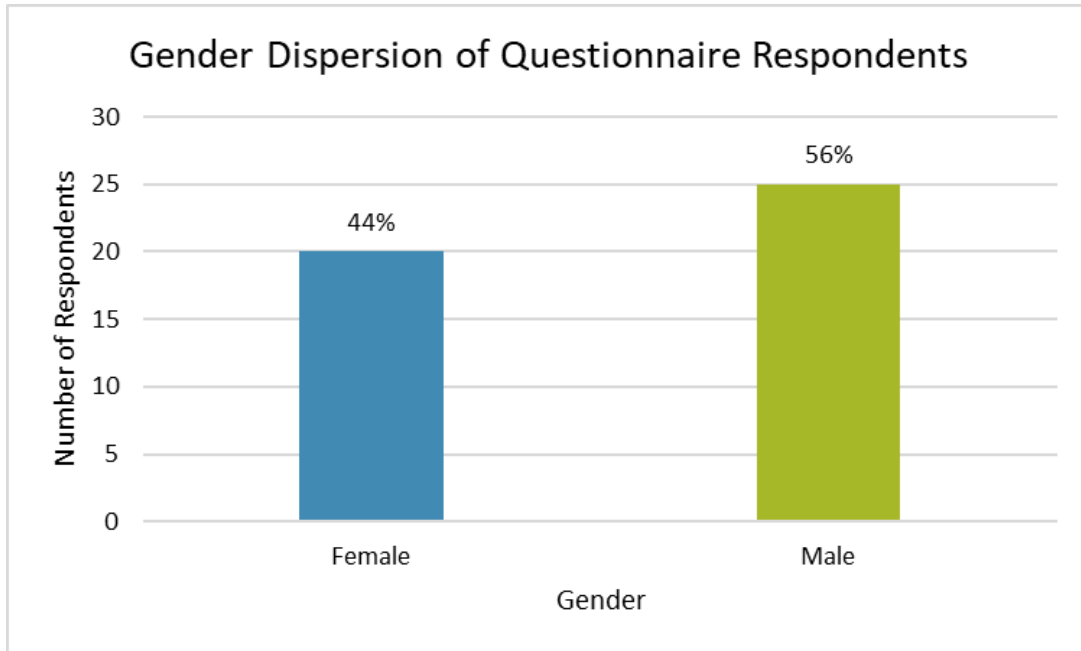


Figure 3

Gender Dispersion of Questionnaire Respondents



The surveyed firms operate in the following industries: construction, fitness and sports, food and beverage, retail sales and “other.” The umbrella category of “food and beverage” encapsulates both restaurants and small-scale convenience stores. The highest number of respondents were from the food and beverage sector and retail sector, at 66.7% and 20%, respectively.

Approximately 76% of questionnaire participants identified their business as being family-run. Most businesses serve only a local market, while only 3 out of the 45 firms serve a regional (nationwide) market.

In the questionnaire, each MSE was asked to provide information on the number of permanent versus temporary employees working at the firm:

- The average number of permanent employees is approximately 4 employees. However, this number is likely inflated due to the 3 firms that are operating with more than 9 permanent employees.
- The median number of permanent employees is 3 with a mode of 1.

- 24 out of the 45 surveyed firms have zero reported temporary employees; 8 firms have only 1 temporary employee; 10 firms have 2 temporary employees; and only 3 firms have more than 3 temporary workers on record.

Respondents were also asked to identify their motivating intent for running their business. Using a prioritization scale from 1 to 3, respondents ranked the following options based on their relative importance to each decision-maker: (1) I want to support my family; (2) I want to make a profit; and (3) I want to create jobs for others. Of the 45 managers surveyed, 49% of respondents identified supporting their family as the primary motivator, 47% of respondents shared that making a profit was their first priority, and only 4% of firm owners selected “I want to create jobs for others” as the primary motivation for owning and operating their business. A desire to support family is aligned with the in-group collectivism often endorsed by Latin American countries (Schwartz, 2009). A complete breakdown of respondent answers is provided in Table 3.

Table 3

Business Priorities of Questionnaire Respondents

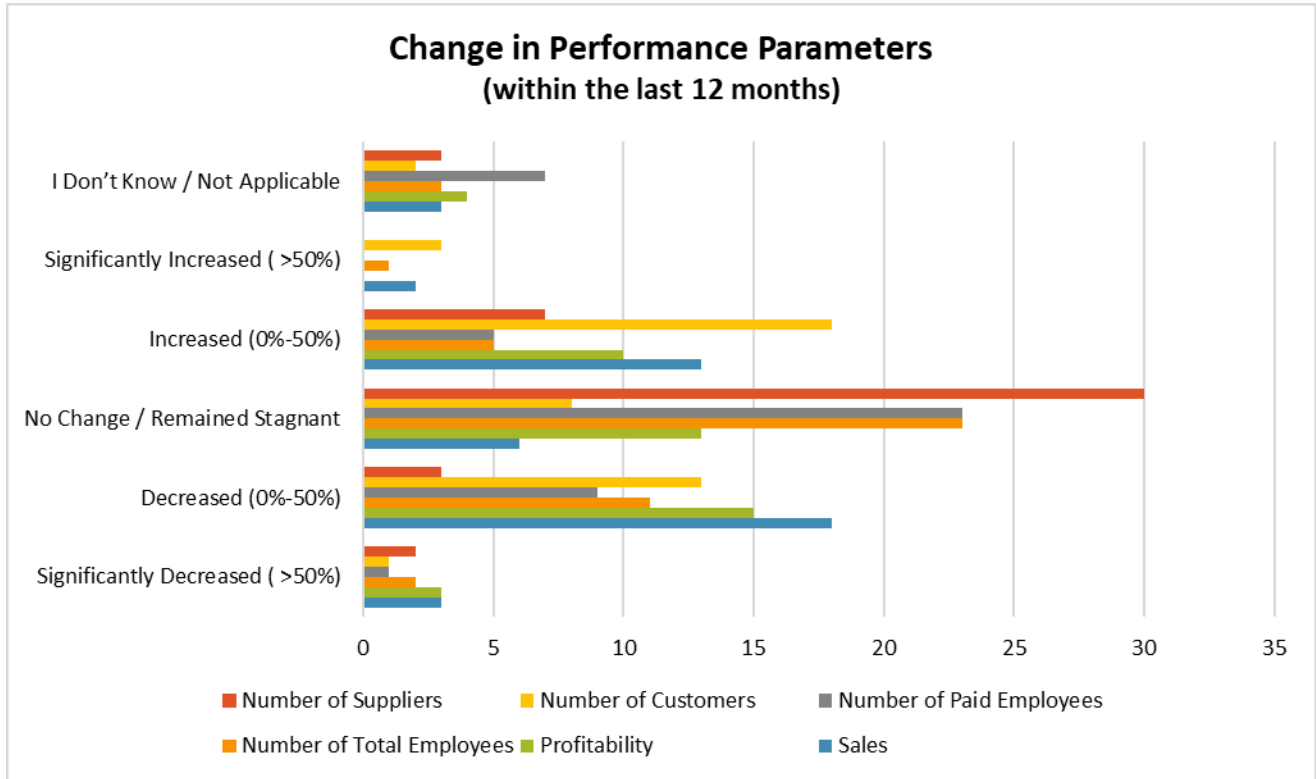
	Priority #1	Priority #2	Priority #3
I want to support my family	22	15	8
I want to create jobs for others	2	6	37
I want to make a profit	21	24	0
	45	45	45

In the questionnaire, firms were also asked to comment on the observed change in the following performance metrics: Sales, Profitability, Number of Total Employees, Number of Paid Employees, Number of Customers, and Number of Suppliers. All features are self-reported and were not validated against internal financial records. Figure 4 shows the relative change in the six performance parameters. Most firms reported no observable change in the following areas: Number of Suppliers, Number of Total Employees and Number of Paid Employees. In addition, we observe that a proportionate number of MSEs witnessed an increase in their Number of Customers but also saw a decrease in Sales. Only a handful of MSEs reported that their change in

Sales, Number of Customers, and Number of Total Employees significantly increased by more than 50%.

Figure 4

Change in Performance Parameters Within the Last 12 Months



Note. This figure reports the relative change of each dependent variable observed over the last 12 months. These results are summarized across all questionnaire participants.

3.3 Principal Component Analysis for Feature Variable Computation

In a similar approach to Horn et al. (2014), we use Principal Component Analysis (PCA) as the primary method for reducing the dimensionality of our dataset. Dimensionality reduction serves a dual purpose: (1) it decreases the complexity of the model, thereby ensuring generalizability on unseen data, and (2) it decreases the required sample size. PCA effectively creates new, uncorrelated variables that successively maximize variance to determine the importance of each variable (Jolliffe & Cadima, 2016). When the analysis is run correctly, the first few components – or “dimensions” – capture the majority of variance in the dataset. This allows us to remove the

least important variables, and therefore, enables more reliable predictions, increased interpretability and minimized information loss.

Within the context of our capstone, we use PCA to empirically form variables based on theoretical statements from existing literature. We apply PCA to six of the eight measured competencies: Supplier Integration [1], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], and Innovativeness [6]. These six variables were selected as candidates for PCA given the scalar structure of the questionnaire statements. PCA was not conducted on the manager- and behavioral-centric competencies (i.e., Strategic-Managerial Competencies [7] and Behavioral Competencies [8]) due to the dichotomous structure of these statements.

Using PCA, we reduce the measured variables from the original 40 statements to 23. These statements - which have been reclassified and grouped into new competencies - explain a significant portion of the variance of the dataset and thereby form the foundation for future regression analyses and hypothesis testing. The pruned competency list, resulting from the dimensionality reduction of the PCA analysis, is shown in Tables 4a and 4b. Each PCA variable is matched to the original competency, renamed based on the statements and themes that it is composed of, and shown relative to the weighted loadings and variance explained.

Existing theory, as explained by Dlugoborskyte (2018), states that “item communality (loading) is considered high if it is 0.80 or greater (Velicer, Fava, 1998), but more common magnitudes in the social sciences, i.e., the low to moderate communalities of 0.40 to 0.70 (Costello, Osborne, 2005), were considered to be acceptable loadings.” As each of our PCA components exceed the required variation threshold, we conclude that the PCA features developed are significant. The first competency, Supplier Integration [1] was split into two principal components – Supplier Integration Execution [1.1] and Supplier Integration Commitment [1.2]. When the components are combined, the cumulative variance explained exceeds the desired threshold of 0.60 (i.e., 67.30%). For the next four competencies – Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4] and Supply Chain Management Competency [5] – statement dimensionality was effectively reduced, but the required variance could be achieved

with only one principal component. As such, the names of these components were maintained from their original versions. The final competency, Innovativeness [6], was split into two principal components (i.e., Proactive Innovativeness [6.1] and Reactive Innovativeness [6.2]) to achieve a cumulative variance explained of 73.20%.

We use the results of PCA explicitly for variable computation. As such, the subsequent chapters refer to these computations as “empirically-formulated variables.”

Table 4a

The Variance and Loadings of Each Empirically-Formulated Variable

No.	Competency	PCA Variable Name	Statement(s) From Questionnaire	Relative Loadings	Variance Explained	Cumulative Variance Explained
1.1	Supplier Integration	Supplier Integration Execution	The firm has managed to establish a quick ordering process in collaboration with its major supplier(s).	0.384	48.40%	67.30%
			The firm asks its supplier(s) for advice and encourages them to come with suggestions for improvements	0.594		
			The firm's employees share close social relationships with the employees from its supplier(s). (i.e., they like to spend time together)	0.592		
1.2	Supplier Integration	Supplier Integration Commitment	The level of information exchange that the firm has with its major supplier(s) through information networks is 100% transparent. (transparent = always available and known by the firm and its suppliers)	0.514	18.90%	
			The firm intends to maintain and continuously improve the relationship with its primary supplier(s).	0.382		
			The firm can rely on its supplier(s) to fulfill the business requirements.	0.415		
2	Customer Integration	Customer Integration	Communication with the firm's major customers is done with periodic frequency (e.g., once a week, a few times a month, etc.).	0.702	61.62%	61.62%
			The firm seeks feedback from its customers in order to improve and meet customers' needs.	0.438		
			The relationship that the firm has with its major customers is something that the firm is very committed to.	0.439		
			The firm intends to maintain and continuously improve the relationship with its primary customers.	0.35		
3	Administrative Items & Record-Keeping Capability	Administrative Items & Record-Keeping Capability	The firm effectively perform general administrative tasks (i.e., record keeping, financial planning).	0.57	80.57%	80.57%
			The firm has established an internal management routine where it takes care of administrative tasks with a defined frequency (i.e., financial record-keeping, inventory planning, sales transactions, bill payments, budgeting).	0.593		
			The firm has established and successfully maintains financial performance practices (i.e., budgeting, profit and loss evaluations, income/expenditure sheet).	0.569		

Table 4b*The Variance and Loadings of Each Empirically-Formulated Variable*

No.	Competency	PCA Variable Name	Statement(s) From Questionnaire	Relative Loadings	Variance Explained	Cumulative Variance Explained
4	Internal Integration	Internal Integration	The firm encourages its employees to share suggestions in order to constantly improve.	0.564	66.64%	66.64%
			When making decisions, the firm's employees consider the business interest on top of their own.	0.826		
5	Supply Chain Management Competency	Supply Chain Management Competency	The firm has processes that support inventory management by providing accurate registers.	0.664	64.34%	64.34%
			The firm has a routine order management and purchasing review. (e.g., once a week, a few times a month, etc.).	0.641		
			The firm can identify process and quality improvements needed and enact meaningful change to address such improvements.	0.386		
6.1	Innovativeness	Proactive Innovativeness	The firm constantly looks for new ways to do things at work.	0.431	51.87%	73.20%
			The firm effectively combined available resources (e.g., labor, supplies, materials, money) in finding a new way of operating business, creating new product versions, or introducing new services.	0.46		
			The firm introduced a new product or service that was fundamentally new to its sector.	0.704		
6.2	Innovativeness	Reactive Innovativeness	The firm often finds more than one solution to a problem.	0.306	21.33%	
			The firm found a new way to adapt the main operations of the business (e.g., when faced with the problem, like COVID pandemic).	0.601		

3.4 Hypothesis Development and Testing

The importance of micro and small enterprises (MSEs) as contributors to economic development is largely uncontested. Existing research suggests that “superior enterprise performance is derived from unique firm-specific resources and capabilities” (Fazal et al., 2019). The personal characteristics of the manager also significantly affect firm performance (Munoz et al., 2014; Fazal et al., 2019). Motivated by these findings, we assume that both a direct and indirect relationship exists between certain business competencies and firm performance for MSEs in Latin America.

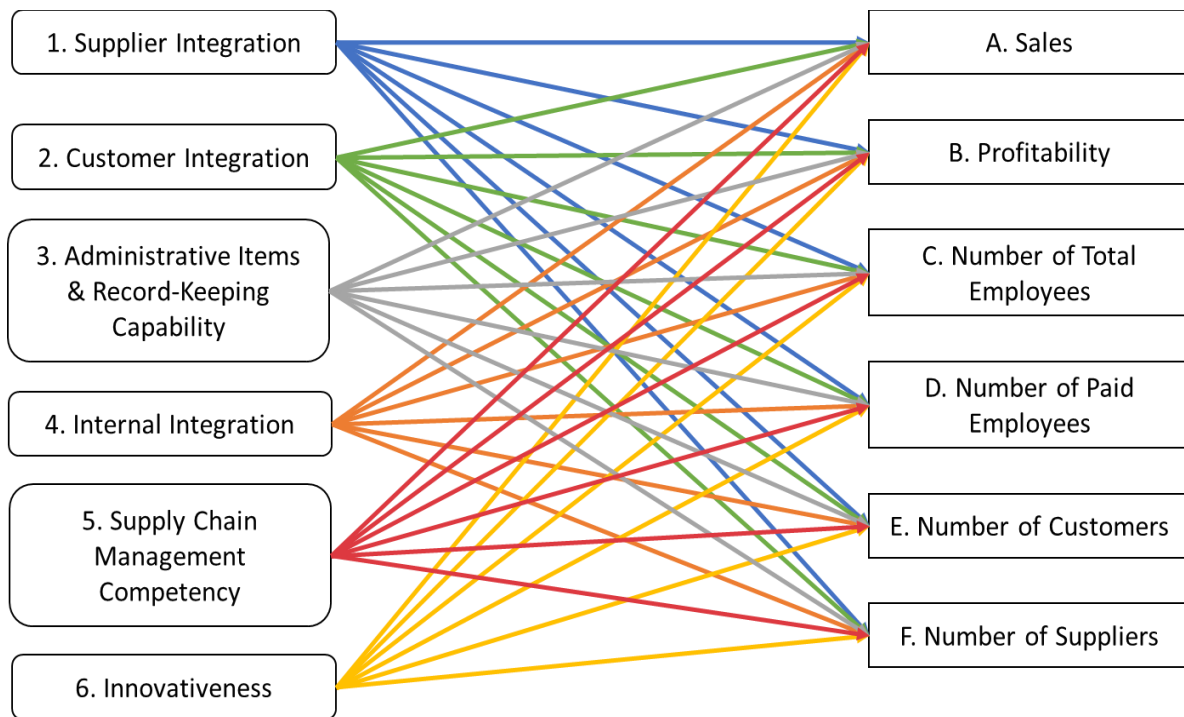
In this section, we present the formulation of our three initial hypotheses. We discuss the results of these analyses in Chapter 4 and the implications of the observed results in Chapter 5.

3.4.1 Hypothesis for Direct Effect (H1)

We use a simple linear regression to test the foundational relationship between the independent variables (i.e., Supplier Integration [1], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Innovativeness [6]) and each dependent variable (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). The overarching intent of H1 is to validate that a significant and direct relationship exists between each of the selected variables before more advanced analyses are conducted (Figure 5).

Figure 5

Hypothesis for Direct Effect (H1) Diagram



H1 consists of six supporting hypotheses. Each supporting hypothesis is described below.

H1.1. Supplier Integration [1] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H1.2. Customer Integration [2] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H1.3. Administrative Items & Record-Keeping Capability [3] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H1.4. Internal Integration [4] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H1.5. Supply Chain Management Competency [5] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

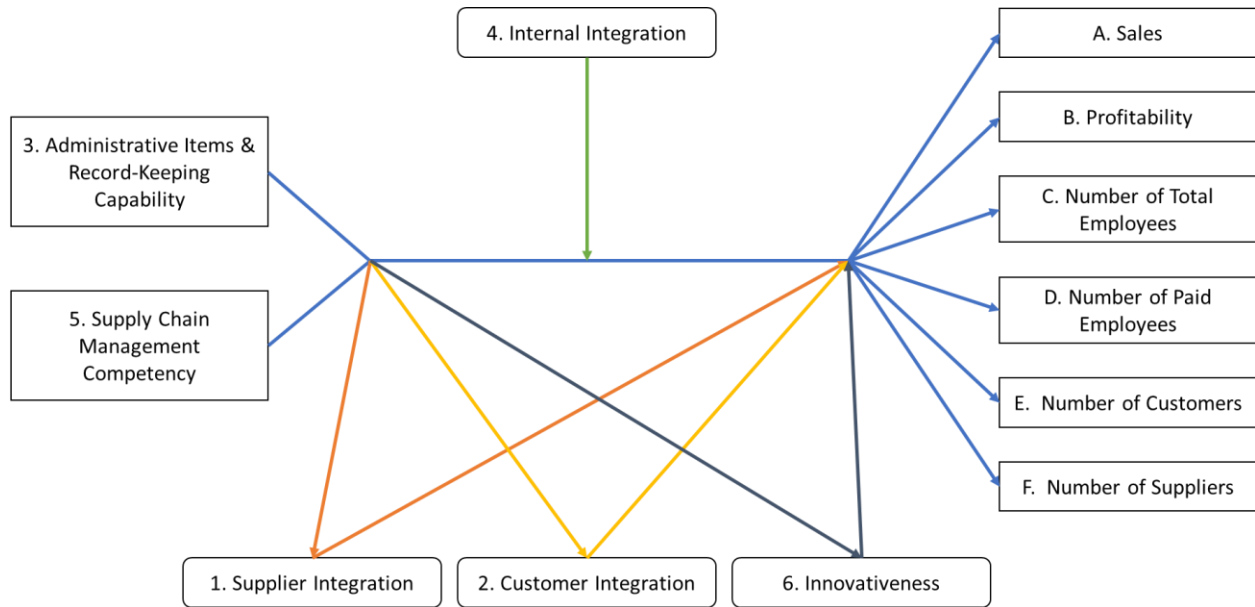
H1.6. Innovativeness [6] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

3.4.2 Firm Dynamics Hypothesis (H2)

We use a multivariate linear regression analysis to measure the direct effect between the firm-centric competencies (i.e., Administrative Items & Record-Keeping Capability [3] and Supply Chain Management Competency [5]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). Then, building from the preceding analysis, we test the mediation and moderation effects using Internal Integration [4] as a moderating variable and Supplier Integration [1], Customer Integration [2] and Innovativeness [6] as mediating variables. We assume that if no direct and significant relationship exists between the firm-centric competencies and the dependent variables, we need not check the mediation or moderation effects (described above). The conceptual framework for the Firm Dynamics Hypothesis (H2) is provided in Figure 6.

Figure 6

Firm Dynamics Hypothesis (H2) Diagram



H2 consists of six supporting hypotheses. Each supporting hypothesis is described below.

H2.1. Administrative Items & Record-Keeping Capability [3] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H2.2. Supply Chain Management Competency [5] directly influences in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H2.3. Internal Integration [4] indirectly influences in a significant and positive way the relationship between the firm's Supply Chain Management Competency [5] and Administrative Items & Record-Keeping Capability [3] and the change in the Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H2.4. Supplier Integration [1] interplays with the firm's Supply Chain Management Competency [5] and Administrative Items & Record-Keeping Capability [3] to influence the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

H2.5. Customer Integration [2] interplays with the firm's Supply Chain Management Competency [5] and Administrative Items & Record-Keeping Capability [3] to influence the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

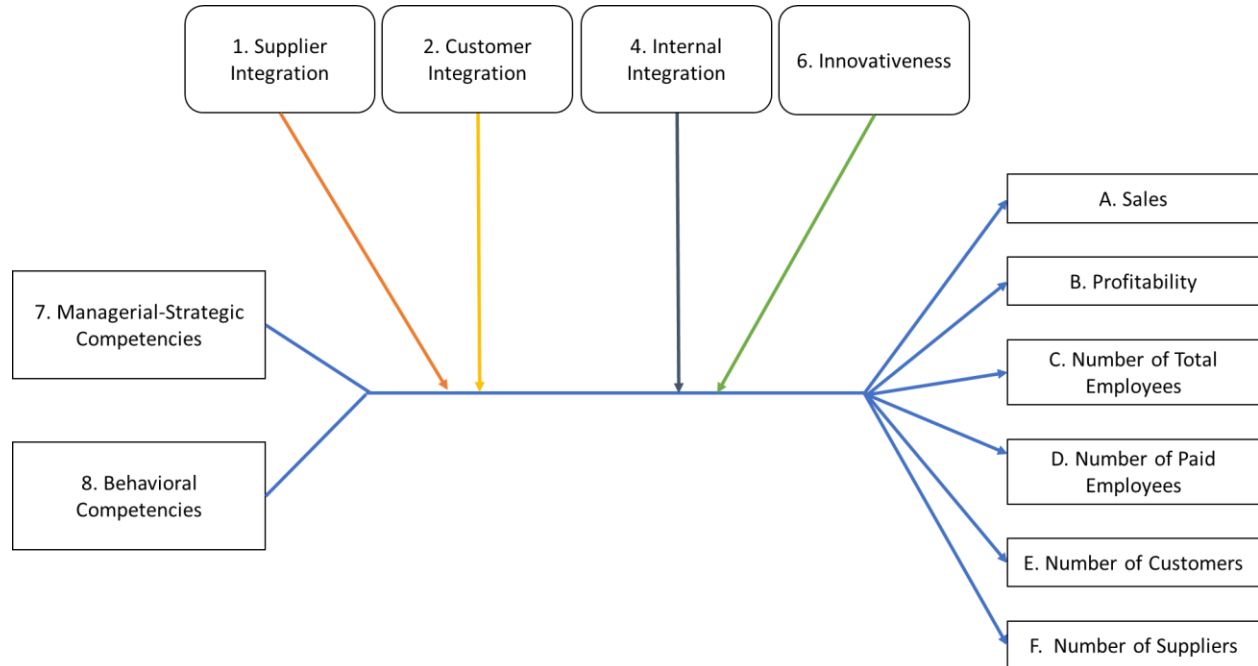
H2.6. Innovativeness [6] interplays with the firm's Supply Chain Management Competency [5] and Administrative Items & Record-Keeping Capability [3] to influence the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], and Number of Suppliers [F].

3.4.3 Manager Dynamics Hypothesis (H3)

We use an analysis of variance (ANOVA) to measure the relationship between the Strategic-Managerial Competencies [7] and Behavioral Competencies [8] and each dependent variable (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). Supplier Integration [1], Customer Integration [2], Internal Integration [4] and Innovativeness [6] were incorporated into the model as moderators. Visual representation of the Manager Dynamics Hypothesis (H3) is provided in Figure 7.

Figure 7

Manager Dynamics Hypothesis (H3) Diagram



H3 consists of six supporting hypotheses. Each supporting hypothesis is described below.

H3.1. Strategic-Managerial Competencies [7] directly influence in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F].

H3.2. Behavioral Competencies [8] directly influence in a significant and positive way the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F].

H3.3. Supplier Integration [1] indirectly influences in a significant and positive way the relationship between the firm's Strategic-Managerial Competencies [7] and Behavioral Competencies [8] and the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F].

H3.4. Customer Integration [2] indirectly influences in a significant and positive way the relationship between the firm's Strategic-Managerial Competencies [7] and Behavioral Competencies [8] and the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F].

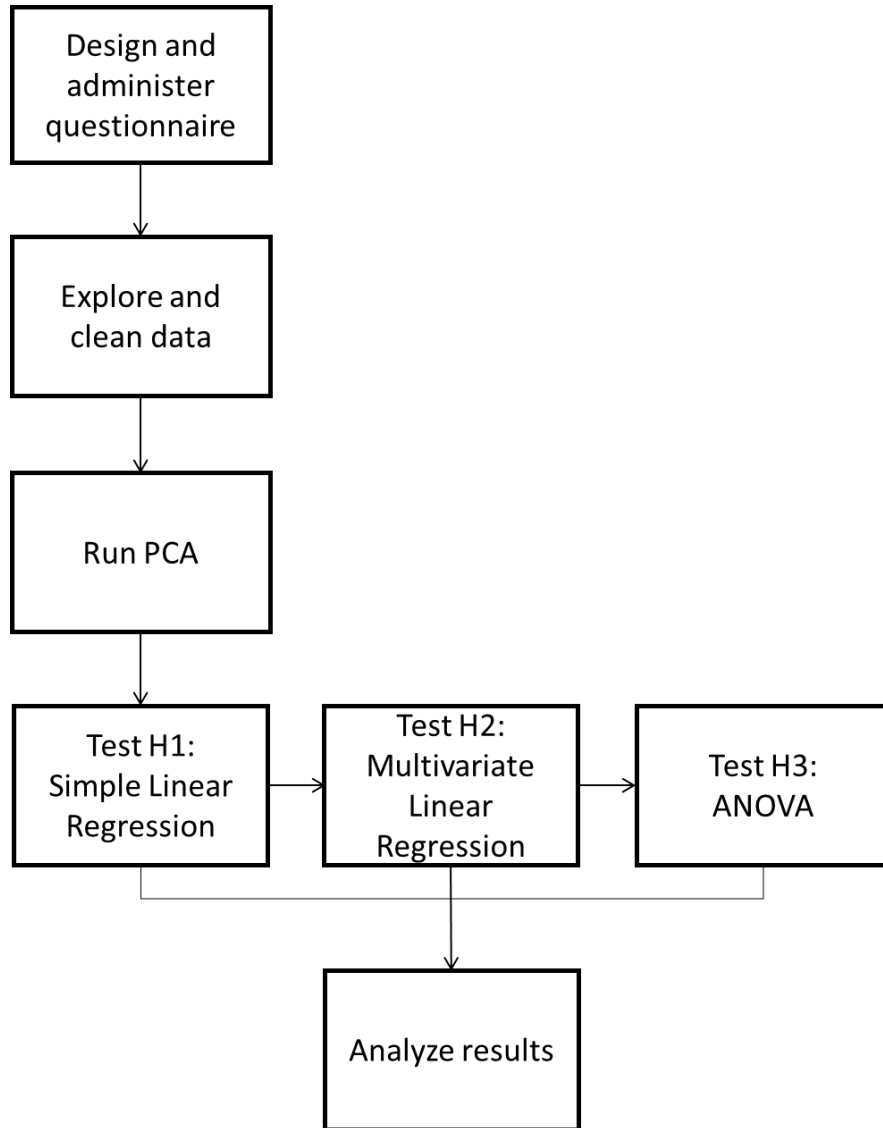
H3.5. Internal Integration [4] indirectly influences in a significant and positive way the relationship between the firm's Strategic-Managerial Competencies [7] and Behavioral Competencies [8] and the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F].

H3.6. Innovativeness [6] indirectly influences in a significant and positive way the relationship between the firm's Strategic-Managerial Competencies [7] and Behavioral Competencies [8] and the change in Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F].

Figure 8 outlines and summarizes the methodology described in Chapter 3 and referenced in Chapter 4. Essentially, this figure provides an overview of the structure of the methods we use and how each connects with the hypotheses developed.

Figure 8

Methodology Process Flow Diagram



4. RESULTS

We implement a series of statistical modeling techniques to evaluate the impact of business and supply chain competencies on the survival rate of micro and small enterprises (MSEs) in Latin America. The results of our models reveal the competency mix that yields significant influence over the performance of MSEs. Drawing from the methodology outlined in Chapter 3, Chapter 4 provides an overview of the results uncovered from each of the three hypothesis tests (i.e., H1, H2 and H3). A detailed discussion of the implications of such findings is provided in Chapter 5.

4.1 Data Inputs & Cleaning

Our analysis uses six performance parameters as the dependent variables in our analysis. These six parameters are common across each hypothesis test (i.e., H1, H2 and H3).

- [A] Change in Sales over the Last 12 Months
- [B] Change in Profitability over the Last 12 Months
- [C] Change in the Number of Total Employees over the Last 12 Months
- [D] Change in the Number of Paid Employees over the Last 12 Months
- [E] Change in the Number of Customers over the Last 12 Months
- [F] Change in the Number of Suppliers over the Last 12 Months

We adopt the eight empirically-formulated variables generated by the Principal Component Analysis (discussed in Section 3.3) as independent moderating and mediating variables in our analysis. As with the dependent variables, the empirically-formulated variables are common throughout each hypothesis test (i.e., H1, H2 and H3).

- [1.1] Supplier Integration Execution
- [1.2] Supplier Integration Commitment
- [2] Customer Integration
- [3] Administrative Items & Record-Keeping Capability
- [4] Internal Integration
- [5] Supply Chain Management Competency
- [6.1] Proactive Innovativeness
- [6.2] Reactive Innovativeness

We also incorporate various Strategic-Managerial Competencies [7] and Behavioral Competencies [8] as independent variables in our analysis. The Strategic-Managerial Competencies are made up of six sub-variables [7.1, 7.2, 7.3, 7.4, 7.5, 7.6]. The Behavioral Competencies [8] are comprised of five sub-variables [8.1, 8.2, 8.3, 8.4, 8.5]. Each sub-variable aligns 1:1 with a statement in the questionnaire.

Prior to analysis, we conducted a thorough cleaning of the data. Responses of “7 - I Don’t Know” were removed from the analysis and replaced with “3 - Undecided” to avoid skewed results. In total, 111 “7 - I Don’t Know” responses out of 2,025 total records were replaced, which is less than 5.5% of the data. Additionally, for each statement nested within the Strategic-Managerial Competencies [7] and the Behavioral Competencies [8], we compute two dichotomous variables to represent opposing manager behaviors and personality traits. A dichotomous variable is a type of variable that can only take one of two possible values. In our analysis, a “1” indicates that the manager possesses the competency whereas the manager is assigned a “0” if they do not possess that competency (Table 5). Since the responses were ranked on a 5-point Likert scale, “1 - Strongly Describes Me” and “2 - Somewhat Describes Me” were re-classified as “0’s” and “4 - Somewhat Describes Me” and “5 - Strongly Describes Me” were re-classified as “1’s”. All “3 – Undecided” responses were removed from the analysis to ensure polarization of results.

Table 5
Classification of Dichotomous Variables

Dichotomous Variable	5-Point Likert Ranking	Questionnaire Statement
0	1	Strongly Describes Me
	2	Somewhat Describes Me
1	4	Somewhat Describes Me
	5	Strongly Describes Me

Note. All “3 – Undecided” responses were removed from the analysis to ensure accurate polarization of results. Of 506 total records, only 40 responses were “3 – Undecided.”

4.2 Summary of Results: H1

A simple linear regression analysis was performed on each of the empirically-formulated variables (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Proactive Innovativeness [6.1], Reactive Innovativeness [6.2]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) to test H1. Tables 6-11 display the resulting coefficient, p-value, standard error and R-squared of each regression analysis. These summary statistics are used to measure and interpret the significance of the direct relationship between each independent-dependent variable pairing.

In regression analyses, the coefficient of determination (R-squared) describes the variation of the dependent variable as explained by the model and is used as a measure of overall model quality. Typically, a larger value of R-squared is desirable as this suggests the model can better explain observed variance and make predictions about future behaviors (Saunders et al., 2012, as cited in Dlugoborskte, 2018). However, Falk and Miller (1992) argue that “values should be equal to or greater than 0.10 in order for the variance explained of a particular endogenous construct to be deemed adequate” (Aslam & Amin, 2015). Using this interpretation, we accept an R-squared at any value above 0.20 as a significant predictor of future behavior.

Change in Sales [A]: Only two empirically-formulated variables significantly influence an MSE's change in Sales [A]. As illustrated by Table 6, Customer Integration [2] is significant at a p-value of 0.059 and Proactive Innovativeness [6.1] is significant at a p-value of 0.021. The sign of the coefficient denotes a positive or negative relationship. Thus, Customer Integration [2] negatively affects change in Sales [A] whereas Proactive Innovativeness [6.1] positively affects change in Sales [A]. According to the resulting R-squared, 26.5% of the change in Sales [A] can be predicted using the six independent variables selected.

Table 6

Results of Linear Regression Analysis Using "Change in Sales [A]" as the Dependent Variable

No.	Variable	Coefficient	p-value	Standard Error
1.1	Supplier Integration Execution	0.0964	0.450 n.s.	0.126
1.2	Supplier Integration Commitment	0.1758	0.407 n.s.	0.21
2	Customer Integration	-0.2796	0.059*	0.143
3	Administrative Items & Record-Keeping Capability	-0.0743	0.556 n.s.	0.125
4	Internal Integration	-0.0942	0.521 n.s.	0.145
5	Supply Chain Management Competency	0.0619	0.703 n.s.	0.161
6.1	Proactive Innovativeness	0.2952	0.021**	0.123
6.2	Reactive Innovativeness	0.1228	0.642 n.s.	0.262

R-squared: 0.265

* $p < 0.1$; n.s.=not significant; ** $p < 0.05$

Change in Profitability [B]: Three of the eight empirically-formulated variables significantly influence an MSE’s change in Profitability [B]. As illustrated by Table 7, Supplier Integration Execution [1.1] is significant at a p-value of 0.066, Customer Integration [2] is significant at a p-value of 0.080, and Proactive Innovativeness [6.1] is significant at a p-value of 0.085. The sign of the coefficient denotes a positive or negative relationship. Thus, both Supplier Integration Execution [1.1] and Proactive Innovativeness [6.1] positively affect a firm’s change in Profitability [B]. However, Customer Integration [2] negatively affects a firm’s change in Profitability [B]. While this result seems counterintuitive, the net effect on firm performance changes when taken in context with a managers’ personal characteristics. We elaborate on this relationship in more detail in Section 4.4. The resulting R-squared suggests that 27.9% of the change in Profitability [B] can be predicted using the six independent variables selected.

Table 7

Results of Linear Regression Analysis Using “Change in Profitability [B]” as the Dependent Variable

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
1.1	Supplier Integration Excecution	0.2394	0.066*	0.126
1.2	Supplier Integration Commitment	-0.0032	0.988 n.s.	0.21
2	Customer Integration	-0.2586	0.080*	0.144
3	Administrative Items & Record-Keeping Capability	-0.1319	0.299 n.s.	0.125
4	Internal Integration	-0.1547	0.295 n.s.	0.146
5	Supply Chain Management Competency	0.0809	0.619 n.s.	0.161
6.1	Proactive Innovativeness	0.2172	0.085*	0.123
6.2	Reactive Innovativeness	0.1992	0.452 n.s.	0.262

R-squared: 0.279

* $p < 0.1$; n.s.=not significant; ** $p < 0.05$

Change in Number of Total Employees [C]: Two of the eight empirically-formulated variables significantly influence an MSE’s change in the Total Number of Employees [C] at the firm. As illustrated by Table 8, Supplier Integration Commitment [1.2] is significant at a p-value of 0.005 and Proactive Innovativeness [6.1] is significant at a p-value of 0.003. The sign of the coefficient for each variable indicates a positive or negative relationship. Thus, both Supplier Integration Commitment [1.2] and Proactive Innovativeness [6.1] positively affect a firm’s change in the Total Number of Employees [C]. Our results show that the six chosen independent variables predict 39.2% of the change in Total Number of Employees [C], according to the resulting R-squared.

Table 8

Results of Linear Regression Analysis Using “Change in Number of Total Employees [C]” as the Dependent Variable

No.	Variable	Coefficient	p-value	Standard Error
1.1	Supplier Integration Execution	0.0298	0.767 n.s.	0.1
1.2	Supplier Integration Commitment	0.4916	0.005**	0.166
2	Customer Integration	-0.1214	0.293 n.s.	0.114
3	Administrative Items & Record-Keeping Capability	0.0225	0.821 n.s.	0.099
4	Internal Integration	-0.0081	0.944 n.s.	0.115
5	Supply Chain Management Competency	0.0914	0.479 n.s.	0.128
6.1	Proactive Innovativeness	0.3046	0.003**	0.097
6.2	Reactive Innovativeness	-0.1484	0.479 n.s.	0.208

R-squared: 0.392

* $p < 0.1$; n.s. = not significant; ** $p < 0.05$

Change in Number of Paid Employees [D]: Only one of the eight empirically-formulated variables significantly influence an MSE’s change in the Total Number of Paid Employees [D] at the firm. As illustrated by Table 9, Supplier Integration Commitment [1.2] is significant at a p-value of 0.002 whereas all other independent variables are not significant. The sign (positive/negative) of the coefficient for each variable indicates the direction of the relationship. Thus, we conclude that Supplier Integration Commitment [1.2] positively affects a firm’s change in the Total Number of Paid Employees [D]. In this case, the R-squared stipulates that 30.1% of the change in Total Number of Paid Employees [D] can be predicted using the six independent variables selected.

Table 9

Results of Linear Regression Analysis Using “Change in Number of Paid Employees [D]” as the Dependent Variable

No.	Variable	Coefficient	p-value	Standard Error
1.1	Supplier Integration Excecution	-0.0318	0.816 n.s.	0.136
1.2	Supplier Integration Commitment	0.7435	0.002**	0.226
2	Customer Integration	-0.0468	0.764 n.s.	0.155
3	Administrative Items & Record-Keeping Capability	-0.1469	0.282 n.s.	0.135
4	Internal Integration	0.0635	0.687 n.s.	0.157
5	Supply Chain Management Competency	0.1981	0.261 n.s.	0.173
6.1	Proactive Innovativeness	0.1385	0.301 n.s.	0.132
6.2	Reactive Innovativeness	0.1805	0.526 n.s.	0.282
R-squared: 0.301				

*p<0.1; n.s.=not significant; **p<0.05

Change in Number of Customers [E]: Only one of the eight empirically-formulated variables significantly influences an MSE’s change in the Number of Customers [E]. As illustrated by Table 10, Proactive Innovativeness [6.1] is significant at a p-value of 0.017 whereas all other independent variables are not significant. The sign (positive/negative) of the coefficient for each variable indicates the direction of the relationship. Thus, we conclude that Proactive Innovativeness [6.1] positively affects a firm’s change in their total Number of Customers [E]. The R-squared shows that approximately 34.4% of the change in Number of Customers [E] can be predicted using the six independent variables selected.

Table 10

Results of Linear Regression Analysis Using “Change in Number of Customers [E]” as the Dependent Variable

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
1.1	Supplier Integration Execution	0.1308	0.212 n.s.	0.103
1.2	Supplier Integration Commitment	0.1729	0.319 n.s.	0.171
2	Customer Integration	-0.1713	0.152 n.s.	0.117
3	Administrative Items & Record-Keeping Capability	0.0032	0.975 n.s.	0.102
4	Internal Integration	-0.1892	0.120 n.s.	0.119
5	Supply Chain Management Competency	0.1086	0.414 n.s.	0.132
6.1	Proactive Innovativeness	0.2493	0.017**	0.1
6.2	Reactive Innovativeness	0.005	0.982 n.s.	0.214

R-squared: 0.344

* $p < 0.1$; n.s.=not significant; ** $p < 0.05$

Change in Number of Suppliers [F]: As shown in Table 11, three of the eight empirically-formulated variables significantly influence an MSE’s change in the Number of Suppliers [F] associated with the firm. Supplier Integration Execution [1.1] is significant at a p-value of 0.053, Customer Integration [2] is significant at a p-value of 0.035 and Proactive Innovativeness [6.1] is significant at a p-value of 0.005. All other independent variables are not significant. Furthermore, the sign (positive/negative) of the coefficient for each variable indicates the direction of the relationship. Thus, we conclude that Supplier Integration Execution [1.1] and Proactive Innovativeness [6.1] both positively affect a firm’s change in the Number of Suppliers [F], whereas Customer Integration [2] negatively affects a firm’s change in the Number of Suppliers [F]. The resulting R-squared shows that 40.6% of the change in Number of Suppliers [F] can be predicted using the six independent variables selected.

Table 11

Results of Linear Regression Analysis Using “Change in Number of Suppliers [F]” as the Dependent Variable

No.	Variable	Coefficient	p-value	Standard Error
1.1	Supplier Integration Excecuion	0.1802	0.053*	0.09
1.2	Supplier Integration Commitment	0.0526	0.727 n.s.	0.15
2	Customer Integration	-0.2237	0.035*	0.102
3	Administrative Items & Record-Keeping Capability	0.0677	0.453 n.s.	0.89
4	Internal Integration	-0.1723	0.105 n.s.	0.104
5	Supply Chain Management Competency	-0.1389	0.235 n.s.	0.115
6.1	Proactive Innovativeness	0.2608	0.005**	0.087
6.2	Reactive Innovativeness	0.1243	0.510 n.s.	0.187

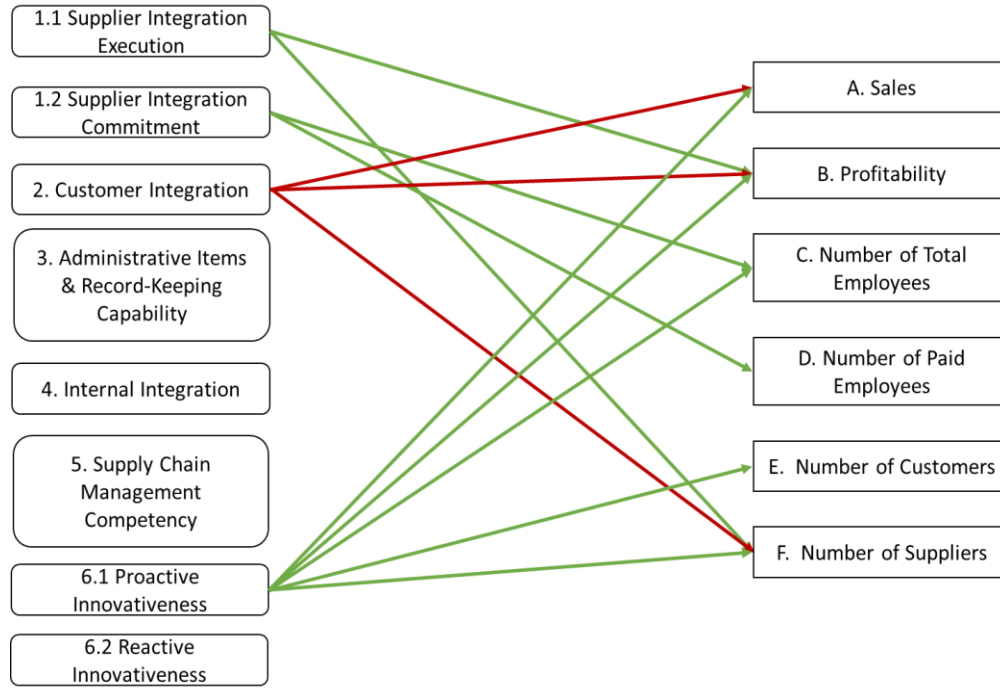
R-squared: 0.406

* $p < 0.1$; n.s.=not significant; ** $p < 0.05$

A summary diagram of the significant and direct relationships between the eight empirically-formulated variables (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Proactive Innovativeness [6.1], Reactive Innovativeness [6.2]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) is shown in Figure 9. Positive, direct relationships are colored in green

whereas negative, direct relationships are colored in red (Figure 9). The variables that are not mapped to a dependent variable did not yield a significant result (Figure 9).

Figure 9
Hypothesis for Direct Effect (H1) Results Diagram



A summary table displaying which components of H1 were rejected, accepted, or not supported is shown in Table 12. Both Figure 9 and Table 12 summarize the same results, but each is presented in a different format.

Table 12
Outcomes of the Hypothesis for Direct Effect (H1)

	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Supplier Integration Execution [1.1]	n.s.	(+)	n.s.	n.s.	n.s.	(+)	Partially accepted
Supplier Integration Commitment [1.2]	n.s.	n.s.	(+)	(+)	n.s.	n.s.	Partially accepted
Customer Integration [2]	(-)	(-)	n.s.	n.s.	n.s.	(-)	Partially rejected
Administrative Items & Record-Keeping Capability [3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Internal Integration [4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Proactive Innovativeness [6.1]	(+)	(+)	(+)	n.s.	(+)	(-)	Partially accepted
Reactive Innovativeness [6.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

4.3 Summary of Results: H2

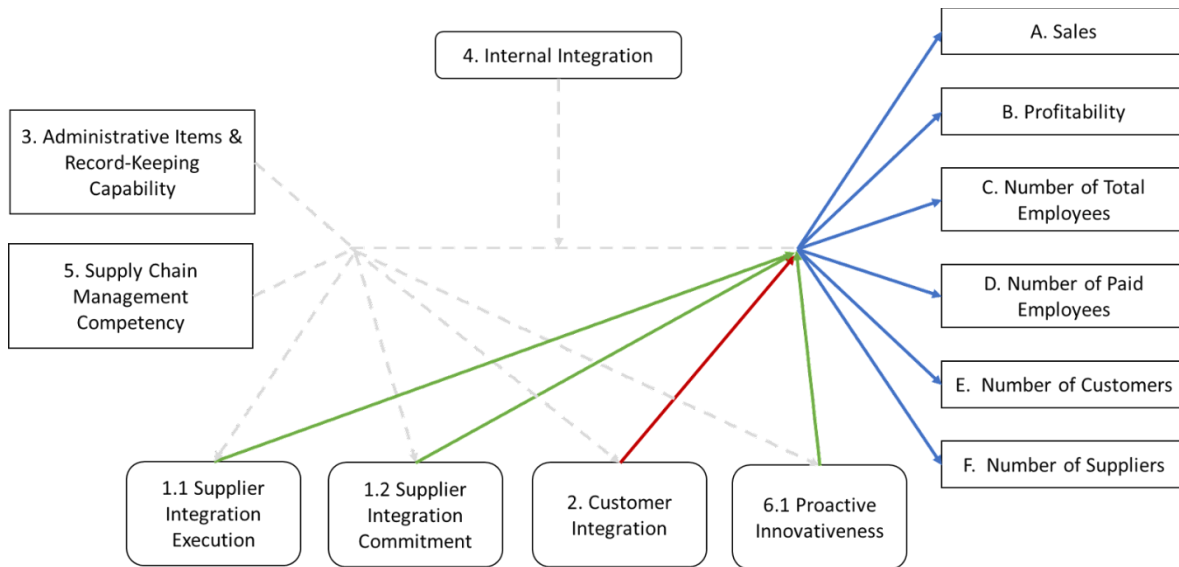
Mediation and moderation testing consists of two steps. First, test the direct effect between an independent variable and the dependent variable(s). Second, test the indirect effect(s) if – and only if – a significant and direct relationship was present in the first step. If there is no direct effect, it is unnecessary to conduct the mediation/moderation test because the first condition was not sufficiently met.

As noted in Section 4.2, the results of H1 have proven that a significant and direct relationship did not exist between the feature variables – Administrative Items and Record-Keeping Capability [3] and Supply Chain Management Competency [5] – and the six dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). Therefore, the observed results negate the need to test the mediating and moderating effects of H2 since neither Administrative Items & Record-Keeping Capability [3] nor Supply Chain Management Competency [5] had a significant, direct effect on the selected performance parameters.

Figure 10 illustrates how our initial hypothesis for H2 changed given the results from H1. The grey dashed line represents that a significant and direct did not exist between Administrative Items & Record-Keeping Capability [3] or Supply Chain Management Competency [5] and any of the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). However, Supplier Integration [1], Customer Integration [2] and Innovativeness [6] did showcase a *direct* effect with some/all of the dependent variables. These direct relationships are colored in green/red to correspond with the positive/negative relationship that each demonstrated.

Figure 10

Firm Dynamics Hypothesis (H2) Results Diagram



Since there was no direct relationship between Administrative Items & Record-Keeping Capability [3] or Supply Chain Management Competency [5] and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]), all mediating and moderating effects of H2 are hereby not supported. This outcome is summarized in Table 13.

Table 13

Outcomes of the Firm Dynamics Hypothesis (H2)

	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Moderating Effect(s)							
Administrative Items & Record-Keeping Capability [3] * Internal Integration [4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5] * Internal Integration [4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Mediating Effect(s)							
Administrative Items & Record-Keeping Capability [3] + Supplier Integration Execution [1.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Administrative Items & Record-Keeping Capability [3] + Supplier Integration Commitment [1.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Administrative Items & Record-Keeping Capability [3] + Customer Integration [2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Administrative Items & Record-Keeping Capability [3] + Proactive Innovativeness [6.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Administrative Items & Record-Keeping Capability [3] + Reactive Innovativeness [6.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5] + Supplier Integration Execution [1.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5] + Supplier Integration Commitment [1.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5] + Customer Integration [2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5] + Proactive Innovativeness [6.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supply Chain Management Competency [5] + Reactive Innovativeness [6.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s. = not significant

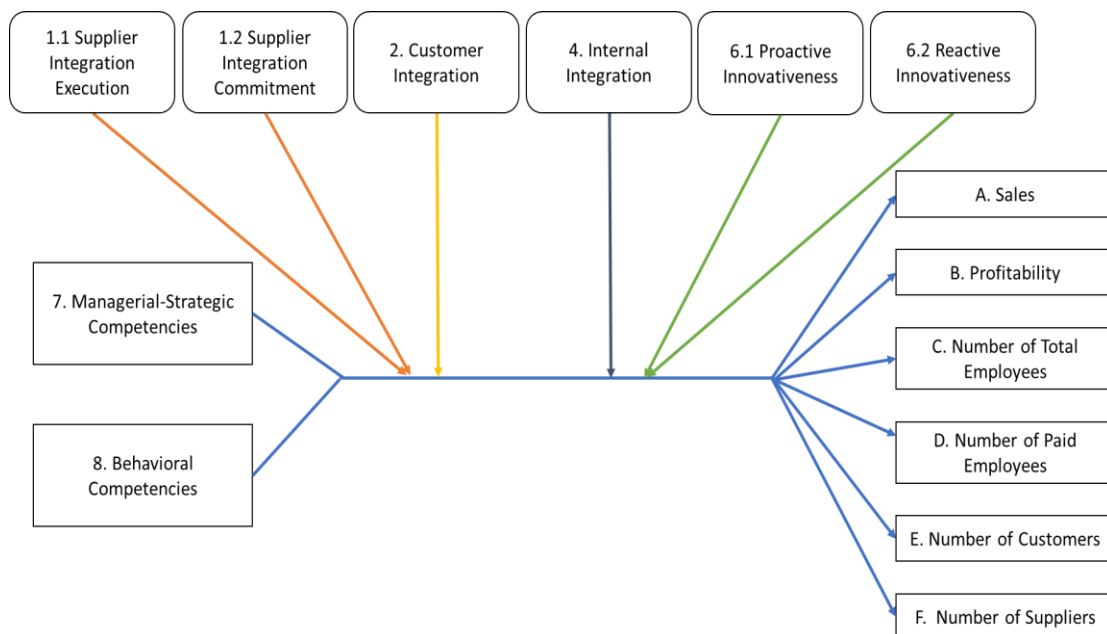
As H2 was not supported, the remaining discussion of results will concentrate solely on the insights derived from the ANOVA analysis used to test H3 (Section 4.4).

4.4 Summary of Results: H3

A multi-step analysis of variance (ANOVA) was used to test H3. First, a two-way ANOVA measured the direct relationship between both manager-centric competences (i.e., Strategic-Managerial Competencies [7] and Behavioral Competencies [8]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). Then, a secondary two-way ANOVA was run to measure the interaction effect of the moderating variables on each of the direct relationships identified. A modified hypothesis diagram showing the relationships that were tested between the manager-centric competencies (i.e., Strategic-Managerial Competencies [7] and Behavioral Competencies [8]), the empirically-formulated variables used as moderating variables (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Proactive Innovativeness [6.1], Reactive Innovativeness [6.2]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) is provided in Figure 11.

Figure 11

Modified Manager Dynamics Hypothesis (H3) Diagram



The results of the ANOVA are shown in Table 14 and Table 15. A positive coefficient is coded in green whereas a negative coefficient is shown in red. For simplicity and ease of interpretation, Table 14 and Table 15 each contain the following abbreviations for the dependent variables:

- CS = Change in Sales
- CP = Change in Profitability
- CNTE = Change in Number of Total Employees
- CNPE = Change in Number of Paid Employees
- CNC = Change in Number of Customers
- CNS = Change in Number of Suppliers

Table 14

ANOVA Summary of the Strategic-Managerial Competencies

No.	Desired Strategic-Managerial Competencies	Direct Effects	1.1 - Supplier Integration Execution	1.2 - Supplier Integration Commitment	2 - Customer Integration	3 - Administrative Items & Record Keeping Capability	4 - Internal Integration	5 - Supply Chain Management Competency	6.1 - Proactive Innovativeness	6.2 - Reactive Innovativeness
	Direct Effects		CP* CNS*	CNTE** CNPE**	CS* CP* CNS**				CS** CP* CNTE** CNC** CNS**	
7.1	Decision-maker delegates tasks to others.	CS* CP** CNTE* CNC**	CNPE** CNC*						CP**	
7.2	Decision-maker frequently seeks out new opportunities.							CNS**		CNPE*
7.3	Decision-maker is comfortable taking risks.	CNC*					CS** CP**			
7.4	Decision-maker has a vision for their business.	CS** CP* CNC**				CNPE**			CNS**	CNPE*
7.5	Decision-maker is quick to make decisions.	CS** CP** CNTE* CNPE* CNC**				CNTE**	CNS**		CNTE** CNPE**	
7.6	Decision-maker is proactive in addressing problems.					CNPE*	CS** CP** CNTE** CNPE** CNC* CNS**			

*p<0.1; **p<0.05

Note. The ANOVA summary illustrates the moderating effect of the Strategic-Managerial Competencies [7.1-7.6] and the empirically-formulated variables [1.1, 1.2, 2, 3, 4, 5, 6.1 and 6.2] on the dependent variables [CS, CP, CNTE, CNPE, CNC, CNS].

Table 15

ANOVA Summary of the Behavioral Competencies

No.	Desired Behavioral Competencies	Direct Effect	1.1 - Supplier Integration Execution	1.2 - Supplier Integration Commitment	2 - Customer Integration	3 - Administrative Items & Record Keeping Capability	4 - Internal Integration	5 - Supply Chain Management Competency	6.1 - Proactive Innovativeness	6.2 - Reactive Innovativeness
	Direct Effect		CP* CNS*	CNTE** CNPE**	CS* CP* CNS**				CS** CP* CNTE** CNC** CNS**	
8.1	Decision-maker possesses leadership qualities.	CNS*	CS** CP*		CP*			CP*		CS* CP**
8.2	Decision-maker is self-motivated.	CS** CNS**				CS*	CS* CNPE*		CS** CP** CNC** CNS**	
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	CNTE** CNPE**			CP*	CNPE*	CNTE** CNS*		CNPE**	CS* CP** CNPE* CNC** CNS**
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	CNC*			CNTE**	CNTE** CNPE**		CNTE** CNPE**		CNTE*
8.5	Decision-maker leverages a wide social and professional network.	CNPE* CNC** CNS**					CS* CNTE*		CNS**	

*p<0.1; **p<0.05

Note. The ANOVA summary illustrates the moderating effect of the Behavioral Competencies [8.1-8.5] and the empirically-formulated variables [1.1, 1.2, 2, 3, 4, 5, 6.1 and 6.2] on the dependent variables [CS, CP, CNTE, CNPE, CNC, CNS].

The subsequent discussion serves to synthesize the results depicted in Tables 14 and 15. Each subsection will explain the moderating effect of the eight empirically-formulated variables (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Proactive Innovativeness [6.1], Reactive Innovativeness [6.2]), the Strategic-Managerial Competencies [7.1-7.6] and the Behavioral Competencies [8.1-8.5] on the six dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]).

Supplier Integration Execution

Supplier Integration Execution [1.1] has a positive, direct impact on the change in Profitability [B] and the change in Number of Suppliers [F]. Additionally, when this feature interacts with a decision-maker who can delegate tasks, the change in Number of Paid Employees [D] and the change in Number of Customers [E] is also positively affected. However, when the decision-maker possesses strong leadership qualities, the interaction between this feature and Supplier Integration Execution [1.1] negatively impacts Sales [A] and Profitability [B]. While this appears counterintuitive, it speaks to the complex interpersonal dynamics of micro and small enterprises. In many cases, MSEs are working with or alongside an extended network of family and friends. As such, having strong leadership qualities may present itself as a power play which would be ill-received by external parties (i.e., suppliers).

Supplier Integration Commitment

Supplier Integration Commitment [1.2] only has a direct, positive effect on both the change in Number of Total Employees [C] and change in Number of Paid Employees [D]. According to Juneja (2015), “[i]n a committed relationship, [sic] both suppliers and customers strive to uphold the relationship and never want to exit which in turn results in building the relationship stronger and sharper. There is, in fact, huge cost which is incurred in switching from committed relationships of one supplier and build new relationships with other suppliers from scratch.” Therefore, we assume that demonstrating strong Supplier Integration Commitment [1.2] entices employees to stay in their current role since they are the “customers” benefiting from the reciprocal relationship with the firms’ suppliers.

Customer Integration

Customer Integration [2] has a direct, negative impact on change in Sales [A], change in Profitability [B] and change in Number of Suppliers [F]. The interaction between Customer Integration [2] and a manager’s actions (i.e., Strategic-Managerial Competencies [7]) does not amplify or significantly change business performance. However, when Customer Integration [2] interacts with a manager’s behaviors, namely, a decision-maker’s leadership qualities and the capability of accepting constructive feedback and adjusting actions accordingly, change in

Profitability [B] is now positively impacted. Interestingly though, when Customer Integration [2] interacts with a decision-maker's capability to maintain a positive outlook in uncertain or adverse situations, the Number of Total Employees [C] is negatively affected.

Administrative Items & Record-Keeping Capability

Administrative Items & Record-Keeping Capability [3] has no significant, direct effect on any of the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). However, when this variable is taken in context with a decision-maker's behavioral and personality traits, firm performance is now affected.

- When Administrative Items & Record-Keeping Capability [3] interacts with a decision-maker's ability to generate a clear vision for their business and proactively make decisions, the change in Number of Paid Employees [D] is positively affected.
- When Administrative Items & Record-Keeping Ability [3] interacts with a decision-maker who is quick to make decisions, the change in Total Number of Employees [C] is positively affected. We contend that this is because an organized leader – both in execution and thought – has a good handle on the operations of their business and may be more likely to attract new employees to the firm.
- A decision-maker's ability to accept constructive feedback and maintain a positive outlook in uncertain or adverse situations negatively affects the change in Number of Paid Employees [D]. A decision-maker's ability to maintain a positive outlook in adverse situations also negatively impacts the change in Number of Paid Employees [D], as it does the change in Number of Total Employees [C]. We argue that this may be because the attitudes of the decision-maker greatly influence the workplace environment. For example, if the decision-maker is negative, stubborn, or unpleasant to work with, employees may be inclined to leave and find work elsewhere.
- A self-motivated decision-maker has a negative impact on change in Sales [A] when combined with an MSE's Administrative Items and Record-Keeping Capability [3]. We argue that this is because a decision-maker may become so focused on other tasks or

projects that they overlook the seemingly menial tasks that help keep their business stay afloat (i.e., bookkeeping, general organizational tasks, etc.)

Internal Integration

Internal Integration [4] has no direct, significant effect on the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) affecting firm performance. However, the interaction between this competency and various manager-dependent characteristics produces the following effects:

- When Internal Integration [4] interacts with a decision-maker that is comfortable taking risks and is proactive in addressing problems, both change in Sales [A] and change in Profitability [B] are negatively impacted. That is, the more willing to take risks and be proactive a decision-maker is, the fewer sales and profitability the MSE will see and vice versa.
- When Internal Integration [4] interacts with a decision-maker who is quick to make decisions, the change in Number of Suppliers [F] is negatively impacted. That is, the faster and more proactive a decision-maker is when making decisions for the business, the fewer number of suppliers the MSE will have, and vice versa. This finding suggests that MSEs may be inclined to keep only a small portfolio of trusted suppliers to streamline costs and develop strategic relationships.
- The interaction between Internal Integration [4] and a decision-maker who is proactive in addressing problems will also negatively affect the change in Number of Total Employees [C] and the Number of Paid Employees [D], along with the change in Number of Customers [E] and change in Number of Suppliers [F].
- The interaction between Internal Integration [4] and a decision-maker who leverages a wide social and professional network negatively impacts change in Sales [A] and change in Number of Total Employees [C] This means that the wider their network is, the less sales and number of total employees the business will have, and vice versa.

- The interaction between a self-motivated decision-maker and Internal Integration [4] positively affects change in Sales [A] and the change in Number of Paid Employees [D]. This means that the more self-motivated a decision-maker is, the more sales and paid employees the business will have.
- Decision-makers who accept constructive feedback and adjust their actions accordingly positively affect the change in Number of Total Employees [C] and change in Suppliers [F] working with/at the firm when combined with an MSE's degree of Internal Integration [4]. That is, the more receptive to feedback a decision-maker is to feedback, the more employees, and suppliers the firm will have.

Supply Chain Management Competency

There is no significant, direct effect of an MSE's degree of Supply Chain Management Competency [5] on the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) affecting firm performance. However, when this feature interacts with a decision-maker who frequently seeks out new opportunities, the change in Number of Suppliers [F] is positively impacted. Similarly, when this feature interacts with a decision-maker who possesses strong leadership tendencies, change in Profitability [B] is positively impacted. In contrast, when the Supply Chain Management Competency [5] interacts with a decision-maker who maintains a positive outlook in uncertain or adverse situations, the change in Number of Total Employees [C] and change in Number of Paid Employees [D] is negatively impacted.

Proactive Innovativeness

On its own, Proactive Innovativeness [6.1] has a significant, positive effect on five of the six dependent variables: Sales [A], Profitability [B], Number of Total Employees [C], Number of Customers [E], and Number of Suppliers [F]. To complement this, when Proactive Innovativeness [6.1] interacts with a decision-maker who is quick to make decisions, the sixth dependent variable (i.e., Number of Paid Employees [D]) is now also positively affected. At the same time, this interaction intensifies the positive effect on Number of Total Employees [C]. An amplified positive effect on Profitability [B] occurs when a decision-maker can delegate tasks to others. Similarly,

an amplified positive effect on the Number of Suppliers [F] occurs when Proactive Innovativeness [6.1] interacts with a decision-maker that has a vision for their business and leverages a wide social and professional network.

However, when Proactive Innovativeness [6.1] interacts with a self-motivated decision-maker, change in Sales [A], change in Profitability [B], change in Number of Customers [E], and change in Number of Suppliers [F] becomes negative. Furthermore, when Proactive Innovativeness [6.1] interacts with a decision-maker who accepts constructive feedback and adjusts actions accordingly, the change in Number of Paid Employees [D] is negatively affected.

Reactive Innovativeness

Reactive Innovativeness [6.2] has no direct, significant effect on the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) influencing firm performance. However, when this feature interacts with a decision-maker that frequently seeks out new opportunities, has a vision for their business, and accepts constructive feedback, the change in Number of Paid Employees [D] is negatively affected. Change in Sales [A] and change in Profitability [B] are also negatively affected when Reactive Innovativeness [6.2] interacts with a decision-maker who possesses strong leadership qualities, who accepts constructive feedback and adjust their actions accordingly. Accepting constructive feedback also negatively impacts the change in Number of Customers [E] and change in Number of Suppliers [F] when combined with Reactive Innovativeness [6.2]. In contrast, the change in Number of Total Employees [C] is positively affected when Reactive Innovativeness [6.2] interacts with a decision-maker who can maintain a positive outlook in uncertain or adverse situations.

The full results of the ANOVA analysis can be found in Exhibits C, D, E and F in the Appendix. Summary tables of the acceptance/rejection of each sub-hypothesis of H3 are provided in Exhibits G and H of the Appendix, as well.

5. DISCUSSION AND LIMITATIONS

Micro and small enterprises “have long been viewed as an important source of job creation and output growth” (Bryson & Forth, 2018). However, these firms are subject to high failure rates due to low productivity, lack of managerial skills and other organizational challenges (OECD/ECLAC, 2012). To combat this, our capstone identifies the competencies and integrative practices that enable success in micro and small enterprises (MSEs) within the context of Latin America. Guided by existing literature, our capstone develops and tests three unique hypotheses:

1. **Hypothesis for Direct Effect (H1):** There is a direct and significant relationship between the independent, empirically-formulated competencies (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Proactive Innovativeness [6.1], Reactive Innovativeness [6.2]) and various dependent variables influencing the performance of micro and small firms in Latin America (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]).
2. **Firm Dynamics Hypothesis (H2):** The direct relationship between firm-oriented competencies (i.e., Administrative Items & Record-Keeping Capability [3] and Supply Chain Management Competency [5]) and the dependent variables used as a proxy for firm performance (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) is amplified by the moderating effect of Internal Integration [4] and the mediating effects of Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Proactive Innovativeness [6.1] and Reactive Innovativeness [6.2].
3. **Manager Dynamics Hypothesis (H3):** The direct relationship between manager-centric competencies (i.e., Strategic-Managerial Competencies [7] and Behavioral Competencies [8]) and the dependent variables used as a proxy for firm performance (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) is amplified by the moderating effects of Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer

Integration [2], Internal Integration [4], Proactive Innovativeness [6.1] and Reactive Innovativeness [6.2].

We utilize a series of statistical modeling tools to test the hypotheses outlined above. We use simple linear regression to test H1, multivariate linear regression to test H2 and an analysis of variance (ANOVA) to test H3. The results of H1 reveal that four of the eight empirically-formulated variables (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2] and Proactive Innovativeness [6.1]) significantly and directly influence firm performance. The results of H2 suggest an insignificant and indirect relationship between the firm-centric variables (i.e., Administrative Items & Record-Keeping Capability [3] and Supply Chain Management Competency [5]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) which renders H2 not supported. In contrast, the significant direct and indirect effects between the manager-centric competencies (i.e., Strategic-Managerial Competencies [7] and Behavioral Competencies [8]), the empirically-formulated variables (i.e., Supplier Integration Execution [1.1], Supplier Integration Commitment [1.2], Customer Integration [2], Administrative Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5], Proactive Innovativeness [6.1], Reactive Innovativeness [6.2]) and the dependent variables (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]) partially supports H3.

5.1 Discussion

At its core, our capstone explores the ways in which different competencies contribute to firm performance. This section provides a brief discussion on the key insights derived from both the direct and indirect effects of the feature variables in our analysis.

Supplier Integration

Supplier Integration Execution [1.1] has a positive, direct impact on the change in Number of Suppliers [F]. This finding is aligned with the research of Koufteros et al. (2005), which affirms the merits of a long-term commitment between value chain partners to establish open

communication and mutual trust. Similarly, Supplier Integration Commitment [1.2] shows a positive effect on the change in Number of Total Employees [C] and a change in the Number of Paid Employees [D], which further supports Koufteros et al.'s research that integration with suppliers is beneficial for micro and small enterprises to help propel both the business and its employees forward.

Supplier Integration Execution [1.1] also has a positive and direct effect on Profitability [B]. This relationship suggests that when micro and small enterprises leverage their own core competencies, reduced transaction costs - which consequently translate into increased profitability - may be observed across the supply chain. Furthermore, when Supplier Integration Execution [1.1] is combined with a decision-maker who is comfortable delegating tasks to others, the change in Number of Paid Employees [D] and Number of Customers [E] is positively affected. These findings are aligned with what Zhao et al. (2008) who demonstrated that integration with suppliers not only benefits the firm and supplier(s), but many other value chain partners, as well.

Another notable insight drawn from our research is that when a decision-maker possesses strong leadership qualities, the interaction between this feature and Supplier Integration Execution [1.1] negatively impacts both Sales [A] and Profitability [B]. We draw on two interesting findings from Chaudhry et al. (2016) to explain these results. In their study, Chaudhry et al. (2016) measures the correlation between profit margin and the constructive culture of an organization (in this context, culture refers to an environment where there is a sense of achievement, challenge, growth, encouragement and humanistic relationships). Chaudhry et al. (2016) concludes that the more constructive the culture, the higher the profit margin *and* more stable the profit is over time. The second insight from this study is that aggressive cultures, the ones that are very task- or number-oriented, that largely lack support and encouragement, had the most erratic profit margins (Chaudhry et al., 2016). These findings help explain the negative impact on firm performance when Supplier Integration Execution [1.1] is combined with a decision-maker who possesses strong leadership traits since being aggressive with suppliers can yield short term gains but may ultimately hurt the firm in the long-term.

Customer Integration

Our results show that Customer Integration [2] has a direct, negative impact on Sales [A], Profitability [B] and the Number of Suppliers [F]. We accredit this to a potential power struggle between a manager operating an MSE and his/her customers. Likely, the manager is a well-respected member of the community that it serves. As such, managers may frequently give in to customer demands, often at the expense of the firm, which may result in a loss of sales and profit.

While high levels of Customer Integration [2] negatively impacting Sales [A] and Profitability [B] is counterintuitive, Zhao et al. (2011) argues that a long-lasting bond between a firm and its' customers – the hallmark of customer integration - cannot be achieved without the proper management. Our research expands on these results by demonstrating how integrating with customers is not enough (as this has a negative impact on the financial performance of the firm, as explained above). Only when this competency is combined with desired manager traits, such as possessing strong leadership tendencies or accepting constructive criticism, will firm performance be positively and significantly impacted. We suppose that this is the case because a strong leader seeks and values feedback from customers, but they are self-aware enough to prevent the customer from dictating too much the operations of the business.

Administrative Items and Record-Keeping Capability

While Administrative Items and Record-Keeping Capability [3] has no direct effect on firm performance, this competency did frequently affect the Number of Total Employees [C] and the Number of Paid Employees [D] when combined with the characteristics of the manager. This finding complements the research of Adeoti and Asabi (2018) who argue that thorough and frequent recording keeping enables sound decision making within micro and small enterprises. Correspondingly, Muchira and Ambrose (2014) highlight how accurate record keeping is essential for growth of micro and small enterprises. Muchira and Ambrose (2014) observed that record keeping allowed firm owners to “calculate the business profit more accurately” and avoid unnecessary or erroneous financial losses. Thus, we maintain that demonstrating a proficiency in record-keeping helps the managers of micro and small enterprises stay organized which, in turn, would affect the number of people employed depending on the financial situation of the firm.

Internal Integration

Internal Integration [4] has no direct or significant effect on the dependent variables measured in our analysis (i.e., Sales [A], Profitability [B], Number of Total Employees [C], Number of Paid Employees [D], Number of Customers [E], Number of Suppliers [F]). However, when Internal Integration [4] is combined with various manager-dependent characteristics, a meaningful effect on firm performance is observed. Most notably, the interaction between Internal Integration [4] and a decision-maker who is quick and proactive in addressing problems negatively impacts all six dependent variables: Sales [A], Profitability [B], Number Total Employees [C], Number of Paid Employees [D], Number of Customers [E] and Number of Suppliers [F]. This may indicate the firm is deficient in streamlining organizational processes and/or is struggling to establish effective communication channels between both internal and external parties.

Most notably, the interaction between Internal Integration [4] and a decision-maker's ability to leverage a wide social and professional network negatively impacts Sales [A] and the Number of Total Employees [C]. In their research, Dimaduro and Bulmer (2010) highlight how business professionals typically make decisions about who to trust in a work setting based on many factors—one of which being physical proximity to others. Given that this research was conducted during the height of the COVID-19 pandemic, social distancing requirements limited human-to-human contact. Therefore, we contend that COVID-19 limited communication and interaction with employees, thereby constraining decision-making capabilities. Ultimately, we argue that this prevented MSE's from exploiting their employee network and wielding the benefits of internal integration into positive financial gains.

Broadly speaking, with high levels of internal integration, our results tend to show a negative influence on firm performance. As mentioned previously, micro and small enterprises are often family-owned and -operated business. When families make decisions together, especially when they have differing opinions, it may become difficult for the firm to execute on their financial and operational goals. Our results support that a firm-owner's voice may sometimes get lost because they are trying hard to appease their family – i.e., their employees.

Supply Chain Management Competency

Profitability [B] is positively impacted when the Supply Chain Management Competency [5] of the firm is united with a decision-maker who possesses strong leadership qualities. We argue that a strong leader is educated on the merits of supply chain practice and would ensure that these are embedded into firm. This, in turn, would positively affect the profitability of the firm. Furthermore, the results of our analysis suggest that supply chain management expertise seldom has a direct effect on firm performance. However, the Number of Suppliers [F] is positively impacted when the Supply Chain Management Competency [5] is combined with a decision-maker who frequently seeks out new opportunities. We argue that this is because the decision-maker is aware of the benefits of diversifying their supply base to advance their business and/or capitalize on new, promising opportunities.

Innovativeness

Micro and small enterprises benefit greatly from Proactive Innovativeness [6.1]. In their study, Sharma and Tarp (2018) found that “[i]nnovativeness is positively correlated with revenue.” The results of our capstone both uphold and enhance this finding. Our analysis reveals that revenue growth is, in fact, positively related to Proactive Innovativeness [6.1]. However, our results also show that revenue growth is further amplified when the manager of the firm is able to delegate his/her tasks to others. Arguably, with a more balanced workload, the manager has greater capacity to dedicate to the innovative activities that fuel business growth. Furthermore, our study also uncovered that there are additional benefits when micro and small enterprises demonstrate high levels of Proactive Innovativeness [6.1], such as an increase in sales, total employees, customers and suppliers.

Reactive Innovativeness [6.2] typically does not have any direct, significant influence on the performance of the firm. However, when this competency is considered with specific leader attributes, it has the potential to negatively affect certain performance variables. We argue that this is because exogenous factors and daily business demands may hamper a manager’s ability to respond to pertinent issues and adapt accordingly.

Generally speaking, proactive tendencies showed positive effects on performance and, most often, were further amplified when combined with certain managerial competences. However, being reactive does not have a direct effect on firm performance and tends to negatively impact firm performance when considered with various managerial competences.

5.2 Conclusions

Ultimately, our capstone sought to answer the following two questions: (1) what business and supply chain management competencies contribute to the growth of micro and small firms in Latin America?, and (2) how does integration with suppliers, customers and the firms' employees impact micro and small firms in Latin America? Our research shows that innovativeness was the only firm-centric competency to have a significant and direct effect on performance. However, our research did unveil that several managerial and behavioral competencies both directly and positively influence firm performance, such as a decision-maker's ability to delegate tasks to others, a decision-maker's willingness to accept risk(s), a decision-maker's ability to leverage a wide social and professional network, etc.. In answer to the second research question, we found that supplier integration directly and positively impacts firm performance whereas customer integration has the opposite effect and internal integration did not have a significant impact on firm performance. These results are further complicated when considered however, these observations speak to the complex interconnectedness between the performance of the firm and the decision-maker operating the microenterprise.

In conclusion, our research produces three main takeaways. First, our results show instances where a significant and direct relationship did not exist between certain business competencies and the dependent variables. But, when the firm-centric competencies were combined with the characteristics and behaviors of the manager – or “decision-maker” – a net change in firm performance was observed. **Effectively, this suggests that the performance of an MSE is highly reliant on the attributes of the decision-maker.** Existing literature supports our finding that personal and behavioral characteristics of a manager serve as useful predictors of firm performance. A study by Palmer et. al (2019) notes that “previous theoretical work and empirical research suggest that a better understanding of firm performance can be gained via the simultaneous consideration of organizational attributes on the one hand, and individual

characteristics of the entrepreneur on the other.” This finding is significant because it requires that firm-owners be self-aware; that they understand how their preferences, action and tendencies affect the success of their business in the long-term. In summary, we conclude that the individualistic behaviors, actions and traits of a manager cannot be completely separated from the operations of micro and small enterprises, especially considering their small size and unique organizational structure.

Second, our results shown that **to achieve higher levels of profitability and sales, managers must alter their behavior according to the different stakeholders they engage with.** For example, integration with customers requires that a leader be more authoritative so that the customers do not make too many demands of the business. In contrast, managers should be more open when integrating with suppliers so that the suppliers’ involvement does not become too invasive. Ultimately, managers must be willing to adapt to truly appreciate the dynamics of each business relationship.

Lastly, **feature variables with strong direct effects present less opportunity for amplified impact on the dependent variables.** This finding is of particular importance considering that most (if not all) decisions within micro and small enterprises are “centered in the hands of one or few persons within the organization” (Henderson & Nutt, 1980, as cited in Alharbi et al., 2018). As such, decision-makers must be cognizant of how their behaviors will influence firm dynamics. We have found that simply possessing certain firm-related competencies - such as internal integration, supply chain management expertise, etc. - is not enough. Decision-makers must understand how to effectively manage the competencies of their business *and* have a handle on how their own strengths, leadership style and/or knowledge gaps affect firm performance. Decision-makers must understand the power they hold over the ability of their business to succeed.

5.3 Limitations and Assumptions

We acknowledge that our research is limited by many factors. For example, only 45 business owners from Latin America were surveyed, with a high concentration of respondents in Mexico and Peru. As such, the interpretations made cannot be generalized to other geographic regions outside of Latin America. Similarly, the questionnaire was only administered to a small sample of

business sectors. Therefore, our results cannot be used to draw conclusions about other industry sectors within or outside Latin America.

Additionally, we acknowledge that survey data tends to be inherently subjective. Relatedly, we acknowledge that there is a risk that responses were untruthful, misled or inaccurate. As noted by Chacra and Rocha (2019), this phenomenon “tends to happen more frequently when survey questions contain sensitive topics or contain an aspect of ‘social desirability’” (Tourangeau & Yan, 2007; Rosenfeld et al., 2016; Brenner & DeLamater, 2016, as cited in Chacra & Rocha, 2019). Social desirability is the extent to which a survey question elicits a response that is seen to be socially (un)acceptable or socially (un)desirable (Tourangeau et al., 2000). To avoid significant repercussions caused by this behavior, our questionnaire was structured in a way that elicited an unbiased interpretation. Most notably, Section VII and Section IX, which analyzed the personal or behavioral characteristics of the firm owner, followed the positive-positive structure for survey questions where “their available choices are phrased in a positive reference, in an effort to avoid loaded, leading or biased statements” (Chacra & Rocha, 2019).

Lastly, the behavioral aspect that a manager contributes to an MSE makes it difficult to extrapolate our findings into universally generalizable recommendations. These individualistic traits often complicate the net effect on performance (i.e., an interaction either becomes more positive or switches to a negative effect). These results are highly dependent on the context and should only be interpreted as such.

5.4 Recommendations for Future Research

Existing research shows how many firm-centric competencies have a different impact on firm performance. In many ways, our research shows the same results. However, we believe further research should be conducted to understand the distinction between competencies that have a direct effect and those that do not. For example, a decision-maker frequently seeks out new opportunities [7.2] and a decision-maker who is proactive in addressing problems [7.6] do not have a direct effect on performance but do when they are combined with a few of the feature variables.

Additionally, the following four feature variables showed no direct effect on firm performance: Administrative-Items & Record-Keeping Capability [3], Internal Integration [4], Supply Chain Management Competency [5] and Reactive Innovativeness [6.2]. However, when combined with the characteristics of the manager, a net effect on performance was observed. We believe it would be worthwhile to explore the reasons behind the lack of direct effect.

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APPENDIX

Exhibit A – Questionnaire Template (English Version)

Please read **ALL** the instructions before starting the survey.

The objective of this research is to measure the impact supply chain capabilities have on the success/survival rate of MSEs in Latin America. With that said, we would like to ask for your help administering the following survey to MSEs decision-makers in order to gather relevant data about their businesses.

Before beginning data collection, please explain the dynamic of the survey and share with the decision-maker that you will read the corresponding instructions for each question out loud. Some questions have a different answer format, so please request that the decision-maker listen carefully to the instructions shared.

For Section I, please ask the decision-maker to select the answer that best describes their firm's changes in the last year. For Question #I.6, please ask the decision-maker to rank the options listed in order of importance. If the decision-maker selects the "Other" option, please ask him/her for supporting details.

For Sections II-VII, please ask the decision-maker to indicate the extent to which he/she agrees with the statements listed. The decision-maker will have 5 options to choose from: strongly disagree, disagree, undecided, agree or strongly agree. There is also an "I Don't Know/Not Applicable" option provided for each statement. Please **DO NOT** mention this option; instead, only check this option if the decision-maker is unable to select another option.

For Sections VIII-IX, please ask the decision-maker to indicate the extent to which he/she feels that the statements listed describes them. The decision-maker will have 5 options to choose from: strongly describes him/her (in reference to the *first* statement listed), somewhat describes him/her (in reference to the *first* statement listed), undecided, somewhat describes him/her (in reference to the *second* statement listed) or strongly describes him/her (in reference to the *second* statement listed).

For all questions, please ensure that you read the entire question, including for example, the words/phrases provided inside parentheses. Please **DO NOT** rephrase any statement. If the decision-maker does not understand the question asked, please repeat the question again or mark their answer as "I Don't Know/Not Applicable."

We appreciate your help tremendously! Let's get started.

I. DEMOGRAPHIC AND PERFORMANCE DATA

Please specify what change (if any) you noticed within the last year in....		1 - Significantly Decreased (more than 50%)	2 – Decreased (0%-50%)	3 - No change / Remained Stagnant	4 – Increased (0%-50%)	5 - Significantly Increased (more than 50%)	7 - I Don't Know / Not Applicable
1	Sales						
2	Profitability						
3	Number of total employees						
4	Number of paid employees						
5	Number of customers						
6	Number of suppliers						

Please indicate:

7. What is the motivating intent behind running your business? Please rank each option below in order of importance to you:

- I want to support my family
- I want to make a profit
- I want to create jobs for others

II. SUPPLIER INTEGRATION

Please indicate the extent to which the respondent agrees with the following statements:		1 - Strongly Disagree	2- Disagree	3 - Undecided	4 - Agree	5 - Strongly Agree	7 - I Don't Know / Not Applicable
1	The level of information exchange that the firm has with its major supplier(s) through information networks is 100% transparent. (transparent = always available and known by the firm and its suppliers)						
2	The firm has managed to establish a quick ordering process in collaboration with its major supplier(s).						
3	The firm intends to maintain and continuously improve the relationship with its primary supplier(s).						
4	The firm asks its supplier(s) for advice and encourages them to come with suggestions for improvements.						
5	The firm's employees share close social relationships with the employees from its supplier(s). (i.e., they like to spend time together)						
6	The firm can rely on its supplier(s) to fulfill the business requirements.						

III. CUSTOMER INTEGRATION

Please indicate the extent to which the respondent agrees with the following statements:		1 - Strongly Disagree	2- Disagree	3 - Undeci ded	4 - Agree	5 - Strongly Agree	7 - I Don't Know / Not Applicable
1	The level of information exchange that the firm has with its primary customers through information networks (including but not limited to: ordering, customer service, POS (points of sale), inventory levels, and demand forecasting) is 100% transparent. (transparent = always available and known by the firm and its customers)						
2	Communication with the firm's major customers is done with periodic frequency (e.g., once a week, a few times a month, etc.).						
3	The firm seeks feedback from its customers in order to improve and meet customers' needs.						
4	The relationship that the firm has with its major customers is something that the firm is very committed to.						
5	The firm intends to maintain and continuously improve the relationship with its primary customers.						

IV. ADMINISTRATIVE ITEMS & RECORD-KEEPING CAPABILITY

Please indicate the extent to which the respondent agrees with the following statements:		1 - Strongly Disagree	2- Disagree	3 - Undeci ded	4 - Agree	5 - Strongly Agree	7 - I Don't Know / Not Applicabl e
1	The firm effectively performs general administrative tasks (i.e., record keeping, financial planning).						
2	The firm has established an internal management routine where it takes care of administrative tasks with a defined frequency (i.e., financial record-keeping, inventory planning, sales transactions, bill payments, budgeting).						
3	The firm has established and successfully maintains financial performance practices (i.e., budgeting, profit and loss evaluations, income/expenditure sheet).						

V. INTERNAL INTEGRATION

Please indicate the extent to which the respondent agrees with the following statements:		1 - Strongly Disagree	2- Disagree	3 - Undeci ded	4 - Agree	5 - Strongly Agree	7 - I Don't Know / Not Applicable
1	The firm is able to predict demand for its products/services.						
2	The firm has processes that support inventory management by providing accurate registers.						
3	The firm has a routine order management and purchasing review. (e.g., once a week, a few times a month, etc.).						
4	The firm can identify process and quality improvements needed and enact meaningful change to address such improvements.						

VI. SUPPLY CHAIN MANAGEMENT COMPETENCY

Please indicate the extent to which the respondent agrees with the following statements:		1 - Strongly Disagree	2- Disagree	3 - Undeci ded	4 - Agree	5 - Strongly Agree	7 - I Don't Know / Not Applicable
1	The firm has managed to integrate its data in a way that information (e.g., transactional company data) is available at any time.						
2	The firm's employees know their role in the business to an extent that they proficiently perform this role.						
3	The firm encourages its employees to share suggestions in order to constantly improve.						
4	When making decisions, the firm's employees consider the business interest on top of their own.						
5	The firm trusts that its employees are honest with the business.						

VII. INNOVATIVENESS

Please indicate the extent to which the respondent agrees with the following statements:		1 - Strongly Disagree	2- Disagree	3 - Undecided	4 - Agree	5 - Strongly Agree	7 - I Don't Know / Not Applicable
1	The firm constantly looks for new ways to do things at work.						
2	The firm often finds more than one solution to a problem.						
3	The firm found a new way to adapt the main operations of the business (e.g., when faced with the problem, like COVID pandemic).						
4	The firm effectively combined available resources (e.g., labor, supplies, materials, money) in finding a new way of operating business, creating new product versions, or introducing new services.						
5	The firm introduced a new product or service that was fundamentally new to its sector.						

6. If you agree to any of the aforementioned statements, please describe an example in a few sentences.

VIII. BUSINESS/MANAGERIAL/STRATEGIC COMPETENCY

Please indicate the extent to which the following statements describe you.

		1 - Strongly Describes Me	2 - Somewhat Describes Me	3 - Undecided	4 - Somewhat Describes Me	5 - Strongly Describes Me	
1	I prefer to handle tasks on my own.						I prefer to delegate tasks to others.
2	I feel more comfortable staying within the opportunities I already know.						I frequently seek out new opportunities.
3	I tend to stay within my comfort zone and avoid risks.						I am fully comfortable taking risks.
4	I tend not to create long-term plans and instead, adjust based on the immediate situation.						I have a vision for where my business will be in 5 years.
5	I tend to spend long periods of time weighing possible options before deciding.						I am very quick and intuitive when making decisions.
6	I solve problems when they emerge.						I try to predict and prepare for problems before they arise.

IX. PERSONAL/BEHAVIORAL COMPETENCY

Please indicate the extent to which the following statements describe you.

		1 - Strongly Describes Me	2 - Somewhat Describes Me	3 - Undecided	4 - Somewhat Describes Me	5 - Strongly Describes Me	
1	I let my team members guide their own way.						I lead my team.
2	I look to others for motivation.						I am highly self-motivated.
3	I tend to avoid situations where my work or personality is criticized.						I welcome constructive feedback and adjust my actions accordingly.
4	I tend to avoid confrontation and often shut down in the face of adverse and uncertain situations.						I am confident in my ability to maintain a positive attitude when faced with adverse and uncertain situations.
5	I tend to rely more on myself and have only a limited network.						I have and utilize a wide social and professional network.

Exhibit B – Questionnaire Template (Spanish Version)

Por favor, lee **TODAS** las instrucciones antes de iniciar la encuesta.

El objetivo de esta investigación es medir el impacto que tienen las capacidades de las cadenas de suministro en la tasa de éxito/supervivencia de las PYME en Latinoamérica. Dicho esto, queremos solicitar tu ayuda para administrar la siguiente encuesta a las personas a cargo de tomar decisiones en las PYME, con el fin de recopilar datos relevantes sobre estos negocios.

Antes de empezar la recopilación de datos, por favor, explica al decisor la dinámica de la encuesta e indícale que vas a leer en voz alta las instrucciones correspondientes a cada pregunta. Algunas preguntas tienen un formato de respuesta diferente, por lo que es necesario pedir al decisor que preste mucha atención a las instrucciones que le des.

Para la sección I, por favor, pide al decisor que escoja la respuesta que mejor describa los cambios que ha sufrido el negocio en el último año. Para la pregunta #I.6, por favor, pide al decisor que clasifique las opciones enumeradas por orden de importancia. Si el decisor escoge la opción “Otra”, por favor, pide que te dé más detalles.

De la sección II a la VII, por favor, pide al decisor que indique hasta qué punto está de acuerdo con las afirmaciones enumeradas. El decisor deberá escoger entre 5 opciones: en total desacuerdo, no de acuerdo, indeciso, de acuerdo y totalmente de acuerdo. También existe la opción “No sé/No aplica” para cada una de las afirmaciones. Por favor, **NO** menciones esta opción; márcala únicamente cuando el decisor no pueda elegir alguna de las otras opciones.

Para las secciones VIII y IX, por favor, pide al decisor que indique hasta qué punto siente que las afirmaciones enumeradas lo(a) describen. El decisor deberá escoger entre 5 opciones: me describe bastante (referente al *primer* enunciado), me describe un poco (referente al *primer* enunciado), no estoy seguro, me describe un poco (referente al *segundo* enunciado) y me describe bastante (referente al *segundo* enunciado).

Para todas las preguntas, por favor, asegúrate de leer la pregunta completa, incluyendo, por ejemplo, palabras o frases que se encuentren dentro de un paréntesis. Por favor, **NO** replantees o uses palabras diferentes para las afirmaciones. Si el decisor no entiende la pregunta, por favor, repite la pregunta tal cual o registra la respuesta como “No sé/No aplica”.

¡Agradecemos enormemente tu ayuda! Empecemos.

I. DATOS DEMOGRÁFICOS Y DE RENDIMIENTO

Por favor, especifica el cambio (si lo hubo) que notaste durante el último año en torno a:		1 - Disminuyó considerablemente (más del 50 %)	2 - Disminuyó (0 % al 50 %)	3 - No cambió/Se quedó estancado	4 - Aumentó (0 % al 50 %)	5 - Aumentó considerablemente (más del 50 %)	7 - No sé/No aplica
1	Ventas						
2	Rentabilidad						
3	Número total de empleados						
4	Número de empleados pagados						
5	Número de clientes						
6	Número de proveedores						

Por favor, indica:

7. ¿Qué te motiva a llevar un negocio? Por favor, clasifica las siguientes opciones según el orden de importancia que tienen para ti:

- Quiero apoyar a mi familia
- Quiero obtener ganancias
- Quiero crear trabajos para los demás

II. INTEGRACIÓN DE PROVEEDORES

Por favor, indica en qué medida el encuestado está de acuerdo con las siguientes afirmaciones:		1 - En total desacuerdo	2 - No de acuerdo	3 - Indeciso	4 - De acuerdo	5 - Totalmente de acuerdo	7 - No sé/No aplica
1	El nivel de intercambio de información que el negocio tiene con su(s) principal(es) proveedor(es) mediante redes de información es 100 % transparente. (Transparente = siempre está disponible y tanto el negocio como sus proveedores la conocen).						
2	El negocio ha logrado establecer un proceso rápido de pedidos en colaboración con su(s) principal(es) proveedor(es).						
3	El negocio tiene la intención de mantener y mejorar continuamente la relación con su(s) proveedor(es) principal(es).						
4	El negocio pide consejo a su(s) proveedor(es) y lo(s) invita a proponer sugerencias para mejorar.						
5	Los empleados del negocio se llevan bien con los empleados del (de los) proveedor(es) (es decir, les gusta pasar tiempo juntos).						
6	El negocio puede confiar en que su(s) proveedor(es) cumplirán con sus requerimientos.						

III. INTEGRACIÓN DE CLIENTES

Por favor, indica en qué medida el encuestado está de acuerdo con las siguientes afirmaciones:		1 - En total desacuerdo	2 - No de acuerdo	3 - Indeciso	4 - De acuerdo	5 - Totalmente de acuerdo	7 - No sé/No aplica
1	El nivel de intercambio de información que el negocio tiene con sus clientes mediante redes de información (incluyendo, pero no limitado a pedidos, atención al cliente, puntos de venta, niveles de inventario y proyección de la demanda) es 100 % transparente. (Transparente = siempre está disponible y tanto el negocio como sus proveedores la conocen).						
2	El negocio se comunica periódicamente con sus clientes principales (por ejemplo, una vez a la semana, varias veces al mes, etc.).						
3	El negocio busca retroalimentación de sus clientes para mejorar y satisfacer las necesidades de éstos.						
4	La relación que el negocio tiene con sus clientes principales es algo por lo que trabaja constantemente.						
5	El negocio busca mantener y mejorar continuamente la relación que tiene con sus clientes principales.						

IV. ELEMENTOS ADMINISTRATIVOS Y CAPACIDAD DE REGISTRO

Por favor, indica en qué medida el encuestado está de acuerdo con las siguientes afirmaciones:		1 - En total desacuerdo	2 - No de acuerdo	3 - Indeciso	4 - De acuerdo	5 - Totalmente de acuerdo	7 - No sé/No aplica
1	El negocio realiza actividades administrativas generales de forma efectiva (por ejemplo, llevar registros, planificación financiera, etc.).						
2	El negocio tiene una rutina de gestión interna que se encarga de las tareas administrativas cada cierto periodo de tiempo (es decir, registros financieros, planificación de inventarios, transacciones de ventas, pagos de facturas, elaboración de presupuestos).						
3	El negocio ha establecido y lleva a cabo prácticas de rendimiento financiero con éxito (es decir, elaboración de presupuestos, evaluaciones de pérdidas y ganancias, hoja de ingresos/gastos).						

V. INTEGRACIÓN INTERNA

Por favor, indica en qué medida el encuestado está de acuerdo con las siguientes afirmaciones:		1 - En total desacuerdo	2 - No de acuerdo	3 - Indeciso	4 - De acuerdo	5 - Totalmente de acuerdo	7 - No sé/No aplica
1	El negocio ha conseguido reunir sus datos para que la información (por ejemplo, los datos de las transacciones) esté disponible en todo momento.						
2	Los empleados del negocio saben cuál es su rol dentro de la empresa, de modo que desempeñan dicho rol eficientemente.						
3	El negocio invita a sus empleados a compartir sus sugerencias para mejorar constantemente.						
4	Cuando toman decisiones, los empleados del negocio consideran los intereses de la empresa antes que los suyos.						
5	El negocio confía en que sus empleados son honestos.						

VI. HABILIDAD DE MANEJO DE LA CADENA DE SUMINISTRO

Por favor, indica en qué medida el encuestado está de acuerdo con las siguientes afirmaciones:		1 - En total desacuerdo	2 - No de acuerdo	3 - Indeciso	4 - De acuerdo	5 - Totalmente de acuerdo	7 - No sé/No aplica
1	El negocio puede predecir la demanda de sus productos/servicios.						
2	El negocio maneja procesos que favorecen la administración del inventario mediante registros precisos.						
3	El negocio tiene una rutina de gestión para revisar los pedidos y las compras de forma periódica (por ejemplo, una vez a la semana, varias veces al mes, etc.).						
4	El negocio puede identificar las mejoras necesarias en los procesos y en la calidad, y hacer cambios significativos para lograr dichas mejoras.						

VII. INNOVACIÓN

Por favor, indica en qué medida el encuestado está de acuerdo con las siguientes afirmaciones:		1 - En total desacuerdo	2 - No de acuerdo	3 - Indeciso	4 - De acuerdo	5 - Totalmente de acuerdo	7 - No sé/No aplica
1	El negocio constantemente busca nuevas formas de hacer las cosas en el trabajo.						
2	El negocio suele encontrar más de una forma de solucionar un problema.						
3	El negocio encontró una nueva manera de adecuar sus principales operaciones (por ejemplo, ante un problema como lo fue la pandemia de COVID-19).						
4	El negocio combinó recursos disponibles eficazmente (por ejemplo, mano de obra, suministros, materiales, dinero) para encontrar una nueva forma de operar, creando nuevas versiones de productos o incorporando nuevos servicios.						
5	El negocio sacó un nuevo producto o servicio que fue totalmente nuevo dentro de su sector.						

6. Si estás de acuerdo con cualquiera de las afirmaciones anteriores, por favor, describe un ejemplo con unas cuantas oraciones.

VIII. HABILIDAD EMPRESARIAL/ADMINISTRATIVA/ESTRATÉGICA

Por favor, indica en qué medida las siguientes afirmaciones te describen.

		1 - Me describe bastante	2 - Me describe un poco	3 - No estoy seguro	4 - Me describe un poco	5 - Me describe bastante	
1	Prefiero encargarme de las cosas yo solo.						Prefiero delegar las cosas a otros.
2	Me siento más cómodo centrándome en las oportunidades que ya conozco.						Busco nuevas oportunidades con frecuencia.
3	Suelo quedarme en mi zona de confort y evito riesgos.						Me siento muy cómodo tomando riesgos.
4	No suelo hacer planes a largo plazo, prefiero hacer ajustes con base en la situación actual.						Tengo una visión clara de cómo será mi negocio en 5 años.
5	Suelo pasar mucho tiempo considerando las posibles alternativas antes de tomar una decisión.						Soy muy rápido e intuitivo al tomar decisiones
6	Resuelvo problemas conforme van surgiendo.						Trato de predecir problemas y prepararme para ellos antes de que surjan.

IX. HABILIDAD PERSONAL Y DE COMPORTAMIENTO

Por favor, indica en qué medida las siguientes afirmaciones te describen.

		1 - Me describe bastante	2 - Me describe un poco	3 - No estoy seguro	4 - Me describe un poco	5 - Me describe bastante	
1	Dejo que los miembros de mi equipo dirijan su propio trabajo.						Yo dirijo a mi equipo.
2	Busco motivación en otras personas.						Yo me motivo a mí mismo.
3	Suelo evitar situaciones en donde me critican a mí o critican mi trabajo.						Acepto comentarios constructivos y ajusto mis acciones de acuerdo con ellos.
4	Suelo evitar enfrentamientos y muchas veces me bloqueo ante situaciones difíciles e inciertas.						Confío en mi habilidad de mantener una actitud positiva ante situaciones difíciles e inciertas.
5	Suelo confiar más en mí mismo y tengo una red de contactos muy pequeña.						Tengo y utilizo una gran red de contactos sociales y profesionales.

Exhibit C – ANOVA Summary Results from the Direct Effect of Managerial-Strategic Competency on the Independent Variables.

No.	Questionnaire Theme	Change in Sales	Change in Profitability	Change in Number of Total Employees	Change in Number of Paid Employees	Change in Number of Customers	Change in Number of Suppliers
7.1	Decision-maker delegates tasks to others.	0.92* <i>moderate</i>	1.31** <i>high</i>	0.81* <i>moderate</i>		1.19** <i>high</i>	
7.2	Decision-maker frequently seeks out new opportunities.						
7.3	Decision-maker is comfortable taking risks.					0.96* <i>moderate</i>	
7.4	Decision-maker has a vision for their business.	1.33** <i>high</i>	0.94* <i>moderate</i>			1.16** <i>high</i>	
7.5	Decision-maker is quick to make decisions.	1.16** <i>high</i>	0.95** <i>moderate</i>	1.17** <i>high</i>	1.11* <i>high</i>	1.11** <i>high</i>	
7.6	Decision-maker is proactive in addressing problems.						

*p<0.1; n.s.=not significant; **p<0.05

Exhibit D – ANOVA Summary Results from the Direct Effect of Behavioral Competency on the Independent Variables.

No.	Questionnaire Theme	Change in Sales	Change in Profitability	Change in Number of Total Employees	Change in Number of Paid Employees	Change in Number of Customers	Change in Number of Suppliers
8.1	Decision-maker possesses leadership qualities.						0.44* <i>low</i>
8.2	Decision-maker is self-motivated.	-1.19** <i>high</i>					-1.04** <i>high</i>
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.			-1.41** <i>high</i>	-1.32** <i>high</i>		
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.					1.20* <i>high</i>	
8.5	Decision-maker leverages a wide social and professional network.				0.89* <i>moderate</i>	0.85** <i>high</i>	0.90** <i>moderate</i>

*p<0.1; n.s.=not significant; **p<0.05

**Exhibit E – Results from the Moderating Effect Between Managerial-Strategic Competency
ANOVA using the six dependent variables.**

Change in Sales

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
7.1	Decision-maker delegates tasks to others.	0.923*	0.078	0.51
7.2	Decision-maker frequently seeks out new opportunities.	0.198 n.s.	0.662	0.449
7.3	Decision-maker is comfortable taking risks.	0.256 n.s.	0.658	0.572
7.4	Decision-maker has a vision for their business.	1.329**	0.002	0.409
7.5	Decision-maker is quick to make decisions.	1.160**	0.009	0.424
7.6	Decision-maker is proactive in addressing problems.	-0.160 n.s.	0.721	0.445

	<i>SS</i>	<i>d.f.</i>	<i>F</i>
7.1 Decision-maker delegates tasks to others.	7.385	1.0	3.277
7.2 Decision-maker frequently seeks out new opportunities.	0.395	1.0	0.194
7.3 Decision-maker is comfortable taking risks.	0.452	1.0	0.199
7.4 Decision-maker has a vision for their business.	16.661	1.0	10.553
7.5 Decision-maker is quick to make decisions.	12.615	1.0	7.471
7.6 Decision-maker is proactive in addressing problems.	0.292	1.0	0.129

R-squared: 0.619

*p<0.1; n.s.=not significant; **p<0.05

Change in Profitability

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
7.1	Decision-maker delegates tasks to others.	1.307**	0.014	0.509
7.2	Decision-maker frequently seeks out new opportunities.	0.534 n.s.	0.243	0.45
7.3	Decision-maker is comfortable taking risks.	0.333 n.s.	0.579	0.595
7.4	Decision-maker has a vision for their business.	0.943*	0.061	0.488
7.5	Decision-maker is quick to make decisions.	0.947**	0.042	0.451
7.6	Decision-maker is proactive in addressing problems.	-0.248 n.s.	0.584	0.448

	<i>SS</i>	<i>d.f.</i>	<i>F</i>
7.1 Decision-maker delegates tasks to others.	14.821	1.0	6.601
7.2 Decision-maker frequently seeks out new opportunities.	2.887	1.0	1.407
7.3 Decision-maker is comfortable taking risks.	0.769	1.0	0.314
7.4 Decision-maker has a vision for their business.	8.389	1.0	3.738
7.5 Decision-maker is quick to make decisions.	8.402	1.0	4.411
7.6 Decision-maker is proactive in addressing problems.	0.699	1.0	0.305

R-squared: 0.522

*p<0.1; n.s.=not significant; **p<0.05

Change in Total Number of Employees

No.	Variable	Coefficient	p-value	Standard Error
7.1	Decision-maker delegates tasks to others.	0.808*	0.073	0.438
7.2	Decision-maker frequently seeks out new opportunities.	-0.137 n.s.	0.754	0.432
7.3	Decision-maker is comfortable taking risks.	0.422 n.s.	0.365	0.461
7.4	Decision-maker has a vision for their business.	0.356 n.s.	0.364	0.387
7.5	Decision-maker is quick to make decisions.	1.173**	0.002	0.356
7.6	Decision-maker is proactive in addressing problems.	0.629 n.s.	0.102	0.376

	SS	d.f.	F
7.1 Decision-maker delegates tasks to others.	5.654	1.0	3.406
7.2 Decision-maker frequently seeks out new opportunities.	0.188	1.0	0.099
7.3 Decision-maker is comfortable taking risks.	1.234	1.0	0.84
7.4 Decision-maker has a vision for their business.	1.196	1.0	0.844
7.5 Decision-maker is quick to make decisions.	12.907	1.0	10.876
7.6 Decision-maker is proactive in addressing problems.	4.509	1.0	2.789

R-squared: 0.354

*p<0.1; n.s.=not significant; **p<0.05

Change in Total Number of Paid Employees

No.	Variable	Coefficient	p-value	Standard Error
7.1	Decision-maker delegates tasks to others.	0.462 n.s.	0.418	0.564
7.2	Decision-maker frequently seeks out new opportunities.	3.529 n.s.	0.928	0.546
7.3	Decision-maker is comfortable taking risks.	0.344 n.s.	0.59	0.634
7.4	Decision-maker has a vision for their business.	0.552 n.s.	0.311	0.538
7.5	Decision-maker is quick to make decisions.	1.107*	0.039	0.519
7.6	Decision-maker is proactive in addressing problems.	-0.051 n.s.	0.917	0.492

	SS	d.f.	F
7.1 Decision-maker delegates tasks to others.	1.846	1.0	0.671
7.2 Decision-maker frequently seeks out new opportunities.	0.025	1.0	0.008
7.3 Decision-maker is comfortable taking risks.	0.821	1.0	0.295
7.4 Decision-maker has a vision for their business.	2.871	1.0	1.053
7.5 Decision-maker is quick to make decisions.	11.482	1.0	4.549
7.6 Decision-maker is proactive in addressing problems.	0.03	1.0	0.011

R-squared: 0.119

*p<0.1; n.s.=not significant; **p<0.05

Change in Number of Customers

No.	Variable	Coefficient	p-value	Standard Error
7.1	Decision-maker delegates tasks to others.	1.192**	0.008	0.428
7.2	Decision-maker frequently seeks out new opportunities.	0.402 n.s.	0.339	0.416
7.3	Decision-maker is comfortable taking risks.	0.955*	0.055	0.482
7.4	Decision-maker has a vision for their business.	1.163**	0.004	0.374
7.5	Decision-maker is quick to make decisions.	1.107**	0.007	0.389
7.6	Decision-maker is proactive in addressing problems.	0.411 n.s.	0.285	0.38

	SS	d.f.	F
7.1 Decision-maker delegates tasks to others.	12.321	1.0	7.772
7.2 Decision-maker frequently seeks out new opportunities.	1.638	1.0	0.936
7.3 Decision-maker is comfortable taking risks.	6.321	1.0	3.936
7.4 Decision-maker has a vision for their business.	12.764	1.0	9.672
7.5 Decision-maker is quick to make decisions.	11.482	1.0	8.096
7.6 Decision-maker is proactive in addressing problems.	1.932	1.0	1.172

R-squared: 0.490

*p<0.1; n.s.=not significant; **p<0.05

Change in Number of Suppliers

No.	Variable	Coefficient	p-value	Standard Error
7.1	Decision-maker delegates tasks to others.	0.385 n.s.	0.357	0.413
7.2	Decision-maker frequently seeks out new opportunities.	-0.054 n.s.	0.891	0.392
7.3	Decision-maker is comfortable taking risks.	0.500 n.s.	0.281	0.457
7.4	Decision-maker has a vision for their business.	0.644 n.s.	0.124	0.409
7.5	Decision-maker is quick to make decisions.	0.373 n.s.	0.373	0.414
7.6	Decision-maker is proactive in addressing problems.	-0.042 n.s.	0.906	0.354

	SS	d.f.	F
7.1 Decision-maker delegates tasks to others.	1.282	1.0	0.869
7.2 Decision-maker frequently seeks out new opportunities.	0.029	1.0	0.019
7.3 Decision-maker is comfortable taking risks.	1.731	1.0	1.197
7.4 Decision-maker has a vision for their business.	3.914	1.0	2.479
7.5 Decision-maker is quick to make decisions.	1.307	1.0	0.813
7.6 Decision-maker is proactive in addressing problems.	0.02	1.0	0.014

R-squared: 0.287

*p<0.1; n.s.=not significant; **p<0.05

**Exhibit F – Results from the Moderating Effect Between Behavioral Competency ANOVA
using the six dependent variables.**

Change in Sales

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
8.1	Decision-maker possesses leadership qualities.	0.008 n.s.	0.984	0.418
8.2	Decision-maker is self-motivated.	-1.192**	0.022	0.500
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	-0.403 n.s.	0.516	0.615
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	0.917 n.s.	0.243	0.775
8.5	Decision-maker leverages a wide social and professional network.	0.678 n.s.	0.142	0.452

	<i>SS</i>	<i>d.f.</i>	<i>F</i>
8.1 Decision-maker possesses leadership qualities.	0.001	1.0	0.000
8.2 Decision-maker is self-motivated.	12.321	1.0	5.696
8.3 Decision-maker accepts constructive feedback and adjusts actions accordingly.	0.964	1.0	0.429
8.4 Decision-maker maintains a positive outlook in uncertain or adverse situations.	3.069	1.0	1.398
8.5 Decision-maker leverages a wide social and professional network.	4.789	1.0	2.244

R-squared: 0.248

*p<0.1; n.s.=not significant; **p<0.05

Change in Profitability

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
8.1	Decision-maker possesses leadership qualities.	-0.133 n.s.	0.758	0.430
8.2	Decision-maker is self-motivated.	-0.769 n.s.	0.156	0.532
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	-0.739 n.s.	0.235	0.614
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	1.191 n.s.	0.132	0.775
8.5	Decision-maker leverages a wide social and professional network.	0.715 n.s.	0.131	0.464

	<i>SS</i>	<i>d.f.</i>	<i>F</i>
8.1 Decision-maker possesses leadership qualities.	0.194	1.0	0.096
8.2 Decision-maker is self-motivated.	5.128	1.0	2.094
8.3 Decision-maker accepts constructive feedback and adjusts actions accordingly.	3.249	1.0	1.453
8.4 Decision-maker maintains a positive outlook in uncertain or adverse situations.	5.176	1.0	2.361
8.5 Decision-maker leverages a wide social and professional network.	5.327	1.0	2.372

R-squared: 0.407

*p<0.1; n.s.=not significant; **p<0.05

Change in Total Number of Employees

<i>No.</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-value</i>	<i>Standard Error</i>
8.1	Decision-maker possesses leadership qualities.	-0.508 n.s.	0.154	0.350
8.2	Decision-maker is self-motivated.	-0.500 n.s.	0.278	0.454
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	-1.414**	0.006	0.494
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	-0.452 n.s.	0.511	0.683
8.5	Decision-maker leverages a wide social and professional network.	0.522 n.s.	0.200	0.402

	<i>SS</i>	<i>d.f.</i>	<i>F</i>
8.1 Decision-maker possesses leadership qualities.	2.819	1.0	2.108
8.2 Decision-maker is self-motivated.	2.167	1.0	1.211
8.3 Decision-maker accepts constructive feedback and adjusts actions accordingly.	11.865	1.0	8.184
8.4 Decision-maker maintains a positive outlook in uncertain or adverse situations.	0.747	1.0	0.439
8.5 Decision-maker leverages a wide social and professional network.	2.852	1.0	1.692

R-squared: 0.613

*p<0.1; n.s.=not significant; **p<0.05

Change in Total Number of Paid Employees

No.	Variable	Coefficient	p-value	Standard Error
8.1	Decision-maker possesses leadership qualities.	0.200 n.s.	0.680	0.481
8.2	Decision-maker is self-motivated.	0.077 n.s.	0.900	0.606
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	-1.315**	0.050	0.652
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	-0.321 n.s.	0.713	0.868
8.5	Decision-maker leverages a wide social and professional network.	0.889*	0.087	0.507
		SS	d.f.	F
8.1	Decision-maker possesses leadership qualities.	0.436	1.0	0.173
8.2	Decision-maker is self-motivated.	0.051	1.0	0.016
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	10.263	1.0	4.063
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	0.377	1.0	0.137
8.5	Decision-maker leverages a wide social and professional network.	8.242	1.0	3.073

R-squared: 0.356

*p<0.1; n.s.=not significant; **p<0.05

Change in Number of Customers

No.	Variable	Coefficient	p-value	Standard Error
8.1	Decision-maker possesses leadership qualities.	-0.133 n.s.	0.709	0.354
8.2	Decision-maker is self-motivated.	-0.731 n.s.	0.108	0.443
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	-0.095 n.s.	0.859	0.534
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	1.202*	0.074	0.656
8.5	Decision-maker leverages a wide social and professional network.	0.845**	0.033	0.384
		SS	d.f.	F
8.1	Decision-maker possesses leadership qualities.	0.194	1.0	0.142
8.2	Decision-maker is self-motivated.	4.628	1.0	2.719
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	0.054	1.0	0.032
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	5.280	1.0	3.359
8.5	Decision-maker leverages a wide social and professional network.	7.454	1.0	4.837

R-squared: 0.264

*p<0.1; n.s.=not significant; **p<0.05

Change in Number of Suppliers

No.	Variable	Coefficient	p-value	Standard Error
8.1	Decision-maker possesses leadership qualities.	0.442*	0.100	0.262
8.2	Decision-maker is self-motivated.	-1.039**	0.015	0.406
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	-0.535 n.s.	0.275	0.484
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	0.286 n.s.	0.649	0.624
8.5	Decision-maker leverages a wide social and professional network.	0.898**	0.015	0.352
		SS	d.f.	F
8.1	Decision-maker possesses leadership qualities.	2.128	1.0	2.837
8.2	Decision-maker is self-motivated.	9.346	1.0	6.529
8.3	Decision-maker accepts constructive feedback and adjusts actions accordingly.	1.697	1.0	1.221
8.4	Decision-maker maintains a positive outlook in uncertain or adverse situations.	0.298	1.0	0.209
8.5	Decision-maker leverages a wide social and professional network.	8.405	1.0	6.498

R-squared: 0.524

*p<0.1; n.s.=not significant; **p<0.05

Exhibit G – Summary Tables Showing the Outcome of the Manager Dynamics Hypothesis (H3) for the Strategic-Managerial Competencies [7.1 - 7.6]

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Supplier Integration Execution [1.1]	[7.1]	n.s.	n.s.	n.s.	(+)	(+)	n.s.	Partially accepted
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.6]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Supplier Integration Commitment [1.2]	[7.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.6]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Customer Integration [2]	[7.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.6]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Administrative Items & Record- Keeping Capability [3]	[7.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	(+)	n.s.	n.s.	Partially accepted
	[7.5]	n.s.	n.s.	(+)	n.s.	n.s.	n.s.	Partially accepted
	[7.6]	n.s.	n.s.	n.s.	(+)	n.s.	n.s.	Partially accepted

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Internal Integration [4]	[7.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.3]	(-)	(-)	n.s.	n.s.	n.s.	n.s.	Partially rejected
	[7.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.5]	n.s.	n.s.	n.s.	n.s.	n.s.	(-)	Partially rejected
	[7.6]	(-)	(-)	(-)	(-)	(-)	(-)	Rejected

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Supply Chain Management Competency [5]	[7.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	(+)	Partially accepted
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.6]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Proactive Innovativeness [6.1]	[7.1]	(+)	n.s.	n.s.	n.s.	n.s.	n.s.	Partially accepted
	[7.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	n.s.	n.s.	(+)	Partially accepted
	[7.5]	n.s.	n.s.	(+)	(+)	n.s.	n.s.	Partially accepted
	[7.6]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Reactive Innovativeness [6.2]	[7.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.2]	n.s.	n.s.	n.s.	(-)	n.s.	n.s.	Partially rejected
	[7.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.4]	n.s.	n.s.	n.s.	(-)	n.s.	n.s.	Partially rejected
	[7.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[7.6]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

Exhibit H – Summary Tables Showing the Outcome of the Manager Dynamics Hypothesis (H3) for the Behavioral Competencies [8.1 - 8.5]

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
	[8.1]	(-)	(-)	n.s.	n.s.	n.s.	n.s.	Partially rejected
Supplier Integration	[8.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Execution	[8.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
[1.1]	[8.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
	[8.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Supplier Integration	[8.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Commitment	[8.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
[1.2]	[8.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
	[8.1]	n.s.	(+)	n.s.	n.s.	n.s.	n.s.	Not supported
Customer	[8.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Integration	[8.3]	n.s.	(+)	n.s.	n.s.	n.s.	n.s.	Not supported
[2]	[8.4]	n.s.	n.s.	(-)	n.s.	n.s.	n.s.	Not supported
	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
	[8.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
Administrative	[8.2]	(-)	n.s.	n.s.	n.s.	n.s.	n.s.	Partially rejected
Items & Record-	[8.3]	n.s.	n.s.	n.s.	(-)	n.s.	n.s.	Partially rejected
Keeping Capability	[8.4]	n.s.	n.s.	(-)	(-)	n.s.	n.s.	Partially rejected
[3]	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Internal Integration [4]	[8.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.2]	(+)	n.s.	n.s.	(+)	n.s.	n.s.	Partially accepted
	[8.3]	n.s.	n.s.	(+)	n.s.	n.s.	(+)	Partially accepted
	[8.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.5]	(-)	n.s.	(-)	n.s.	n.s.	n.s.	Partially rejected

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Supply Chain Management Competency [5]	[8.1]	n.s.	(+)	n.s.	n.s.	n.s.	n.s.	Partially accepted
	[8.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.3]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.4]	n.s.	n.s.	(-)	(-)	n.s.	n.s.	Partially accepted
	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Proactive Innovativeness [6.1]	[8.1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.2]	(-)	(-)	n.s.	n.s.	(-)	(-)	Partially rejected
	[8.3]	n.s.	n.s.	n.s.	(-)	n.s.	n.s.	Partially rejected
	[8.4]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	(+)	Partially accepted

n.s.=not significant

	Strategic- Managerial Competencies No.	Sales [A]	Profitability [B]	Number of Total Employees [C]	Number of Paid Employees [D]	Number of Customers [E]	Number of Suppliers [F]	OUTCOME
Reactive Innovativeness [6.2]	[8.1]	(-)	(-)	n.s.	n.s.	n.s.	n.s.	Partially rejected
	[8.2]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported
	[8.3]	(-)	(-)	n.s.	(-)	(-)	(-)	Partially rejected
	[8.4]	n.s.	n.s.	(+)	n.s.	n.s.	n.s.	Partially accepted
	[8.5]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	Not supported

n.s.=not significant