**WHAT MATTERS MOST, CULTURE OR PROCESS?
INVESTIGATING THE DETERMINANTS
OF HIGH-PERFORMING GLOBAL
SUPPLY CHAIN TEAMS**

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ABSTRACT

The proposed research investigated specific cultural attributes of supply chain teams that enable the transformation of a firm's working supply chain into a high-performing supply chain (what is considered "best-in-class" in its peer group), thereby increasing the overall firm value. The findings of the research indicate that throughout global supply chains, the practice of leadership is considered more impactful and more value creating than the practice of process. Moreover, specific leadership influences cultural attributes and, when practiced, can also generally increase firm value.

A comprehensive review of current literature about supply chain teams and organizational culture as well as supply chain team engineering was conducted to determine the significance of culture in high-performing firms, regardless of industry. In the discipline of supply chain management (SCM), significant research exists for the usual business focus areas of improving cost, quality, and service. However, there is limited research about the construct of culture and, in particular, high-performing supply chain culture. Furthermore, this research examined the extent to which the combination of supply chain team culture, as influenced by leadership and a highly engineered supply chain team process contribute to a firm's success. Data were collected from senior supply chain executives from a cross-section of low, mid, and large market capitalization firms. Additionally, stakeholder value-added metrics of two-year firm performance were used to define successful, sustainable public firm performance. The implications of this research, when practiced, can act as enabler for increasing firm supply chain performance, thereby assisting firms with a successful value-creating framework.

DEDICATION

I would like to thank my mother and father, Boyd and June Edwards, as well as my daughter Addison Edwards. They have been a great source of emotional support, joy, and guidance throughout my life. I will be forever grateful for the blessings of my wonderful family.

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CHAPTER 1: INTRODUCTION

Jack Welch, CEO of General Electric, articulated that the goal of leadership is to move a firm toward something significant that it might not otherwise have done (Karaman, 2006). Maximizing firm value is one of the most important missions of a business enterprise; successfully leveraging transformational leadership in supply chain teams can strategically enable this mission.

Background of the Study

To demonstrate the importance of transformational leadership in promoting a high-performing supply chain team, at a macro level, this paper considers why some firms, delivering the same or similar products and services, using the same or similar resources, and operating in the same or similar markets, have vastly different results. More specifically, this paper, through research, proposes, that leadership is responsible for influencing the culture of its supply chain, and the culture of the supply chain influences firm performance, as moderated by engineering and process. For leadership to be effective, goals must align between leaders and followers (Kochan, Schmidt, & DeCotiis, 1975). Comparing Walmart and Southwest Airlines offers insight into this phenomenon.

Walmart is the 20th largest public corporation in the world (Forbes, 2014). Many business analysts classify the company's supply chain as highly engineered and successful; it is a strategic competitive advantage for the firm. Additionally, Walmart has successfully leveraged culture to gain a competitive advantage. In his "10 rules for running a business," Walmart's founder Sam Walton referenced the following philosophical doctrine: treat employees as business partners, motivate your business partners, and commit to your business with passion (Mackay, 2007). Walton's cultural business philosophy was embedded in Walmart and championed the formation of high-performing teams.

Examining an entirely different business market and model, the airline industry is competitive, structured, historically unprofitable, and operating in a regulated market. Yet, there is one lone player that seemingly refuses to follow any of the failure trends of its peer group: Southwest Airlines. While most airlines have a lengthy track record of unprofitability or low profitability, Southwest does not. Its founder and former CEO, Herb Kelleher, credits its treatment of people as a critical success factor (Reingold, 2013)—yet another deliberate cultural strategy of developing high-performing teams.

Walmart and Southwest Airlines employ leadership that inspires and creates high-performing teams or, as Welch stated, that moves a firm toward something significant (Karaman, 2006).Therefore, fostering and leveraging a culture of high-performing team leadership appear to be important strategic business endeavors. Yet, some supply chain teams with apparently comparable resources in similar competitive environments tend to struggle to be competitive and avoid irrelevance.

Let us consider the supply chains of two firms: Walmart and Toyota. Both are winners of the Gartner Top 25 global supply chains (Gartner, 2015). These two market leaders exemplify high-performing supply chains in their market and enjoy high-performance supply chain status, regardless of the industry. By contrast, if we examine direct market competitors, K-Mart and General Motors respectively, we see a strikingly different performance. These competitors did not ascend to high-performing supply chain status. In fact, General Motors filed for bankruptcy in 2009 (Welch, 2009). K-Mart continues to struggle against Walmart, and it too filed for bankruptcy in 2002 (Sweeney, 2014). A significant differentiator between the successful and faltering supply chain team performances is the cultural environment that team leaders create in their respective supply chains. Contextually speaking, Lummus and Vokurka (1999) defined the global supply as "[t]he processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier-user companies." Additionally and more granularly defined, the definition is extended to include "[t]he functions within and outside a company that enable the value chain to make products and provide services to the customer (Cox et al., 1995; Lummus & Vokurka, 1999). In "practitioner speak," and explained simplistically, if it (whatever it is) is designed, procured, scheduled, manufactured, shipped, warehoused, serviced, or made available for sale, it has touched the global supply chain.

This dissertation examines a compelling business question in the supply chain discipline concerning why firms in the highly engineered space of the global supply chains with similar resources competing in similar markets can have vastly different results. This paper is structured into a longer monograph study in qualitative analytical sections; explanatory data were derived to explain the determinants of high and low supply chain performance. The paper posits that the most significant driver of high supply chain performance is related to leadership. Specifically, the paper investigates if supply chain culture, as influenced by supply chain team leadership, translates to high-performing supply chain performance. Managerial implications of the dissertation are potentially profound, as the study offers a framework that, when practiced successfully, can become an enabler for increasing firm value.

Problem Statement

As firms continue to search for a mechanism to remain relevant or to create competitive advantage, the significance of a firm’s global supply chain has become increasingly important within the current contemporary business world. Although much attention has been given to developing and refining the supply chain process specifically, based on a survey of the most recent literature, few firms have dedicated equal attention to the leadership and the culture component of their global supply chains. Moreover, there is limited research demonstrating the link between culture, corporate culture, and the leadership of creating high-performing teams in the global supply chain. Few studies claim that creating a high-performing supply chain team culture is more significant for a firm’s success than the process of engineering alone. This research will investigate such a proposition by examining a compelling business question in the supply chain discipline concerning why firms within the highly engineered space of the global supply chains with similar resources competing in similar markets can have vastly different results.

The proposed research investigates specific cultural attributes of supply chain teams that enable the transformation of a firm’s working supply chain into a high-performing supply chain (what is considered “best-in-class” in its peer group), thereby increasing the overall firm value.

Purpose of Study

The purpose of this study is to offer evidence through research that when compared leadership is more critical than process within the discipline of global supply chains. Although both leadership and process are important within their own right, and both can have positive impacts on firm performance, leadership can have a greater impact. This research investigates how leadership influences the culture of a firm and how through cultural influence, firm performance is improved to a greater extent more so than through process.

Knowledge obtained from this study will serve to advance firm performance within the discipline of global supply chains. As a result of this study, specific cultural attributes and leadership themes, both positive and negative, can be used to develop a supply chain framework to increase the probability of firm performance.

Research Questions

This research investigates the compelling business question in the supply chain discipline concerning why firms within the highly engineered space of the global supply chains with similar resources competing in similar markets can have vastly different results.

Furthermore, the proposed research investigates specific cultural attributes of supply chain teams that enable the transformation of a firm’s working supply chain into a high-performing supply chain (what is considered “best-in-class” in its peer group), thereby increasing overall firm value.

Conceptual Framework

This research investigated specific cultural attributes of supply chain teams that enable the transformation of a firm’s working supply chain into a high performing supply chain, thus increasing the overall firm value. This study’s findings are generically applicable to other supply chain teams; when practiced similarly, others should expect similar results. This research attempted to determine the most effective cultural leadership process of high-performing global supply chains. The following proposition is submitted for further investigation: high-performing global supply chains are achieved by combining a winning culture with a strong process.

This research, drawing on the work from the pilot study construct research, strengthened the findings, offering more clarity about the levels of supply chain performance. Focusing on the cultural construct, maximum firm supply chain performance must exist, and certain attributes must be present to varying degrees. It is proven that patterns of attribute commonality will surface and a high-performing supply chain cultural “playbook” is defined.

In the literature, in regard to the construct of culture and corporate culture, clear and distinct relationships emerged. Culture is explained in many ways; it is defined as a firm’s “personality” (McAfee et al., 2002), as “values…assumptions [and] artifacts” (Jungbae Roh et al., 2008), and its process and “core capability” (Min et al., 2005). Antecedents linked to the cultural construct include collaboration, communication, trust, customer centricity, and high performance. There are common themes among the defining descriptions and antecedents of the cultural construct. However, there is a distinct gap in the possible effects of these commonalities on the cultural significance on the firm, i.e., which commonalities matter the most and, more importantly, which ones matter the most to high-performing supply chains. By conducting a comparative case study that involved comparing and testing propositions using survey methodology, the below propositions were investigated. Firms that practice strong supply chain processes increase their value (Mello & Stank, 2005).

Within the highly engineered discipline of global supply chains, specific leadership attributes, when deployed successfully, have the ability to influence team culture within the global supply chain and subsequently improve supply chain team performance. Additionally, process and engineering moderate the relationship between culture and supply chain team performance. Since process and engineering is a moderating variable, it has the capability to influence the performance of the supply chain team and consequently the firm. As process and engineering increases with intensity, and ad it is combined with leadership, firm performance changes. The degree of supply chain team performance will be proportional to the amount of culture change as influenced by leadership combined with the degree of influence provided by the moderating engineering variable.

At the core of the research, the question being answered is as follows: Why do firms within the highly engineered space of the global supply chains with similar resources and competing in similar markets have vastly different results? Moreover,

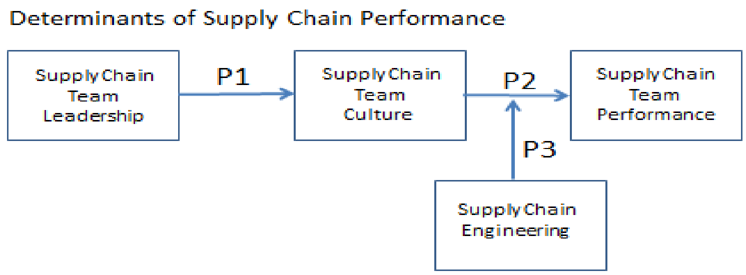

Figure 1. Model of the Determinants of Supply Chain Performance.

can a specific list of attribute themes, once they have emerged, serve as a framework to replicate future successful results?

P1: Supply chain team culture is a function of supply chain team leadership.

Within the current literature, limited evidence strongly suggests that the cultural dimension of the firm is a downstream product of its supply chain leadership. However, evidence exists linking leadership to performance (Denison 1984). Additionally, research does link leadership to culture within the innovation space (Sarros, Cooper, & Santora, 2008). As previously stated, such evidence specifically linking supply chain leadership and performance is lacking within current literature. Regarding supply chain leadership and external team culture, some research indicates that supply chain leadership can have an impact on the supply chain partnership with external suppliers (Wong, 2001). The most compelling linkage of supply chain leadership and performance lies within the relationship between supply chain leadership and supply chain strategy and team performance (positive or negative).

Hence, teams lacking such effective cultural orientation will most likely be unsuccessful with their supply chain initiatives and in executing a high-performing supply chain strategy (Mello & Stank, 2005). An effective SCM strategy requires knowledge development and knowledge sharing, especially as a firm becomes an integrated and mature supply chain. Research indicates a positive relationship between knowledge development and a culture of competitiveness. As a result of this positive relationship, and to the extent it is executed well, team performance improves (Hult, Ketchen, & Arrfelt, 2007). Collaboration in the supply chain can lead to supply chain integration; supply chain integration can lead to increased supply chain team performance (Bowersox, Closs, & Stank, 2003). This study illustrated that supply chain integration, whether good or bad, is at least partially the result of the firm's supply chain culture. Moreover, a firm's vision, strategic orientation, and mission driven stance are critical to the construct of leadership. Subsequently, team leadership is establishes and proliferates team culture.

P2: Supply chain team performance is a function of a high-performing supply chain team culture.

The aforementioned research indicates team collaboration and culture are frequent success predictors in the probability of a high-performing supply chain management strategy (Bowersox, Closs, & Stank, 2003; Mello & Stank, 2005). However, research also indicates that team culture is linked to performance (Ogbonna & Harris, 2000). Firms demonstrating higher performance along the business dimensions of cost, quality, speed to market, and innovative products will have a better competitive advantage (Li, Ragu-Nathan, & Rao, 2006). Moreover, supply chain integration provides the greatest opportunity for a firm to leverage its SCM strategy to create maximum value. Additionally, teams that collaborate and leverage the cultural dimension in their supply chain, developing and influencing an environment conducive to the integration of knowledge, increase the probability of supply chain integration, create firm value, and improve firm performance (McAdam & McCormack, 2001). As discussed, a successful high-performance supply chain increases a firm's value and competitive advantage (Evans et al., 1995).

P3: Supply chain team engineering moderates the relationship between supply chain team culture and supply chain team performance.

As mentioned, limited research indicates that firm collaboration and culture are frequent success predictors of a high-performing SCM strategy (Bowersox, Closs, & Stank, 2003; Mello & Stank, 2005). Also, firms with higher performance in cost, quality, speed to market, and innovative products will have a better competitive advantage (Li, Ragu-Nathan, & Rao, 2006). Moreover, supply chain integration, or managing the global supply chain as one entity verses a group of disaggregated units, allows firms to leverage their SCM strategy to create maximum value. Teams that collaborate and leverage the cultural dimension in their supply chain increase the probability of supply chain integration and of creating value and improving performance (McAdam & McCormack, 2001).

Research indicates that team collaboration and culture are frequently success predictors in the probability of a high-performing SCM strategy (Bowersox, Closs, &

Stank, 2003; Mello & Stank, 2005). Also, firms with higher performance in cost, quality, speed to market, and innovative products will have a better competitive advantage (Li, Ragu-Nathan, & Rao, 2006). Moreover, supply chain integration provides a clear line of sight—affording teams the ability to leverage their SCM strategy to create maximum value. Additionally, teams that collaborate and leverage the cultural dimension in their supply chain, developing and influencing an environment conducive to the integration of knowledge, increase the probability of supply chain integration, thus creating firm value and improving firm performance (McAdam & McCormack, 2001).

When engineered properly, supply chains cost effectively coordinate goods to be produced at the appropriate time and quantity (Christopher & Peck, 2004). A fully integrated supply chain philosophy will likely be one that has been reengineered. As discussed, a successful supply chain increases the firm's value and competitive advantage (Evans et al., 1995).

Methodology

A modified comparative case study research methodology (Yin, 2013) was employed. As such, data were obtained from publically available databases, archival records, interviews, documentation, and surveys from senior supply chain executives. Additionally, this research used a five-point Likert scale to weigh surveyed companies that have demonstrated moderately and high supply chain performance. Data were collected from a cross-section of small, mid, and large-market capitalization firms. Interviewed executives all work for public companies that have a track record of either moderately and high-performing supply chain metrics. The following metrics were examined: change in revenue performance, gross margin percentages, earnings per share (EPS) with the stock price, inventory turns, and gross margin percentages. This research examined leadership's ability to create and nurture a culture that delivers high-performing results (Dul & Hak, 2007).

Assumptions

This study assumed all global supply chain firms studied operate as an integrated supply chain unit. Additionally, it was assumed that all the firms studied are also manufacturers, whereby manufacturing at least part, if not all, of their firm's products. It was also assumed that the general frameworks of all the firms studied are similar in supply chain structure; hence, study findings are assumed to be generalizable across other similar integrated supply chains, regardless of industry. Moreover, it is believed that leadership attributes derived from the firms studied can replicate much of the cultural aspects, thereby creating much of the culture necessary to improve the firm performance of supply chains within this highly engineered discipline.

Scope and Delimitations

This research explores specific details associated with the question of why firms within the highly engineered space of the global supply chains with comparable resources and competing in similar markets can have vastly different results. The proposed research investigated specific cultural attributes of supply chain teams that enable the transformation of a firm's working supply chain into a high-performing supply chain (what is considered "best-in-class" in its peer group), thereby increasing the overall firm value. More specifically, the primary question claimed to be answered is grounded within leadership. Specifically, is leadership more important than process within the supply chain discipline? Moreover, by replicating specific successful cultural attributes derived from this study, can leadership create a culture, thereby increasing the success probability of a high performing supply chain more so than deploying a supply chain engineering process alone?

Limitations

Although sufficient research was conducted so that validity measures can substantiate the proposed claims; adding additional firms could strengthen the study. For the purpose of this study, six firms were selected: three high performing supply chain firms and three moderately performing supply chain firms. An increased sample size would substantially strengthen the generalizability of the findings. Moreover, and equally adequate, were the survey and interview questions as well as the sample of respondents. However, by increasing the survey sample and interview sample, the probability of increased insights and generalizability does exist.

Another means to strengthen the study and minimize research limitations would be to have a second researcher interview the same firms and write interpretative narratives, hence providing an alternate perspective on the interpretations of the interview sessions. Such an exercise should increase the validity of the study findings. Also, the study used archival data for five generally accepted metrics to support strong firm performance: improvements in revenue, adjusted EPS, net income, inventory turns, and operating margin were used to benchmark the six firms as high or middle-to-low-performing supply chains.

Significance of the Study

As a result of this study, it is expected that a significant contribution will be made within the discipline of supply chains—specifically in regard to supply chain teams. As previously referenced, a gap existed within the literature with respect to research as it relates to global supply chain teams. More specifically, the research indicates that leadership, when practiced with the identified attributes, can shape culture and thereby increase the success probability of global supply chain teams. Therefore, this research is significant for managerial practices, as it should provide supply chain practitioners with a framework for increasing the supply chain and the overall success of the firm.

As a result of this research, the literature is expanded within leadership, culture, and its impact on global supply chain teams. Expanding on the highly engineered process of global supply chain teams, the contribution of this research advances knowledge through triangulated evidence that leadership within the supply chain discipline is more significant than that of process engineering. This knowledge advancement can serve as a catalyst for practitioners to build their supply chain strategy, whereby saving resource time and creating more firm value at a faster pace. Additionally, although this research offers a contribution, closing the knowledge gap as previously discussed, it also can serve as a foundation for additional research that both validates and expands on the discipline of supply chain leadership.

In summary, it is expected that a significant contribution will be made within the discipline of supply chains, particularly in regard to supply chain teams. As a result of this research, the very specific knowledge gap is filled, and it gives way to additional research within the discipline of supply chain leadership, such as that concerning global supply chain team leadership, culture, and teams.

CHAPTER 2: LITERATURE REVIEW

High-Performing Supply Chain Teams

Many globalized firms leverage their supply chain efficiencies to gain a competitive advantage. Executives are increasingly more cognizant of the global supply chain as a value-creating discipline that must be deliberately managed with strong integrated, cross-functional business practices that extend from end-to-end in the supply chain (Lambert, Cooper, & Pagh, 1998). Contemporary integrated supply chains are expected to improve performance through cost reduction, quality, speed to market, and innovative products. As such, supply chain teams that perform better in these business dimensions will have a competitive advantage (Li, Ragu-Nathan, & Rao, 2006). Moreover, in globalized economies, supply chains, in many cases, must remain strategically competitive (Cooper & Ellram, 1993). Evidence indicates that a well-executed and integrated supply chain can significantly improve the shareholder value (Christopher & Ryals, 1999). Although sparse, supply chain literature has focused on high-performing teams. Common themes emerged from this research, including a company vision that is contagious, customer centric, communicated simply, fully integrated, and leverages technology (Fawcett & Magnan, 2004).

Research in human resources (HR) and supply chain disciplines has indicated HR management factors can positively impact supply chain performance. Specifically, management and employee support improves performance and should be leveraged to increase the competitiveness of a firm (Gowen & Tallon, 2003). Sam Walton (Mackay, 2007) and Herb Kelleher embodied such a culture of high-performing teams through HR management (Reingold, 2013). The characteristics of high-performing supply chain teams include, but are not limited to, contributes to the firm, aligns the organization's resources and market needs, is sustainable, and is continuously improving (Gowen & Tallon, 2003). For an increased firm value, supply chain team collaboration should be executed beyond the operational tactical level—at the strategic level (Barratt, 2004). Collaboration is a core competency for high-performing supply chains (Min et al., 2005).

Research has shown that poorly managed supply chains adversely affect firm performance. Stock prices of poorly executed supply chain management (SCM) can deteriorate an average of 10% (Hendricks & Singhal, 2003). The best-value chains use SCM to create value using "speed, cost, and flexibility" (Ketchen & Hult, 2007). Tables 1, 2, and 3 illustrate the antecedents and relationships of high-performing supply chains.

Supply Chain Culture

A critical review of the literature in the construct of culture, examined across numerous disciplines (e.g., information technology, marketing, HR, and SCM), indicates that significant commonalities and differences exist. Limited evidence has strongly suggested that the cultural dimension of the supply chain culture is a leading indicator of its supply chain success. Moreover, supply chain teams lacking such effective cultural orientation will likely be unsuccessful with their supply chain initiatives; hence, they will not effectively execute a high-performing SCM strategy (Mello & Stank, 2005). An effective SCM strategy requires knowledge development

Table 1. High-Performing Antecedents and Relationships

Author(s)	Domain	Antecedent	Relationship
Fawcett, S. E., & Magnan, G. M. (2004)	High-Performing Teams	Leverage	Integrated
Gowen Iii, C. R., & Tallon, W. J. (2003)	High-Performing Teams/HRM	Supportive	Integrated
Barratt, M. (2004)	High-Performing Teams/HRM	Collaborative	Strategic

Table 2. Culture Antecedent and Relationships

Author(s)	Domain	Antecedent	Relationship
McAfee et al., 2002	Supply Chain/ Human Resources	Connectivity/ Relationships	Integrated
Giorgi et al., 2015	Organizational Studies	Trust/Credibility/ Values	Foundational
Gordon & DiTomaso, 1992	Service Organization	Integration/ Coordination	Foundational
Boddy et al., 2000	Supply Chain	Connectivity/ Coordination	Integrated/Foundat ional
Author(s)	Domain	Antecedent	Relationship
Ismail Al-Alawi et al., 2007	Multi-discipline/ Financial Services	Coordination/ Sharing	Integrated
Liu, et al., 2010	IT	Coordination	Strategic
Min et al., 2005	SCM	Coordination	Strategic
Denison and Mishra, 1995	Multi-discipline	Connectivity	Strategic
Bass and Avolio, 1993	Multi-discipline	Connectivity/ Coordination	Strategic
Jungbae Roh et al., 2008	SCM	Trust/Connectivity	Integrated/Foundat ional

Table 3. Engineered Process Antecedents and Relationships

Author(s)	Domain	Antecedent	Relationship
Mason-Jones, R., et al., 2000	Engineered Process	Agility	Linkage
Mason-Jones, R., 2000	Engineered Process	Enabling	Coordinated
Christopher, M., & Peck, H., 2004	Engineered Process	Integration	Coordinated
Evans, G. N., et al., 1995	Engineered Process	Integration	Strategic
Lee, H. L., & Whang, S., 2005	Engineered Process	Integration	Strategic
Towill, D., & Christopher, M., 2002	Engineered Process	Agile	Linkage
Beamon, B. M., & Ware, T. M., 1998	Engineered Process	Integration	Strategic

and knowledge sharing, especially as a company integrates and matures its supply chain. Research by Hult, Ketchen, and Arrfelt (2007) demonstrated a positive relationship between knowledge development and a culture of competitiveness. As a result of this positive relationship, and to the extent it is executed well, firm performance improves. Additionally, collaboration in the supply chain can lead to supply chain integration. Supply chain integration can increase a team's performance (Bowersox, Closs, & Stank, 2003). An examination of the cultural construct, specifically corporate culture, has shown that culture frequently affects the development and execution of corporate strategy (Gowen & Tallon, 2003).

Corporate culture has been defined as a "firm's personality" (McAfee et al., 2002) and, in the simplest of terms, as a firm's values (Giorgi et al., 2015).

Organizational culture may positively impact a firm's involvement, consistency, adaptability, and mission (Denison & Mishra, 1995). Furthermore, organizational culture is derived from a firm's leadership and is proliferated through its culture—its tactical and strategic thinking (Bass & Avolio, 1993). An additional definition of *culture* is a "set of complex values, beliefs, assumptions, and symbols, by way of how a firm conducts its business" (Barney, 1986). Gordon and DiTomaso (1992) defined *corporate culture* as shared meanings and central values. Extending the thematic view of culture across multiple organizations is defined as "the prevailing norms, beliefs, and underlying values which characterize the two organizations" (Boddy et al., 2000). Moreover, *organizational culture* is defined as a "shared basic assumption" that results from knowledge acquired internally—adapting externally and developing a successful problem-solving process (Ismail Al-Alawi et al., 2007). Organizational culture can also be defined as attributes, including artifacts, espoused values, and basic underlying functions (Jungbae Roh et al., 2008).

From an information technology (IT) perspective, culture can be a means to an end—a system to "process" and "rationalize" information during the decision-making process (Liu et al., 2010). Based on the research, culture is clearly embedded in a firm and profoundly affects a firm's performance. Foundationally, *culture* will be defined as "the prevailing norms, beliefs, and underlying values" that characterize an organization (Boddy et al., 2000, p. 1,007).

Scholars Mello and Stank (2005) offered new insight into the emerging significance culture plays in SCM and its role as a critical success enabler for a successful SCM strategy, regardless of industry. Their research explored how culture can be a strategic differentiator in supply chain team performance. However, it also clearly highlighted the limited scholarly research deficiencies in the new construct domain of SCM (Mello & Stank, 2005).

Limited research exists on the cultural context of supply chain teams (Mello & Stank, 2005). As discussed in the aforementioned literature review, culture and corporate culture, in particular, have been widely researched and published but in the SCM discipline. However, contemporary researchers have argued that an effective SCM strategy is a critically important business strategy (Mello & Stank, 2005). Generally, supply chain practitioners effectively manage company resources, such as product and service cost structures, inventory, quality of supplies, and procuring assets.

Historically, supply chain leaders have been isolated in their thinking and functionally focused on their particular discipline. This philosophy has served supply chain teams well and was commonplace before the contemporary globalization of business. Yet, perhaps the greatest paradigm shift in contemporary supply chain philosophy occurred when single business units, operating independently, moved to a fully integrated supply chain that operated linearly across the enterprise. Moreover, competitive advantage can be created by culturally deploying a successful SCM strategy termed “culture competitiveness” (Ireland & Webb, 2007). Hence, supply chain success can be measured according to the extent to which integration occurs throughout the value chain (Lambert & Cooper, 2000).

Supply chain teams that are unable to make the paradigm shift to supply chain integration or become more integrated are likely destined for mediocre performance (Barratt, 2004). Further review of the culture construct clearly and frequently suggests that collaboration may indeed be the "secret sauce" and true differentiator of those high-performing and aspiring supply chains (Braunscheidel & Suresh, 2009). Collaboration in the supply chain has been described as the "ultimate core capability" (Min et al., 2005).

As we further explore collaboration in the context of culture, it becomes evident that trust is a core component of supply chain success. To achieve supply chain success, a transformational culture shift must occur. A firm must transition from adversarial to collaborative relationships in the chain in internal and external relationships; trust is the likely catalyst for the paradigm shift (Braunscheidel & Suresh, 2009).

Successful collaboration in the supply chain also hinges on creating and promoting a learning culture in an environment of trust. *Trust*, in the context of SCM, is defined as a "partner's willingness to take a risk" (Kwon & Suh, 2005). Supply chains are rich in subject matter experts with tacit knowledge. The efficient transfer of tacit knowledge to explicit knowledge is a critical factor for global supply chain success. Moreover, the conduit that makes such knowledge transfer work lies in a company's cultural DNA. The more transparent the supply chain team culture, the more likely a successful knowledge transfer will occur. By creating the appropriate cultural environment for efficient knowledge transfer, a competitive advantage can be achieved (Spekman et al., 2002).

Stronger relationships lead to stronger firm performance: a single firm can create value by combining efforts with other firms (Min et al., 2005). Research has suggested that a well-executed SCM strategy creates value and separation from competition. Firms, such as Walmart, Toyota, and Dell, leveraged their supply chains as a strategic differentiator (Ketchen & Hult, 2007).

Research indicates that when supply chains are not managed well, adverse firm performance may occur. Stock prices associated with poor SCM practices deteriorate an average of 10% (Hendricks & Singhal, 2003). The best-value chains leverage their supply chain management to create value with "speed, cost, and flexibility" (Ketchen & Hult, 2007).

High-performing teams, i.e., those that consistently outperform peers, have constructed a teamwork cultural platform that is embedded in their success formula. In addition to strategy, operational excellence, and a talented team, CEO Michael Dell indicated that culture played a major role in his company's ability to outperform many of its competitors (Rogers & Meehan, 2007). IBM Chairman and CEO, Lou Gerstner, commented, "We have to win through brilliant execution that can only be done with teamwork" (as cited in Huang, 1997, p. 149). Although high-performing teams create a competitive advantage, there is limited knowledge of high-performing supply chain teams as developed from more emphasis on leadership verses engineering alone.

Engineered Processes

The term “engineered process” in the supply chain discipline describes an extension of lean manufacturing concepts that reduce waste throughout the value stream and improve efficiency, cost, and service performance (Mason-Jones et al., 2000). When designed properly, supply chains cost effectively coordinate goods to be produced at the appropriate time and quantity (Christopher & Peck, 2004). A fully integrated supply chain philosophy has been engineered for optimization to increase the firm’s value and competitive advantage (Evans et al., 1995). A critical literature review of supply chains and their engineered processes revealed common themes. The term “engineered process” in the supply chain generally describes an extension of lean manufacturing concepts deployed to reduce waste and improve efficiency, cost, and service performance (Mason-Jones et al., 2000).

Contemporary consumers demand a high level of marketplace performance; quality and service levels are the minimum expectation of supply chains. Moreover, the cost equation can be a differentiator between high and low-performing supply chains (Mason-Jones et al., 2000). Supply chain failures can be minimized through robust internal processes. A cross-functional approach within the supply chain team is generally the most effective engineered approach. This approach, known as “business process reengineering,” was popularized during the 1990s, and the intent was to integrate the supply chain, including logistics, operations management, and marketing.

A common approach to developing a highly engineered supply chain is to use a quality improvement approach, such as that used in many lean-engineered manufacturing operations. This quality-centric approach can be cost effective and secure from a firm safety perspective (Lee & Whang, 2005). Another lean-engineered component of successful supply chains is their linkage to the overall corporate strategy and market expectations (Towill& Christopher, 2002). An integrated supply chain approach extends the lean and continuous improvement philosophy, including a total quality approach, throughout the supply chain. This process begins by acquiring the raw materials and continues to the final consumer delivery. A strong, integrated, and highly-engineered supply chain process includes modeling, assessment, implementation, control, and continuous improvement (Beamon & Ware, 1998).

Definitions

Based on a survey of the literature, term definitions associated with the measured supply chain construct are categorized in Tables 4, 5, and 6. The definitions are expanded along dimensional aspects of the supply chain discipline. The definitions are segmented into the four constructs of high performing supply chain teams, culture, and engineering process. Each construct's definition section demonstrates linkages of attribute dimensions associated with each dimension within the supply chain discipline.

Summary

In summary, I reviewed the research conducted in SCM focusing on the constructs of high-performing teams, culture, and more specifically, organizational culture and supply chain engineering processes. To various extents, culture is a dominant contributor to a firm's success (Min et al., 2005). Corporate culture, developed through leadership, is credited for creating high-performing business teams that outperform peers. However, there is limited research demonstrating the link between culture, corporate culture, and the leadership of creating high-performing teams in the global supply chain. Moreover, few studies have claimed that creating a high-performing supply chain team culture is more significant to a firm's success than the process of engineering alone. This research will investigate such a proposition.

Table 4. High-Performing Teams Definition Summary

Author (s)	Discipline	Labels	Definition
Fawcett, S. E., & Magnan, G. M. (2004)	Supply Chain	High-Performing Teams	Leverages resources for customers' and suppliers' best performance
Gowen Iii, C. R., & Tallon, W. J. (2003)	Supply Chain	Human Resource Management (HRM)	HRM positively affects SCM success
Barratt, M. (2004)	Supply Chain	Collaboration	Collaboration beyond the operational level to the strategic level

Table 5. Culture Definition Summary

Author(s)	Discipline	Labels	Definition
McAfee et al., 2002	Supply Chain/ HR	Culture	Defined as similar to a "firm's personality"
Giorgi et al., 2015	Organizational Studies	Culture	Defined in the very simplest of terms as a firm's "values"
Gordon & DiTomaso, 1992	Service Organization	Culture	Defined as a "set of complex values, beliefs, assumptions, and symbols that way a firm conducts its business"
Boddy et al., 2000	Supply Chain	Culture	Defined as "the prevailing norms, beliefs, and underlying values which characterize the two organizations"
Ismail Al-Alawi et al., 2007	Multi-discipline/ Financial Services	Culture	Defined as a "shared basic assumption" that is an outgrowth of knowledge acquired over time internally from adapting externally and developing a successful process to solve problems
Liu et al., 2010	Information Technology	Culture	Perceived as a means to an end; a system to "process" and "rationalize" information during the decision-making process
Min et al., 2005	Supply Chain Management	Culture	Defined as the "ultimate core capability"
Denison and Mishra, 1995	Leadership	Organizational Culture	Has a positive firm impact through its involvement, consistency, adaptability, and mission
Bass and Avolio, 1993	Multi-discipline	Organizational Culture	Results from a firm's leadership and leveraged through its culture, both through its tactical and strategic thinking
Jungbae Roh et al., 2008	Supply Chain Management	Organizational Culture	Defined as attributes that include artifacts, espoused values, and basic underlying functions

Table 6. Engineered Process Definition Summary

Author(s)	Discipline	Labels	Definition
Mason-Jones, et al., 2000	Supply Chain	Engineered Process	A total system, with agility as the differentiator
Mason-Jones, et al., 2000	Supply Chain	Engineered Process	A system to eliminate waste through agility
Christopher, M., & Peck, H., 2004	Supply Chain	Engineered Process	Business process reengineering
Evans, et al., 1995	Supply Chain	Engineered Process	Business process reengineering
Lee, H. L., & Whang, S., 2005	Supply Chain	Engineered Process	Reengineering integrating the quality systems
Towill, D., & Christopher, M., 2002	Supply Chain	Engineered Process	Linking systems strategically
Beamon, B. M., & Ware, T. M., 1998	Supply Chain	Engineered Process	Integrated set of business functions

CHAPTER 3: RESEARCH METHOD

The proposed research investigates specific cultural attributes of supply chain teams that enable the transformation of a firm's working supply chain into a high-performing supply chain (what is considered "best-in-class" in its peer group), thereby increasing the overall firm value. Specifically, that supply chain leadership influences supply chain culture, and its culture influences firm performance, as moderated by engineering and process.

Role of the Researcher

As the researcher, I have 32 years of business experience working within and managing specific functions of global supply chains, as well as managing completely integrated supply chains. During my career as an executive and supply chain practitioner, I have always been perplexed with the research question previously posed—hence, the genesis of this research.

My role as researcher was to personally conduct the research via archival data of public companies. Moreover, I personally constructed the survey and interview questions based on an extensive literature review combined with my 32 years of business experience. Additionally, I personally interviewed the executives from the firms listed in Table 19. I evaluated and complied all survey data. (I did have assistance putting the survey into an internet survey instrument, but I authored all survey questions and information.) I, as the researcher, also evaluated all interview information, and conclusions drawn from the research were mine based on my experience, survey data, archival data, and comments from interview respondents.

Lastly, I did receive outside assistance with the formatting and editing of my research, but all of the research, conclusions, and contributions are mine.

Research Design

The design strategy consists of an ethnographic study composed of interviews, surveys, and archival data of high and moderately performing supply chains. The study endeavors to investigate the following question: What matters most in global supply chains, people or process? Specifically, the following three propositions were stated, as illustrated in Figure 1: P1: Supply chain team culture is a function of supply chain team leadership; P2: Supply chain team performance is a function of a high-performing supply chain team culture; P3: Supply chain team engineering moderates the relationship between supply chain team culture and supply chain team performance.

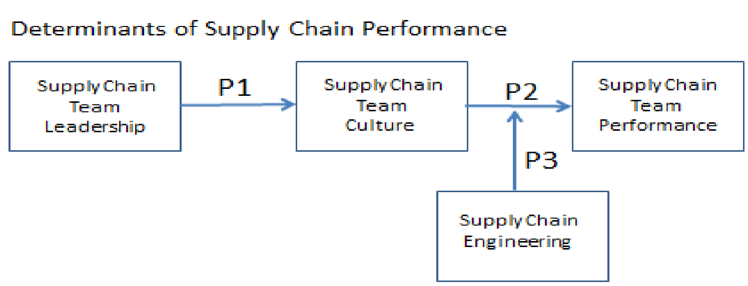

Figure 1. Model of the Determinants of Supply Chain Performance.

Survey respondents are supply chain professionals from at least one or more of the holistic global end-to-end supply chains with responsibilities, including order entry, scheduling, procurement, manufacturing, logistics, distribution, and customer support. Some of the survey respondents have multi-disciplined responsibilities. Where possible, a standard or similar respondent view was researched.

Participant Selection Logic

Six firms were selected for this study due to meeting the following selection criteria: All firms are fully integrated global supply chains, whereby all firms have, within their scope of discipline, manufacturing (one high performing firm's manufacturing is a service), planning, procurement, logistics and distribution, and supporting functions. Also, all firms are publically traded firms, affording access to archival data along the generally accepted metrics Table 20. All firms accumulate at least two billion in annual revenue and conduct business globally. Lastly, all firms, having met the aforementioned threshold criteria, were also accessible to me, the researcher.

Firm A

Firm A was founded in 1960 in the Midwestern United States, and it is the second largest provider of its product globally. Firm A conducts business in over 13,000 locations globally and has over 250,000 employees. Global sales in 2016 were approximately $10 billion, with approximately 50% of its sales occurring outside the United States. The firm's stock is traded at the New York Stock Exchange, and it considers itself a good corporate citizen as it believes in "giving back to the communities" that support them (Firm A, 2017).

Firm B

Firm B, a business-to-business (B2B) firm, was founded more than a century ago in the Midwestern United States, has grown to over 8,000 employees. Annual sales are currently in excess of $2.3 billion and are traded at the New York Stock Exchange. Firm B's product portfolio includes a collection of high quality hardware and software aimed at the reliable and secure transmission of increasing amounts of data, audio, and video needed for contemporary applications. Firm B operates a fully integrated global supply chain, and its business is segmented into four product lines: industrial connectivity, industrial IT, enterprise connectivity, and broadcast (Firm B, 2016).

Firm C

Firm C was created almost 130 years ago in the Southern Atlantic region of the United States. Since its early years, the firm has evolved through a series of strategic mergers and acquisitions, and it is regarded as a collection of globally recognized brands. The firm is traded at the New York Stock Exchange, and it is primarily a business-to-consumer (B2C) firm. Firm C has a strategic initiative as well as talent, and it focuses on environmental sustainability . Firm C operates a fully integrated end-to-end global supply chain. Firm C, Inc. reported sales (2015) of over $60 billion and has an employment base of 110,000 employees globally (Firm C, 2016).

Firm D

Firm D was founded in the early 1900s and is located in the Midwestern United States. The firm is traded at the New York Stock Exchange and is a global leader in business-to-business products (B2B) consumer products. Firm D is a global firm operating an end-to-end fully integrated supply chain. The firm has over 10,000 employees and a 2016 revenue of just over $3 billion. Firm D strategically targets growth through creating customer value—specifically, it offers solutions for new customer markets and new geographies. Firm D considers itself a good corporate citizen that contributes to society by creating sustainable value, both economically and environmentally (Firm D, 2016).

Firm E

Firm E, founded in the late 1800s, just before the turn of the century, is a global leader in lifestyle B2C products. The firm has more than 60,000 associates and just over $12.0 billion in revenue, and it is traded on the New York Stock Exchange. Firm F segments its business into various categories based on strategic components (direct-to-consumer, strategy and innovation, sustainability, international, and supply chain) that align with its brands. The firm refers to its supply chain as a strategic pillar, and it operates an integrated end-to-end supply chain (Firm E, 2016).

Firm F

Firm F considers itself a leading global manufacturer of consumer products (B2C), with sales in excess of $20 billion, over 95,000 employees, and a multitude of global manufacturing and technology research centers as of 2015. The firm is traded on the New York Stock Exchange. Firm F is composed of an end-to-end fully integrated global supply chain. The firm takes pride in its innovative products that differentiate the various consumer segments they serve (Firm F, 2016).

Instrumentation

Archival data was used to categorize the firms' supply chains. Improvements in revenue, adjusted EPS, net income, inventory turns, and the operating margin will be used to benchmark the six firms as high or moderately performing supply chains. Archival data was reviewed with interview and survey findings to establish patterns and leadership attributes that, when practiced well, should increase the probability of success in the global supply chain discipline. As a result of an analysis of the findings from the interviews and survey information, clarity was provided to the research question and propositions.

The research was conducted using archival data (Table 17), a survey instrument (Table 8), and a semi-structured interview guide (Table 7). The three sources of data and instrumentation were used as a means to triangulate the results for validly purposes. Additionally, the survey information was gathered using the online Survey Monkey instrument (Survey Monkey, 2017). All interviews were recorded using the audacity software (Audacity, 2017) and were transcribed using a transcription service (Scribie 2017; Speechpad 2017).

Table 7. Semi-Structured Interview Questions

Model Construct	Semi-Structured Interview Questions
Supply Chain Leadership	-Are you a consumer products company (B2C) or a business-to-business (B2B) company? -What size is your firm? -Is your firm more global or domestic regarding its markets? -What top leadership attributes, in your opinion, most impact your firm's performance? -What top leadership detractors, in your opinion, diminish firm performance? -What are the pillars of an SCM strategy? -Do you consider leadership or process more important, and why? -What is the average wage of hourly employees? -At, above, or below market for professional mangers?
Supply Chain Team Culture	-What top leadership attributes, in your opinion, most impact your SC team's performance? -What top leadership detractors, in your opinion, diminish SC team performance? -Describe your firm's culture. -Describe your SCM culture.
Supply Chain Team Process Engineering	-How frequently do you meet to discuss SCM issues? -How much time is dedicated to SCM issues? -What are the pillars of an SCM strategy? -To what extent does your company practice lean principles within your supply chain? -How long has your company practiced an SCM strategy? -How long has your company practiced a lean manufacturing strategy? -Do you consider leadership or process more important, and why? -Describe your SCM process.
Supply Chain Performance	-Define your objective measures of success. -What imperatives were must-haves to ensure the SC team's success? -Was there one particular attribute/item that had more of an impact than the others,? If so, what was it? -What is the length of time it has taken for your SCM strategy to generate firm acceptable value?

Table 8. Respondent Survey Questions

<table>
<tr><th>Model Constructs</th><th>Dimensions of Constructs</th><th>Measures (specific scales, questions, metrics, etc., associated with Dimension)</th></tr>
<tr><td colspan="2">Using a 5-Point Likert Scale for Ratings</td><td>Strongly Disagree, Disagree, Neither, Agree, Strongly Agree</td></tr>
<tr><td rowspan="5">Supply Chain Leadership</td><td>Vision</td><td>-Our people know what our company stands for
-Talent management process is a formal process in my company
-A significant amount of time is dedicated to talent management at my company
-SCM is considered a business enabler in my company</td></tr>
<tr><td>Strategic Orientation</td><td>-SCM is more corporate driven in my company
-SCM is more locally driven in my company
-Top management supports our SCM strategy
-During the hiring process, SCM is discussed at my company</td></tr>
<tr><td>Mission Driven</td><td>-Leadership is more important than process in my firm
-Leadership is more important than process in our SCM strategy
-Our leadership has high performance expectations
-Our leadership encourages cross-functional working relationships
-Our leadership has high performance expectations</td></tr>
<tr><td>Collaborative</td><td>-Collaboration is valued in my organization
-SCM teams collaborate well
-Our leadership encourages cross-functional working relationships</td></tr>
<tr><td>Strength of Culture</td><td>-During the hiring process, culture is discussed at my company
-Culture is critical to the SCM strategy in my company
-Our company culture is a priority for our company leadership
-Autonomy is encouraged
-Teamwork is valued at my company</td></tr>
</table>

Table 8. (continued)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with Dimension)**
Supply Chain Team Culture	Communication	-Working in teams is valued in my organization -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team in general, feels valued at our company -Organizational trust is evident in my company
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company
	Scientific Approach	-Most supply chain processes are developed with industrial engineering practices at my company
Supply Chain Team Process Engineering	Workflow Integration	-Centralized functions are more prevalent vs. decentralized in my company -Autonomous operations are more normal vs. standardized in our company -SCM is a functionally integrated process in our company
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role

Table 8. (continued)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with Dimension)**
Using a 5-Point Likert Scale for Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -It is a practice to do lean manufacturing training at our company -It is common to use Six Sigma training at our company
	Value to Stakeholders	-SCM performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor SCM performance at my company -SCM is considered an income generator at my company -I know how my role within SMC creates value for stakeholders of our company
Supply Chain Performance	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company -Our SCM is a long-term value-contributor to our company

Rationale for Pilot Study

Once the research question was formulated, and as the process of the research study was being formulated, it became apparent to me that too many unknown variables existed to do an extensive study without first conducting a pilot study. The task of examining numerous firms, with an increasing number of executives operating in different industries, presented the risk of considerable errors and the probability of delivering a quality research product was low. Given the high probability of error, the most efficient path towards delivering a quality research product was to carry out a plot study, learn, and apply newly gained knowledge about the research and to an expansive study. Hence, the rationale and basis for using a pilot study served as a precursor to successfully address the research question.

Pilot Study

Culture is explained in many ways. It is defined as a firm's "personality" (McAfee et al., 2002), as "values… assumptions [and] artifacts" (Jungbae Roh et al., 2008), and its process and "core capability" (Min et al., 2005). Antecedents linked to the cultural construct include connectivity, trust, coordination, and credibility. There are common themes between the defining descriptions and antecedents of the cultural construct. However, there is a distinct gap in the possible effects of these commonalities on the cultural significance of supply chain teams, i.e., which commonalities matter the most and, more importantly, which ones matter the most to high-performing supply chains. By conducting a comparative case study, and by using survey methodology to compare and test propositions, the below propositions were investigated. Firms that practice strong a supply chain process increase their value (Mello& Stank, 2005).

P1: Supply chain team performance is a function of a high-performing supply chain team culture.

Limited evidence has strongly suggested that a firm's culture is a leading indicator of its supply chain team success. Moreover, supply chain teams lacking such

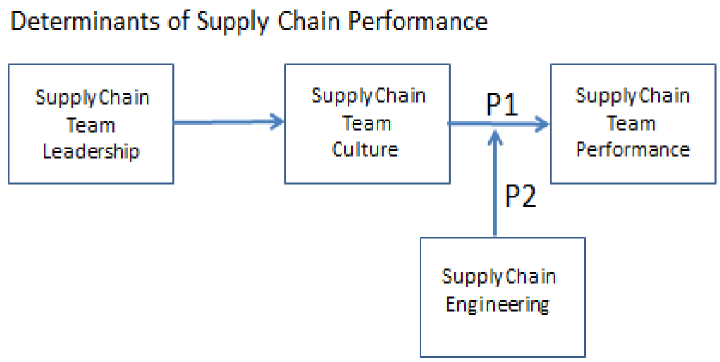

Figure 2. Determinants of Supply Chain Performance Tested in the Pilot Study

effective cultural orientation will most likely be unsuccessful with their supply chain initiatives and in executing a high-performing supply chain strategy (Mello & Stank, 2005).

An effective SCM strategy requires knowledge development and knowledge sharing, especially as a supply chain team becomes integrated and mature. Research has indicated a positive relationship between knowledge development and a culture of competitiveness, and as a result of this positive relationship, and to the extent it is executed well, firm performance improves (Hult, Ketchen, & Arrfelt, 2007). Collaboration in the supply chain can lead to supply chain integration; supply chain integration can lead to increased supply chain firm performance (Bowersox, Closs, & Stank, 2003). This study illustrates that supply chain integration, whether good or bad, is at least partially the result of a firm's supply chain culture.

P2: Supply chain team engineering moderates the relationship between supply chain team culture and supply chain team performance.

Data Collection Sources

Data collection sources are specific to the construct being measured (Table 9). Data were collected from a diverse base of three low-to-moderate to high-performing firms. The firms and their executives selected for the pilot study were as follows: Firm 1, a $9 billion global firm that manufactures and distributes B2B products (VP of Global Sourcing); Firm 2 (Senior Vice President (SVP) of Supply Chain and Engineering Services), a $6 billion B2B global firm that manufactures and distributes industrial machinery; Firm 3 (Vice President (VP) of Global Supply Chain), a $2.3 billion B2B global firm specializing in industrial communications products. It also should be noted that Firm 3 was also included (the only firm from the pilot study) in the expanded research study.

Table 9. Pilot Study Data Collection Sources

Supply Chain Teams	Supply Chain Function	Team Size	Information Gathering Mechanisms	Respondent Types
Supply Chain Team #1 **Firm 1**	Procurement/ Sourcing	8	1 Interview 1 Survey	1 VP Interview/1 Manager Survey
Supply Chain Team #2 **Firm 2**	Manufacturing/ Engineering	10	1 Interviews 2 Surveys	1 SVP Interview/1 Manager Survey
Supply Chain Team #3 **Firm 3**	Procurement/ Operations	6	1 Interviews 2 Surveys	1 VP Interview/1 Manager Survey

Measurement and Analysis Protocols

For each construct, measurements were obtained, and, in some cases, more than one measure of the construct was used. The construct of "Supply Chain Team Leadership" used interviews and surveys with the head of the company supply chains to collect data. Interviews were used to measure supply chain team health at the senior level of the firm and specifically targeted senior leadership. Surveys collected specific measurable data along the construct dimensions. Interviews were conducted throughout senior levels of the supply chain, ranging from Senior Vice Presidents (SVPs) and Vice Presidents (VPs). Additionally, team members in the aforementioned levels of the supply chain were asked to complete surveys and participate in interviews. Surveys and interviews were combined with archival data (see Appendix 1); the data needed for the study could not be satisfied using one collection method. Survey questions focused on assessing team specifics along the SCM constructs; interviews assessed the tone of leadership team culture, strategy, and values. For the supply chain culture, as explained above, a similar design was used, including interviews and surveys of supply chain leadership, respectively. When examining the supply chain team's process engineering, interviews and surveys were used with the SVPs and VPs; surveys were used with the aforementioned supply chain team members. Documents from archival records were used, as listed in Table 13. For supply team performance, interviews, surveys, and documents were used with the SVPs, VPs, and supply chain leadership, respectively, to gather data on quality and finance. The rationale for the survey and interview distribution was due to their position on the team (senior leadership interviews will offer a strategic perspective) and the data being sought (survey data were more construct-driven along the dimensions measured).

The common themes that emerged from high-performing supply chain leadership were as follows: (1) a contagious vision, (2) a customer-centric vision that is communicated simply, (3) a fully integrated vision, and (4) leveraging technology (Fawcett & Magnan, 2004). Additionally, research indicated management and employee support improves firm performance and should be leveraged to increase a firm's competitiveness (Gowen & Tallon, 2003).

Construct and Measures

Through the aforementioned literature review (reference the literature review section), the following SCM dimensions were framed and subsequent measures were developed. My nearly 31 years of SCM experience were used with the literature review to support the data collection methodology and logic. The constructs and their associated measures are shown in Table 10. The construct supply chain leadership dimensions consist of having (1) a vision and (2) strategic orientation and are (3) mission driven, (4) innovative, and (5) collaborative. For the construct of supply chain team culture, the dimensions consisted of (1) the strength of culture, (2) communication in the culture, (3) the performance rewarded, (4) trust, (5) individual autonomy, and (6) having a high-performance culture. For the constructs of supply chain team process engineering, the dimensions included (1) workflow integration, (2)

Table 10. Pilot Study Model Constructs and Measures Survey Questions

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)
Using a 5-Point Likert Scale for Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree
Supply Chain Leadership	Vision	-Our people know what our company stands for -The talent management process is a formal process in my company -A significant amount of time is dedicated to talent management at my company -SCM is considered a business enabler in my company
	Strategic Orientation	-SCM is more corporate driven in my company -SCM is more locally driven in my company -Top management supports our SCM strategy -During the hiring process, SCM is discussed at my company
	Mission Driven	-Leadership is more important than process in my SC team -Leadership is more important than process in our SCM strategy -Our leadership has high performance expectations -Our leadership encourages cross-functional working relationships -Our leadership has high performance expectations
	Collaborative	-Collaboration is valued in my SC team -SCM teams collaborate well -Our leadership encourages cross-functional working relationships
	Strength of Culture	-During the hiring process, culture is discussed at my company -Culture is critical to the SCM strategy in my company -Our company culture is a priority to our company leadership -Autonomy is encouraged -Teamwork is valued at my company

Table 10. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)
Supply Chain Team Culture	Communication	-Working in teams is valued in my SC -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team, in general, feels valued at our company -Team trust is evident in my SC
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain processes are developed with industrial engineering practices at my company
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized in my company -Autonomous operations are more normal vs. standardized in our company -SCM is a functionally integrated process in our company
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -It is a practice to do lean manufacturing training at our company -It is common to use Six Sigma training at our co.

Table 10. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor SCM performance at my company -SCM is considered an income generator at my company -I know how my role within SMC creates value for stakeholders of our company
	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company -Our SCM is a long-term value-contributor to our company

standardization, (3) scientific approach, (4) process orientation, and (5) how well lean tools are used in the supply chain. For the construct of supply chain performance, the dimensions were (1) the value to the firm, (2) the value to key stakeholders, and (3) the sustainability of the supply chain. A five-point Likert scale survey assessment was used (ratings range from strongly disagree, disagree, neither, agree, and strongly agree) to determine the strength of dimensional construct measures, as described in the measures section in Table 10. The Likert scale is a multi-item scale and is more reliable when interpreting results, compared to single-item scales (Gliem, 2003).

Using the outlined interview audience from Table 11, a semi-structured interview process was used to gather data along the constructs of supply chain leadership, supply chain culture, and supply chain performance from respondents from a cross-functional group of supply chain teams. A semi-structured interview process included a formal interview during which specific questions were asked in a particular order to support data gathering along strategic dimensions (Cohen & Crabtree, 2006). Throughout the interview process, relevant information that had not been previously identified or researched was integrated into this study and further explored.

Supply chain teams practicing highly engineered processes do so primarily, to some variable extent (usually at a 60% success rate or greater for high performing teams and less than 60% for low-moderate performing teams), along six macro-dimensions: being project management driven, using standard work as an enabler, using lean tools, having a formalized quality operating system, practicing the Six Sigma methodology, and, at a minimum, leveraging an industrial engineering methodology (Table 12). Team skill level mastery and embedded processes are determined through surveys of the director and VP supply chain professionals of the respective supply chain teams, as shown in Table 9. The 60% threshold for this study was regarded as the minimum level of proficiency exhibited to be considered a high-performing highly engineered team within the supply chain discipline. The 60% threshold was selected as a differentiation point between high and low-mid performing supply chains based on my thirty years of experience leading supply chain companies as well as benchmarking and knowledge sharing between supply chain leaders of other companies. Figure 3 illustrates examples of the supply chain engineering dimensions and their use.

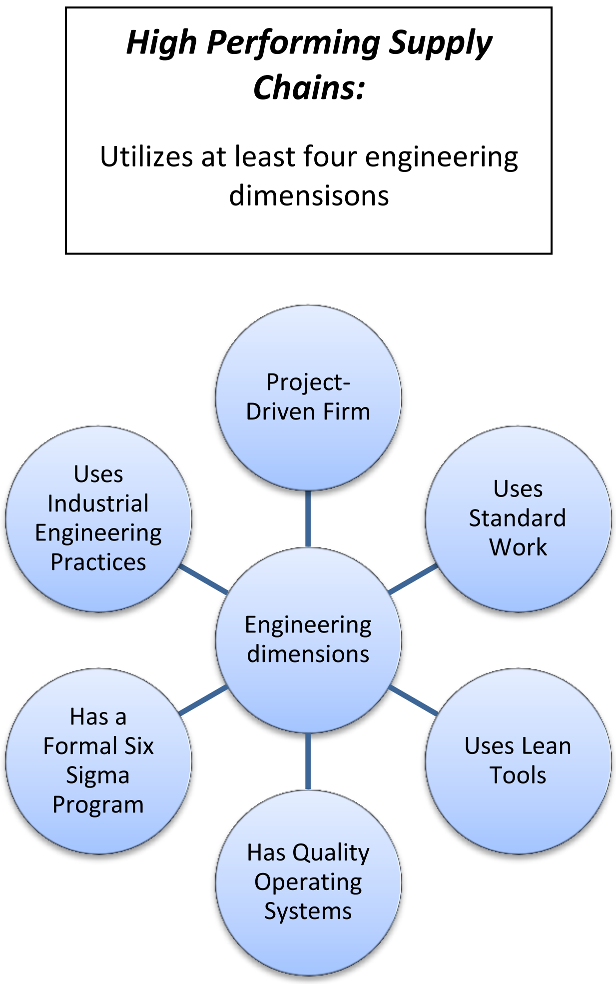

Figure 3. Infographic. Supply Chain Engineering Dimensions.

Table 11. Pilot Study Model Constructs Semi-Structured Interview Questions

Model Construct	Semi-Structured Interview Questions
Supply Chain Leadership	-Are you a consumer products company (B2C) or a business-to-business (B2B) company? -What size is your firm? -Is your firm more global or domestic regarding its markets? -What top leadership attributes, in your opinion, most impact your firm's performance? -What top leadership detractors, in your opinion, diminish firm performance? -What are the pillars of an SCM strategy? -Do you consider leadership or process more important, and why?
Supply Chain Team Culture	-What top leadership attributes, in your opinion, most impact your SC team's performance? -What top leadership detractors, in your opinion, diminish SC team performance? -Describe your firm's culture. -Describe your SCM culture.
Supply Chain Team Process Engineering	-How frequently do you meet to discuss SCM issues? -How much time is dedicated to SCM issues? -What are the pillars of an SCM strategy? -To what extent does your company practice lean principals within your supply chain? -How long has your company practiced an SCM strategy? -How long has your company practiced a lean manufacturing strategy? -Do you consider leadership or process more important, and why? -Describe your SCM process.
Supply Chain Performance	-Define your objective measures of success. -What imperatives were must-haves to ensure the SC team's success? -Was there one particular attribute/item that had more of an impact than the others? If so, what was it? -What is the length of time it has taken for your SCM strategy to generate firm acceptable value?

Table 12. Pilot Study Supply Chain Team Engineering Performance Dimensions

Supply Chain Team Engineering Performance Dimensions	High Performance	Data Source	Low Performance	Data Source
Project-Driven SC Team	Uses most of the engineering dimensions	Surveys	Uses near 60% or less of the engineering dimensions	Surveys
Uses Standard Work	Uses most of the engineering dimensions	Surveys	Uses near 60% or less of the engineering dimensions	Surveys
Uses Lean Tools	Uses most of the engineering dimensions	Surveys	Uses near 60% or less of the engineering dimensions	Surveys
Has a Quality Operating Systems	Uses most of the engineering dimensions	Surveys	Uses near 60% or less of the engineering dimensions	Surveys
Has a Formal Six Sigma Program	Uses most of the engineering dimensions	Surveys	Uses near 60% or less of the engineering dimensions	Surveys
Uses Industrial Engineering Practices	Uses most of the engineering dimensions	Surveys	Uses near 60% or less of the engineering dimensions	Surveys

Supply Chain Team Performance Criteria

The performance criteria used for determining high to low-performing supply chains was measured along four generally accepted firm performance dimensions: gross profit percentage, earnings per share price of company stock, change in revenue, and net income (Table 13).

If we again compare high-performing supply chains of firms, such as Walmart and Toyota, both Gartner Supply Chain Top 25 winners (Gartner, 2015), to those of low-performing supply chains, such as K-Mart and General Motors, there is strikingly different performance. Keeping in mind that General Motors and K-Mart filed for bankruptcy, there are unquestionably profound supply chain performance differences between the best and poorest performing supply chain teams.

After extensively reviewing the literature, no single group or suggested group of “best-in-class” metrics is prescribed as the best methodology for describing high-performing supply chains. However, at a macro level, certain categories (e.g., lean manufacturing concepts deployed to reduce waste and improve efficiency, cost, and service performance) were used as measurements (Mason-Jones et al., 2000). A successful supply chain increases the firm’s value and competitive advantage (Evans et al., 1995). This quality-centric approach can be cost effective and secure (Lee & Whang, 2005). A further review of the literature indicates that contemporary integrated supply chains are expected to improve team performance through cost, quality, speed to market, and innovative products—delivering a competitive advantage for the firm (Li, Ragu-Nathan, & Rao, 2006).

Through the literature review, no metrics series was prescribed as the suggested benchmark for measuring the highest performing supply chains. For this study, high-performing supply chains were defined as those performing in the top 25% of their industry group in gross profit percentage, change in revenue, net income, and earnings per share during a two-year period. Low-performing supply chain teams were defined as performing within or near the bottom 25% of their industry group along the aforementioned performance dimensions, as outlined in Table 13.

Table 13. Pilot Study Criteria for High and Low-Supply Chain Team Performance

Supply Chain Team Performance Dimensions	**High Performance**	**Data Source**	**Low Performance**	**Data Source**
Gross Profit Percentage	Near Top 25% of Peer Average, Trending Over 2 Years	Archival Data	Near Bottom 25% of Peer Average, Trending Over 2 Years	Archival Data
Change in Revenue	Near Top 25% of Peer Average, Trending Over 2 Years	Archival Data	Near Bottom 25% of Peer Average, Trending Over 2 Years	Archival Data
Net Income	Near Top 25% of Peer Average, Trending Over 2 Years	Archival Data	Near Bottom 25% of Peer Average, Trending Over 2 Years	Archival Data
Earnings Per Share	Near Top 25% of Peer Average, Trending Over 2 Years	Archival Data	Near Bottom 25% of Peer Average, Trending Over 2 Years	Archival Data

Supply Chain Culture

Data were obtained from publically available databases, archival records, interviews, documentation, and surveys, primarily in the below dimensions, though not limited to these. Through research, applicable information was integrated during the process.

The following attributes of high-performing supply chain teams were investigated: respect and trust among its members, mutual support of the supply chain team membership between the team and employees, transparent communication between the team and the firm, a common vision for the team, shared common goals for the team, aligned values professionally, team values, and a strong competency skill in SCM. Moreover, the attributes of high-performing supply chains are a means to consider the needs of the team and professional contributions, striking a balanced approach and creating a collaborative environment between a team and an employee (Castka et al., 2001). This research endeavored to contribute to high-performing supply teams, their desire to be successful, and the significance such team desires in terms of success.

High-Performing Supply Teams

Data were obtained from publically available databases, archival records, interviews, documentation, and surveys, primarily in the below dimensions, though not limited to these. Through research, applicable information was integrated during the process.

The criteria for determining high to low-performing supply chains were measured along four generally accepted high-performance firm dimensions: gross profit percentage, earnings per share price of company stock, change in revenue, and net income (Table 17).

Engineered Processes

Data were obtained from publically available databases, archival records, interviews, documentation, and surveys, primarily in the below dimensions, though not limited to these. Through research, as applicable information was revealed, it was integrated in the process.

Metrics and processes that define highly engineered processes include lean tools, such as value stream mapping, or tools used to identify and remove waste from the process, and just-in-time inventory management (the means of scheduling inventory to arrive at the manufacturing process at the needed time to reduce obsolesce and preserve firm cash). Additionally, lean tools in the manufacturing space include cellular manufacturing (a manufacturing process that produces products in a one-piece flow), which produces precisely what is needed when it is needed, and a single-minute exchange of dies, which is an efficient method of machine set-up time that reduces machine and labor waste. Lean tools in the manufacturing quality space include total quality management, kaizen maps, and Six Sigma. Total quality management is a sophisticated quality system used to improve quality, reduce re-work, and lower external warranty cost, including the supply base. Process maps involve physically laying out equipment and processes to reduce processing waste. Kaizen events are collaborative shop floor team events that improve firm efficiency. Lastly, Six Sigma and statistical process control leverage statistics to reduce machine and process variation for firm effectiveness (Shah & Ward, 2007).

The data collection survey was sent via email with an invitation (Survey Monkey, 2016), and it offered a summary of the purpose of the research: i.e., to identify attributes of high-performing supply chain teams. After the research and analysis of the data, the indicators of a process for high-performing supply chains can be created. The research findings will be shared with all participating executives. The survey included numerous questions, and where applicable, applied a five-point Likert scale with weighting. The survey also included a discussion section to allow executives to offer any insights not addressed in the questions. All of the aforementioned survey methodologies and requests were outlined in the initial communication to survey participants, as to be transparent.

Pilot Study Findings

The Sample

In the highly engineered discipline of global supply chains relative to the construct of leadership, particularly the culture that builds winning teams, the following interviews, surveys, and data were gathered. Three firms were surveyed using senior-level executives who gave interviews. Moreover, all of the teams studied provided products to businesses, not consumers (B2B). The research included small-cap and mid-cap firms, with sales ranging from $2.3 billion to $9 billion in revenue. The supply chain teams selected for the pilot study were Firm 1, a low-to-moderately performing $9 billion B2B and business-to-consumers (B2C) global firm that manufactures and distributes packaging products; Firm 2, a $6 billion B2B moderately performing global firm that manufactures and distributes industrial machinery; Firm 3, a high-performing $2.3 billion B2B global firm specializing in hardware and software connectivity products.

At the central level of the research, all of the interviewed executives unanimously agreed that in the highly engineered discipline of SCM, leadership is more important than process. This statement was not made lightly, as all executives interviewed wrestled with the question as a distinct dilemma; all executives stressed the importance of process in the supply chain discipline.

As illustrated in Table 7, survey and interview data were categorized according to communication, trust, being customer centric, and a high-performing culture. For communication, the data indicated that the moderately performing and high-performing firms all highly valued working in teams; leadership keeps everyone moderately informed at a high level, including SCM leadership. Also, all teams agreed that knowledge transfer is generally well done. For trust, all of the teams involved in the study valued trust highly, and all employees felt valued by their firm, including the SCM team. At a macro level, trust is moderately evident and felt by all the firms studied. There were no customer-centric data gathered in the survey data; hence, a gap existed and must be corrected prior to the next study. All of the involved teams valued and highly rated a high-performing culture. However, there appeared to be low to moderate levels of consequences for low performance: occasional poor performance was not perceived as having negative consequences.

Given that the intent of the pilot study was to be a precursor to an expansive study (as indicated within Chapter Four), the researcher located three supply chain teams that fit the analysis profile of a U.S. public company operating in the global supply chain discipline. All teams engaged in the procurement, scheduling, manufacturing, and distribution of products in the consumer market space. Moreover, executives at the senior team level were interviewed similarly. The setting afforded this study the ability to consider attributes of leadership culture, strategy, engineering, and values.

Interviews

This pilot study compared one moderately-to-highly efficient supply chain to two supply chains that demonstrated less efficient performance. Moderately-to-highly efficient and less efficient supply chains were defined by archival data along the performance metrics, as illustrated in Table 17. Interviews were conducted with three senior supply chain executives who represented the team's performance. The interviews were semi-structured and followed an interview guide. Using the outlined interview audience from Table 9, a semi-structured interview process was used to gather data for supply chain leadership, supply chain culture, and supply chain performance from respondents of a cross-functional group of supply chain teams. A semi-structured interview process was used; this method was a formal interview during which specific questions were asked in a particular order to support data gathering along strategic dimensions (Cohen & Crabtree, 2006). The interviews were completed via telephone and recorded through the computer using audacity software (Audacity, 2016). Thereafter, I manually transcribed the audio recordings through Microsoft Word and verified the transcriptions three times for accuracy.

Documents

Archival documents, specific to income statements from the three public companies (Firms 1, 2, and 3) were reviewed and examined to offer a financial metric and a more objective perspective (Example-Appendix 2). Since all three firms are publically traded, actual supply chain performance relative to the criteria used for determining high and moderately performing supply chains was measured along four generally accepted supply chain dimensions (Stewart, 1995; Gartner, 2015): change in revenue, earnings per share for the stock price, net income, and gross profit percentage (Table 17).

Analysis

Based on the propositions and exploratory research in the pilot study, three firms with global supply chains were identified as candidates for data and information gathering. In addition, senior leaders of the firms' global supply chains were interviewed to supplement the archival data and survey information. The criteria for supply chain team selection were based on the following: firm size (at least $1 billion in annual revenue); must be a publically traded company so that financial information was accessible; must be global, having done business in multiple countries.

Interviews were conducted via phone and recorded using Audacity software (Audacity, 2016). The audio recordings were later transcribed into narratives so that they would be available for thematic analysis and citations in the paper. All senior leaders interviewed were offered the opportunity to receive a copy of the aggregated data from the interviews. Moreover, surveys were distributed to senior supply chain leaders at least at the level of director or senior staff. All survey participants were offered an opportunity to receive an aggregated copy of the survey data. Various macro themes and quotations were extracted from interviews and surveys.

For data analysis and evaluation, the survey and interview information was categorized into attribute themes, which led to suggested strategies to leverage from a leadership and cultural perspective to improve team performance. Certain negative themes or detractors were identified as a suggested practice to avoid when building global supply chain teams.

Several macro commonalities emerged among the global supply chains and their respective teams. All supply chains had recently (in the past decade) gone through a supply chain transformation. Once, they might have operated as a decentralized business function; now, all operate centrally as a corporate function and as matrixed teams. Also, all of the firms' supply chains use similar metrics to measure success and are categorized under the macro categories of safety, quality, customer service, and cost. Similarly, all teams are capital intensive.

Surveys

The data collection survey was sent via email to respondents as an invitation summarizing the purpose of the research: to identify attributes of high-performing supply chain teams. The constructs of leadership, culture, engineered process, and supply chain performance were surveyed through the 54 questions using a five-point Likert scale, with ranges from strongly disagree to strongly agree. Associated measures of the constructs were also defined in the survey. The Survey Monkey tool

(Survey Monkey, 2016) was used via an internet link (survey sample attached in Appendix 2). After researching and analyzing the data, an analysis of the process for high-performing supply chains was investigated and reported. The research findings will be shared with all participants. To be transparent, all of the aforementioned survey methodologies and requests were outlined in the initial communication to survey participants.

The foundational research proposition investigated was that in the highly engineered discipline of global supply chains, culture is more important than process. From the pilot study, investigative research of respondent interview information was compartmentalized into four macro-level categories: team similarities, team culture, supply chain culture, and leadership bias.

At the central level of the research, all of the interviewed executives unanimously agreed that in the highly engineered discipline of SCM, leadership is more important than process. This statement was not made lightly, as all executives interviewed wrestled with the question as a distinct dilemma; all executives stressed the importance of process in the supply chain discipline.

As illustrated in Table 14, survey and interview data were categorized according to communication, trust, being customer centric, and high-performing culture. For communication, the data indicated that the moderately performing and high-performing firms all highly valued working in teams; leadership keeps everyone moderately informed at a high level, including SCM leadership. Also, all teams agreed that knowledge transfer is generally well done. For trust, all of the teams involved in the study valued trust highly, and all employees felt valued by their firm, including the SCM team. At a macro level, trust is moderately evident and felt by all firms studied. There were no customer-centric data gathered in the survey data; hence, a gap existed

Table 14. Pilot Study Supply Chain Team Culture Survey Data

Model Construct	Dimension Construct	Measurement
Supply Chain Team Culture	Communication	-Working in teams is highly valued is most firms -SCM leadership keeps everyone mostly informed at a high level -Leadership keeps everyone moderately informed at a high level -Mostly, firms agree that knowledge transfer occurs
	Trust	-All teams highly value trust -All of the employees surveyed feel valued by their firm -The SCM team generally feels valued by their firm -Overall trust is moderately evident in their teams
	Customer Centric	-No data collected
	High-Performance Culture	-Performance is highly measured at all firms -Good performance is highly rewarded at all firms -Low to moderate consequences occur at the firms measured

and must be corrected prior to the next study. All of the teams studied valued and . However, there appeared to be low to moderate levels of consequences for low performance; occasional poor performance was not perceived as having negative consequences.

Table 15. Pilot Study Highest-Performing Supply Chains

Model Construct	Dimension Construct	Measurement
Supply Chain Leadership	Vision	-Most people in the SC who understand the company's vision strongly agree -Moderate to strongly agree, talent management is a formal process -Moderately amount of time dedicated to talent management -SCM is considered a business enabler; strongly agree
	Strategic Orientation	-SCM is generally managed centrally at corporate, moderately driven -SCM is supported at the senior level, moderate to moderately high -SCM is sometimes discussed during the hiring process, low to moderate
	Mission Driven	-Leadership is more important than process, moderate to strongly agree -SCM leadership is more important than process, agree to strongly agree -Leadership has high expectations for the firm, strongly agree -Leadership highly encourages cross-functional working relationships
	Collaborative	-Collaboration is highly valued in all teams -SCM teams collaborate mostly well -Leadership moderately to highly encourages cross-functional relationships
Supply Chain Performance	Value to Stakeholders	-All SC teams had high consequences for poor performance -SCM was an income generator for most teams -All SCM roles understood how they generate income for the team -Most SCM processes are repeatable and sustainable

Table 15 (continued)

	Sustainable	-Most employees in the SCM teams believe they can influence the firm -Most employees in the SCM teams believe they can create shareholder value -Most employees believe that SCM creates long-term value for the firm

Executives described their supply chain communication in the following way:

"You must have alignment; communicate it in many different forms and over and over" (VP of Global Sourcing, low-performing supply chain).

"If you don't take the time to communicate to key stakeholders, you're a dead man walking" (SVP of Operations and Engineering Services, moderately performing supply chain).

Inversely, another executive gave an example of how he was spoken to when arriving at his current firm as a new employee and referenced this incident as ineffective communication:

"You don't have the right to have an opinion…you haven't been here long enough; you haven't earned it" (SVP of Operations and Engineering Services, moderately performing supply chain).

Regarding trust and customer service, executive feedback was as communicated below:

"We are the most predictable company, very trustworthy; we take care of our customers forever" (SVP of Operations and Engineering Services, moderately performing supply chain).

"Ethics and integrity…without it, this is the quickest ways to disengage your team" (VP of Global Sourcing, low-performing supply chain).

"This accusatory behavior will not build trust" (VP of Global Supply Chain, high-performing supply chain).

Regarding culture, executives expressed the following:

"Our culture is risk averse. We train leaders not to fail; we do not train leaders to win" (SVP of Operations and Engineering Services, moderately performing supply chain).

"Our culture is about being humble, teamwork, collaboration" (VP of Global Sourcing, low-performing supply chain).

"The reason I am going to stay as long as I can is really because of the culture" (VP of Global Sourcing, low-performing supply chain).

Executives shared these views regarding high-performance culture:

"Go find something that's not broke and fix it" (SVP of Operations and Engineering Services, moderately performing supply chain).

"We are really not satisfied with what is happening today" (VP of Global Supply Chain, high-performing supply chain).

As illustrated in Table 15, survey and interview data were categorized along the dimensions of vision, strategic orientation, being mission driven, collaboration, strength of culture, value to stakeholders, and being a sustainable supply chain team. Regarding vision, most of the respondents moderately agreed that they understood the team's vision and that talent management is a formal process. The firms' strategies are centrally managed at a moderate level; all respondents agreed that SCM is not usually discussed during the hiring process. Concerning being mission driven, all respondent's moderately to strongly agreed that leadership is more important than process.

Moreover, all survey respondents strongly agreed that SCM is more important than process, and all teams have highly cross-functional working relationships and high expectations for the SCM strategy. Moreover, collaboration was highly encouraged across all teams; most teams agreed that they collaborate well. As mentioned, a high-performing culture was valued and closely measured in all the teams studied.

As referenced, there was a mix of centralized, decentralized, and autonomous SCM processes at the surveyed teams. This finding will need to be explored more, as all firms were reasonably successful. This aspect did not prove to be a team differentiator. As cited, a high-performing culture is valued and closely measured in all the teams studied. Survey respondents offered mixed responses to the sub-category of high-performing supply chains. Depending on the position in the team, poor performance may or may not result in adverse consequences. This subcategory must be explored in greater detail during the next study. All respondents unanimously agreed that SCM can create sustainable value.

In summary, based on the survey information, archival data, and interviews, the preliminary findings from the pilot study were supported in P1: supply chain team performance is a function of a high-performing supply chain team culture. Commentary from interviews concerning the specific dimensions of high-performing culture included the following:

> *"We design processes that cater to C players, fool proof, anybody can go through those processes and get things done, however the real issues that occur in the supply chain don't fall into the everyday things…The real issues occur when there are things totally out of the ordinary to come through, and that's when the supply chain makes or breaks the company, and true leadership comes through or doesn't…Leadership makes or breaks your supply chain"* (VP of Global Supply Chain, high-performing supply chain).

Another executive interviewed stated his answer to the order, significance, and magnitude of the leadership versus process question:

> *"You need great leaders to drive process…You can't drive process excellence without great leaders"* (SVP of Operations and Engineering Services, moderately performing supply chain).

The final executive interviewed articulated his view on the leadership dilemma:

> *"A good leader can balance process with good commonsense…A good leader brings with them the right amount of process but doesn't get paralyzed by it"* (VP of Global Sourcing, low-performing supply chain).

There were common success themes that all executives referenced that were embedded in their company and supply chains. For instance, one common success theme was the ability to focus on a few important things that would create maximum firm value (Figure 3). This attribute theme was expressed as the following:

> *"Rally your organization around the critical few things they have to do"* (SVP of Operations and Engineering Services, moderately performing supply chain).

When the above-mentioned executive arrived at his current role, he noticed the lack of focus of the team's supply chain:

> *"We had this lake that was 20 miles wide and one inch deep, [so] we needed to focus"* (SVP of Operations and Engineering Services, moderately performing supply chain).

He also referenced his strong belief in the significance of communication in the supply chains.

Supply chain or supply chain agility or flexibility was common across all the teams studied. One executive commented on what flexibility meant to his supply chain:

> *"Being flexible means what drives them and matching that to what the needs of the company are and driving them to those metrics"* (VP of Global Supply Chain, high-performing supply chain).

Another executive stated the following about agility in his supply chain:

> *"Our supply chain culture is fast, agile, risk orientation, driving leaders to win, speed…Versatility is the operating rhythm of the supply chain"*

(SVP of Operations and Engineering Services, moderately performing supply chain).

On several occasions, executives referred to aligning all employees with the team and supply chain strategy as a critical supply chain success factor.

"Getting everyone to understand how an initiative benefits the company is critical" (SVP of Operations and Engineering Services, moderately performing supply chain).

Energizing and engaging employees regarding the supply chain and company mission was also referenced as a critical success factor.

"Be able to energize people, you can have all the energy in the world, but you have to energize the 10,000 people" (SVP of Operations and Engineering Services, moderately performing supply chain).

Aside from the greater research question and macro themes of high-performing supply chain teams, patterns of detracting leadership on culture emerged. Those patterns are categorized as follows: severe autocratic leadership, the "because I said so" syndrome; accusatory leadership; moving at a pace of change faster than the team was equipped to handle.

In the quotes below, the executives identified examples of accusatory leadership or severe autocratic leadership that prevented firms from building high-performance SC teams.

"If you don't like it, I am sure there is somebody out there that is willing to assume that goal, it's a bully strategy, makes you do something that doesn't

make sense" (SVP of Operations and Engineering Services, moderately performing supply chain).

"Stay away from telling an employee exactly what to do, this type of leadership does not lead to an engaged employee, it's like pushing a rope" (VP of Global Supply Chain, high-performing supply chain).

"Fear of the red dot, missing your number" (SVP of Operations and Engineering Services, moderately performing supply chain).

One executive offered examples of interjecting change at a faster pace than the business is equipped to execute at a high level, which is another leadership detractor. Quotes are as follows:

"People don't resist change; they just resist how change affects them" (SVP of Operations and Engineering Services, moderately performing supply chain).

"Found the choke points, drove it faster than the machine was able to change," (SVP of Operations and Engineering Services, moderately performing supply chain).

As illustrated in Table 16, survey and interview data are categorized along the dimensions of scientific approach, workflow integration, standardization, and the lean tools used. Along the dimension of scientific approach, survey respondents agreed that SCM processes are moderately to highly engineered. There was a mix of centralized, decentralized, and autonomous SCM processes at the surveyed teams. This finding will be further explored, as all teams were reasonably successful, and, as such, the SCM process did not prove to be a team differentiator. Regarding standardization,

Table 16. Pilot Study Supply Chain Team Process Engineering

Model Construct	Dimension Construct	Measurement
Supply Chain Team Process Engineering	Scientific Approach	-Moderate to high-performing teams agree that processes are engineered
	Workflow Integration	-About half the teams have centralized processes -Most firms have SCM integrated through the business -Just fewer than half of the teams have autonomous processes
	Standardization	-Approximately 60% of the teams' processes are standardized -Approximately 50% of the teams' processes are standard across geography -Product quality is stressed for all teams -Product quality is stressed in all team roles
	Lean Tools Used	-Lean manufacturing tools are practices at approximately 60% of firms -Lean training occurs at approximately 60% of the firms -Most firms do not practice Six Sigma

approximately 50-60% of the teams were standard across geography and process, showing no distinctive performance differentiator. This dimension should also be more thoroughly examined during the next study. Quality was clearly and unanimously stressed across all teams and all components of the supply chain. Survey respondents indicated that approximately 60% of all firms practiced lean engineering and have done so for approximately a decade. Moreover, most teams surveyed did not practice Six Sigma, an advanced lean tool.

In summary, based on the survey information, archival data, and interviews, the preliminary findings from the pilot study do not support P2—i.e., supply chain team engineering moderates the relationship between supply chain team culture and supply chain team performance. There was not enough separation in firm performance to substantiate the proposition since disparate amounts of engineering process existed. This weakness must be addressed in the next study.

Interviewees openly discussed the dimensions of supply chain team engineering. For instance, executives described their supply chain communication:

> *"SC strategy has been around for ten years, an evolution, practicing lean manufacturing strategy for eight years"* (VP of Global Sourcing, low-performing supply chain).
>
> *"Have practiced lean throughout the business-varying degrees…from recently to 4-10+ years"* (SVP of Operations and Engineering Services, moderately performing supply chain)."Currently, we've practiced lean principals for about 10 years" (VP of Global Supply Chain, high-performing supply chain).
>
> Executives described standardization as the following:
>
> *"Each business ran their own supply chain"* (SVP of Operations and Engineering Services, moderately performing supply chain).
>
> *"Supply chain is not fully integrated, only has procurement, logistics, warehousing, inventory, materials management, a matrix organization"* (VP of Global Supply Chain, high-performing supply chain)

Archival data from the three supply chains were studied along the dimensions of revenue growth, adjusted stock share price as diluted earnings per share (EPS), net income, and operating margin (Table 17). The data indicated all supply chains saw a loss of revenue, with Firm 3 having the least revenue shrinkage and Firm 2 with the largest. In addition, Firm 3 enjoyed the largest share growth, with Firm 1 having the largest EPS deterioration. Firm 2 was the only corporation with an improvement of net income; Firm 1 had the largest loss of net income. Firm 3 had the largest improvement in operating margin; Firm 1 was the only firm with a deteriorating operating margin.

Table 17. Pilot Study Summary of Archival Data

Firm	**Revenue (B)**			**Adjusted EPS**		
	2015	2014	Δ	2015	2014	Δ
Firm 1	$7.99	$8.57	$-.580	$1.99	$3.30	$-1.31
Firm 2	$6.30	$6.62	$-.32	$6.09	$5.91	$.18
Firm 3	$2.75	$2.84	$-.09	$6.40	$6.17	$.23
Firm	**Net Income**			**Operating Margin**		
	2015	2014	Δ	2015	2014	Δ
Firm 1	$281	$470	$-189	6%	7%	-.01%
Firm 2	$828	$827	$1	42%	41.5%	.005%
Firm 3	$66.1	$74.4	$-8.30	39.7%	35.4%	4.3%

Limitations of the Pilot Study

After completion of the pilot study, noticeably deficient themes surfaced that needed to be addressed and remedied prior to the expanded study. Additionally, as well as equally important, the study needed to be expanded to include more than three firms. I recognized that at least four firms should be studied in order to provide a broader perspective of the leadership width of the supply chain. To remedy the team gap, five teams were added to one of the three firms studied; three additional high-performing firms and two additional moderately performing supply chain firms were added to the dissertation research. In addition, it was necessary for clear performance gaps to exist between high and low-performing teams. The high-performing firm additions were expected to sufficiently address the narrow performance gap. Moreover, a more precise survey instrument needed to be used to more thoroughly analyze the data. It was important for the survey samples to be designed to address the concerns of precision and tractability of specific data, and they needed to be easily discernable and able to model between firm data. Also, I decided that an increased sample size of survey and interview respondents should be gathered and analyzed to more closely examine leadership's influence on the supply chain culture of high, moderately, and low-performing teams. I regarded the addition of the five teams as able to increase the sample size and address the team's influence concern.

The fact that P1 was not consistently supported by any measurement indicates that the reliability of the survey instruments and archival data had to be strengthened before the next study. More specific questions also needed be asked in conjunction

Table 18. Limitations of the Pilot Study

Limitations of Pilot Study	Countermeasure for Next Study
Only Three Firms Studied	Study expanded to six firms
Firm Performance Closely Related	Firms added with widened performance gap
Weak Survey Instrument	Increased robustness/functionality of survey instrument
Small Survey Sample Size	Sample size of respondents more than tripled
Limitations of Pilot Study	Countermeasure for Next Study
Archival Data Needs to be Expanded	At least one additional SC metric to be added
Weak Construct Validity	Increased robustness of survey instrument
Weak Firm Analysis	Increase team analysis along SC dimensions
Team Median Wage Not Considered	Team wages integrated into the survey instrument
Survey Questions Limited	Increased survey questions based on pilot study

with ambiguous open-ended questions. A more detailed analysis of teams and respondents had to be considered as well, e.g., discipline of specialty, engineering, and accounting. Also, the average level of income of the general team population and professionals needed to be accounted for, as to account for wage as an externality.

Moreover, it was necessary for interview and survey questions to address the deficiencies associated with P1.

As referenced, a greater spread of team performance needed to be identified and alternate teams selected before the next study. Deficiencies existed in demonstrating construct as well as external and internal validity. All surveys and interview questions were improved and increased accordingly based on the results from the pilot study, as to address the noted concerns. The aforementioned improvements in team selection, survey improvement, survey instrument, and interview question improvements would address the validity concerns.

The aforementioned limitations notwithstanding, the primary proposition was supported, and additional insight was gained that can be leveraged in future supply chain leadership research. As such, it will be explored in greater detail during the dissertation research.

Validity Challenges

Construct Validity

The evidence supports P1, but some construct validity issues existed due to insufficient variation in firm performance across the sample. The archival data did not exhibit a sufficient spread between high-performing and low-performing supply chains. A greater spread of firm performance needed to be identified and alternate firms selected prior to the completion of the next study.

Internal Validity

Testing the cause and effect relationship between firm similarities, culture, supply chain culture, and leadership bias satisfied the internal validity measurement. The interview and survey data supported P1 and P2. The archival data did not demonstrate a sufficient spread between high and low-performing supply chains. A greater spread of firm performance needed to be identified and alternate firms selected prior to the next study.

External Validity

External validity was not unquestionably proven and validated for P1, as the study findings are not generalizable to the greater global supply chain network or to other disciplines. Survey data and interviews supported P2. The archival data did not demonstrate a sufficient spread between high and low-performing supply chains. A greater spread of firm performance needed to be identified and alternate firms selected before the completion of the subsequent study.

Reliability

Although surveys and interviews consistently supported P2, the fact that P1 was not consistently supported by any measurement indicated that the reliability of the survey instruments and archival data needed to be strengthened before the next study. It was important for interview and survey questions to address the deficiencies associated with P1. The archival data did not demonstrate a sufficient spread between high and low-performing supply chains.

The interview section was strengthened as a result of deficiencies discovered during the pilot study. The interview questions were improved in the following areas: discipline of specialty, engineering, and accounting. Also, the average level of income of the general team population and professionals was considered, as to account for wage as an externality.

Fifty-four survey questions were administered along four supply chain constructs: leadership, team culture, engineering process, and performance. During the pilot study, it was discovered that the surveys were not descriptive enough to adequately differentiate between the constructs; hence, additional survey questions were added. Moreover, the survey was set-up in a way that responses from any one supply chain or supply chain team could not be differentiated from the peer group, as all responses were aggregated into a series of trends. The survey instrument was administered using a method with which each survey response could be examined independently and was aggregated in three formats. The three formats included an individual response, an aggregated response as part of a high-performing or middle-to-low-performing supply chain, and as a total supply chain aggregated study.

Expanded Study

Research Setting

With the exception of one firm, a high performing supply chain, all firms were fully integrated, highly capital intensive firms. The one exception was considered a heavily service type firm; it manufactured a product and was global, but it was not capital intensive. Also, there was a reasonable variation in supply chain size, with small, mid-, and large capitalized firms ranging from just over $2 billion in sales to over $60 billion in sales. Such a variation could potentially demonstrate a findings bias. Moreover, although all supply chains were global in scale, there were some variations in the percentages of United States centric versus Asian or European centric.

An additional externality that perhaps influenced the findings was that two of the senior executives interviewed were retired—one had retired recently and one had been retired for four years. Both executives had led large global supply chains and both were from high performing supply chains that were studied. However, it must be noted that these two participants were not actively working for the studied firms. With that said, the executive that was retired for four years remains engaged by professionally consulting within the supply chain industry. Hence, he continues to be exposed to contemporary and relevant global supply chain practices.

All professionals were within the supply chain discipline. All participants were at least at the professional supply chain manager at a director level (leading a functional business group with employees reporting to them), with most being at a Vice President level. Five of the interview respondents were at the Senior Vice President level, reporting into the Chief Executive Officer. Both of the high performing supply chain teams had a Senior Vice President (or commensurate level) as an interview respondent.

Demographics

All participating firms were United States centric with a global presence. Additionally, all participating executives were based within the United States, with most having global responsibility and deep integration within the global supply chain of their firm. The corporate offices of the leadership that were surveyed and interviewed are headquartered primarily within the Midwestern and Southern part of the United States. The reach of the global supply chain of planned surveyed firms and surveyed respondents is substantial, with more than one firm having a global supply chain presence in more than 30 countries but primarily North American, Asian, and Latin American focused.

Data Collection Sources

Data collection sources were specific to the construct being measured (Table 19). Increased knowledge and weaknesses uncovered in the pilot study were integrated into the data collected sources. Data were collected from a diverse base of three high-performing firms and three moderately performing firms.

In each construct, a measurement was used to clarify each proposition; in some cases, more than one measure of the construct was used. The construct of “Supply Chain Team Leadership” was used in interviews and surveys with the SVPs and VPs of the company supply chains to collect data. Interviews were used to measure supply chain team health at the senior levels of the firm - specifically, senior leadership. Surveys were used to collect specific measurable data along the construct dimensions. Additionally, team members in the aforementioned levels of the supply chain were

Table 19. Data Collection Sources

Supply Chain Teams	Supply Chain Function	Team Size	Information Gathering Mechanisms	Respondent Types
High Performing Supply Chain Team #4 Firm A	Procurement/ Sourcing	8	1 Interview 2 Surveys	1 VP Interview/1 Manager Surveys
Moderate-Performing Supply Chain Team #1 Firm B	Procurement/ Operations	6	1 Interview 5 Surveys	1 VP Interview/2 Manager Surveys
Moderately-Performing Supply Chain Team # 2 Firm C	Procurement/ Operations	8	1 Interview 4 Surveys	1 VP Interview/2 Manager Surveys
Moderately-Performing Supply Chain Team # 2 Firm D	Procurement/ Operations	8	1 Interview 3 Surveys	1 VP Interview/2 Manager Surveys
High-Performing Supply Chain Team #3 Firm E	Sourcing/ Manufacturing/ Operations	10	1 Interview 3 Surveys	1 SVP Interview/2 Manager Surveys
High Performing Supply Chain Team #1 Firm F	Manufacturing/ Engineering	10	1 Interview 3 Surveys	1 SVP Interview/2 Manager Surveys

asked to complete surveys and interviews. Survey and interview data was combined with archival data (Example- Appendix 1) since the data needed for the study could not be satisfied using one collection method. Survey questions focused on assessing team specifics along the SCM constructs; interviews assessed the tone of leadership culture, strategy, and values. For supply chain culture, as explained above, a similar design was used, including interviews and surveys of supply chain leadership, respectively. When examining the supply chain team process engineering, interviews and surveys were used with the SVPs and VPs; surveys were used with the aforementioned supply chain team members. Documents from archival records were also used, as listed in Table 20. For supply team performance, interviews, surveys, and documents were used with the SVPs, VPs, and supply chain leadership, respectively, to gather data on quality and finance. The rationale for the survey and interview

Table 20. Summary of Archival Data

	Revenue (B)			Adjusted EPS			Net Income		
	2015	2014	Δ	2015	2014	Δ	2015	2014	Δ
Firm A	$7.41	$6.42	$.99	$3.45	$2.90	$.55	$62.8	$48.0	$14.8
Firm B	$2.75	$2.84	-$.99	$6.40	$6.17	$.23	$66.1	$74.4	-$8.30
Firm C	$63.0	$66.7	-$3.7	$3.67	$4.27	-$.60	$5,452	$6,531	-$1.061
Firm D	$3.10	$3.0	$.10	$.68	$.69	-$.01	$86.10	$87.7	-$1.60
Firm E	$12.3	$12.2	$.10	$3.08	$3.08	$0	$1,232	$1,048	$184
Firm F	$20.9	$19.9	$1.0	$9.83	$8.17	$1.66	$822	$692	$130

	Operating Margin			Inventory Turns		
	2015	2014	Δ	2015	2014	Δ
Firm A	$31.2	$29.5	$1.7	13.29	12.29	.9
Firm B	39.7%	35.4%	4.3%	6.56	6.82	-.26
Firm C	13.2%	14.4%	-1.2%	9.68	9.43	.25
Firm D	4.80%	5.6%	-.80%	13.5	14.14	-.64
Firm E	13.4%	11.7%	1.7%	4.21	4.36	-.15
Firm F	6.2%	6.0%	.20%	6.42	6.4	

distribution was due to the leader's position within the team (senior leadership interviews offered a strategic perspective) and the data sought (survey data were more construct-driven along the dimensions measured).

As referenced from the pilot study, common themes from high-performing supply chain leadership were as follows: (1) contagious vision, (2) customer-centric vision communicated simply, (3) fully integrated vision, and (4) leveraging technology (Fawcett & Magnan, 2004). Additionally, research indicated management and employee support improves firm performance and should be leveraged to increase a firm's competitiveness (Gowen & Tallon, 2003).

Data Analysis

Based on the propositions and exploratory research in the pilot study, six firms with global supply chains were identified as candidates for data and information gathering. In addition, senior leaders of the firms' global supply chains were interviewed to supplement the archival data and survey information. The supply chain team selection was based on the following criteria: firm size (at least $1 billion in annual revenue); must be a publically traded company so to have access to financial information; must be global, having done business in multiple countries.

Interviews were conducted via phone and recorded using Audacity software (Audacity, 2017). The audio recordings were transcribed into narratives so that they were available for thematic analysis and citations in the paper. All of the senior leaders interviewed were offered the opportunity to receive a copy of the aggregated data from the study. Moreover, surveys were distributed to senior supply chain leaders at least at the level of director or senior staff. All survey participants were offered an opportunity to receive an aggregated copy of the study data. Various macro themes and quotations were expected to be extracted from interviews and surveys.

For data analysis and evaluation, the survey and interview information was categorized into attribute themes, which led to suggested strategies to leverage from a leadership and cultural perspective to improve team performance. Certain negative themes or detractors were expected to be identified as a suggested practice to avoid when building global supply chain teams.

Several macro commonalities were expected to emerge among the global supply chains and their respective teams. All supply chains should have recently (in the past decade) gone through a supply chain transformation. Once, they might have operated as a decentralized business function; now, they are expected to operate centrally, as a corporate function and as matrixed teams. Also, all of the firms' supply chains were expected to use similar metrics to measure success and were categorized under the macro categories of safety, quality, customer service, and cost. Similarly, all teams were expected to be mostly capital intensive.

The final analysis was concluded in a report that included a findings section, discussions and concluding remarks, and a section outlining the limitations of the pilot study. Suggested mediations for strengthening the next phase of the greater scope of the study were also included.

Surveys

The data collection survey were sent via email to respondents as an invitation that summarized the purpose of the research: to identify attributes of high-performing supply chain teams. The constructs of leadership, culture, engineered process, and supply chain performance will survey through the 55

3 questions using a five-point Likert scale, with ranges from strongly disagree to strongly agree. Associated measures of the constructs were also defined in the survey. The Survey Monkey tool (Survey Monkey, 2017) was used via an internet link (Example-Appendix 2). After researching and analyzing the data, the process for high-performing supply chains was investigated and reported. The research findings are to be shared with all participants. To be transparent, all of the aforementioned survey methodologies and requests were outlined in the initial communication to survey participants.

The research proposition to be investigated was as follows: in the highly engineered discipline of global supply chains, culture is more important than process. From the pilot study, the respondent interview information was compartmentalized into four macro-level categories: team similarities, team culture, supply chain culture, and leadership bias.

Description of Necessary Data

The research protocol used to investigate the questions and relationships proposed in the model of high-performance supply chain team performance addressed the following challenges to this research: construct validity, internal validity, external validity, and reliability. The research design and data collection tactics addressed these challenges. Given the nature of the research question, a comparative multilevel and multidimensional case research methodology was used (Yin, 2013).

As a result of the findings from the pilot study, an increased number of firms were studied: three high-performing firms and three moderately perform firms. Broadening the sample size of low and high-performance levels addressed the external validity concerns identified in the pilot study.

To address the issue of delineation of survey data, separate survey instruments were sent with a separate link attached to an individual leader. Moreover, the survey was designed so that it could also aggregate all data to indicate supply chain macro trends. This survey design change was expected to solve the tractability of data issue discovered during the pilot study and strengthen the reliability of the survey instrument. As used during the pilot study, Survey Monkey was also be used during the dissertation proposal (Survey Monkey, 2016).

Expanding on the findings from the pilot study, an additional question was added to Tables 7 and 8 for greater depth and clarity of understanding. These new questions focused on the supply chain: leadership, culture, engineering process, and performance. The increased knowledge content offered a stronger analysis of the research question and insight into the dissertation research motivation.

Through data collection methodologies, this research considered the implications of supply chain team dynamics, the significance of the engineered processes of supply chains, and supply chain team culture as it relates to high-performing supply chains. Although SCM firms tend to be heavily engineering-focused and process-orientated, this research asserts that supply chain team culture, as shaped by leadership, can influence the firm even more profoundly than a team's SCM strategy. This research also claims that the highest performing SCM teams integrate highly engineered processes with effective firm leadership to enable a high-performing culture.

Using the outlined interview audience (updated post-pilot study) from Table 9, a semi-structured interview process was applied to gather data along the constructs of supply chain leadership, supply chain culture, and supply chain performance from respondents from a cross-functional group of supply chain teams. A semi-structured interview process was used; this process was a formal interview during which specific questions were asked in a particular order to support data gathering along strategic dimensions (Cohen & Crabtree, 2006). Throughout the interview process, relevant information that had not been previously identified or researched was integrated into this study and further explored.

Supply Chain Team Performance Criteria

The performance criteria used for determining high to moderately-performing supply chains is measured along five generally accepted supply chain dimensions: gross profit percentage, the EPS of company stock, change in revenue, net income, and inventory turns (Table 20).

After extensively reviewing the literature, no single group or suggested group of "best-in-class" metrics is prescribed as being the best methodology for describing high-performing supply chains. However, at a macro level, certain categories, such as lean manufacturing concepts deployed to reduce waste and improve efficiency, cost, and service performance, are used (Mason-Jones et al., 2000). A successful supply chain increases the firm's value and competitive advantage (Evans et al., 1995). This quality-centric approach can be cost effective and secure from a safety perspective (Lee & Whang, 2005). A further review of the literature indicated that contemporary integrated supply chains are expected to improve a firm's performance through cost, quality, speed to market, and innovative products, thus providing a competitive advantage for businesses (Li, Ragu-Nathan, & Rao, 2006).

Based on the literature review, no singular metric series was prescribed as the suggested benchmark for measuring the highest performing supply chains. For this study, high-performing supply chains were defined as those performing in the top 25% of their industry group in gross profit percentage, the EPS price of company stock, change in revenue, inventory turns, and net income during a two-year period moderately performing supply chain teams will perform in the subsequent 75% of their industry group along the aforementioned performance dimensions, as outlined in Table 20.

Supply Chain Culture

Data were obtained from publically available databases, archival records, interviews, documentation, and surveys, primarily in the below dimensions, though not limited to these dimensions. Through research, applicable information will be integrated in the process.

The following attributes of high-performing supply chain teams were investigated: respect and trust among its membership, mutual support of the supply chain team membership between the firm and employees, transparent communication between the team and firm, a common vision for the firm, shared common goals for the firm, aligned values professionally, firm values, and strong competency skill in SCM. Moreover, the attributes of high-performing supply chains were a means to consider the needs of the firm and professional contributions, striking a balanced approach and creating a collaborative environment between team and employee (Castka et al., 2001). This research endeavored to contribute to high-performing supply teams, their desire to be successful, and the significance such team desire plays in supply chain team success.

High-Performing Supply Teams

Data were obtained from publically available databases, archival records, interviews, documentation, and surveys, primarily in below dimensions, though not limited to these. Through research, applicable information was integrated into the process.

The performance criteria used for determining high to-moderately-performing supply chains will be measured along five generally accepted supply chain dimensions: gross profit percentage, the EPS price of company stock, change in revenue, net income, and inventory turns (Table 20).

Engineered Processes

Data was obtained from publically available databases, archival records, interviews, documentation, and surveys, primarily to these dimensions, though not limited to these. Through research, applicable information was revealed and integrated within the process.

The metrics and processes that defined highly engineered processes included the following: value stream mapping: tools used to identify and remove waste from the process; just-in-time inventory management: the means of scheduling inventory to arrive at the manufacturing process at the needed time to reduce obsolesce and preserve firm cash; cellular manufacturing: a manufacturing process that produces products in a one-piece flow, producing precisely what is needed when it is needed; single-minute exchange of dies: an efficient method of machine set-up time, reducing machine and labor waste; total quality management: a sophisticated quality system used to improve quality, reduce re-work, and lower external warranty cost, including the supply base; process maps: physically laying out equipment and processes to reduce processing waste; Kaizen events: a collaborative shop floor team event that improves team efficiency; Six Sigma and statistical process control: leverage statistics to reduce machine and process variation for supply chain effectiveness (Shah & Ward, 2007).

The data collection survey was sent via email with an invitation (Survey Monkey, 2017) summarizing that the purpose of the research, i.e., to identify attributes of high-performing supply chain teams. After the analysis of the data, assertions of a process for high-performing supply chains were created and subsequently reported within this document. The research findings are to be shared with all participating executives. The survey was composed of numerous questions, and, where applicable, a five-level Likert scale with weighting was used. All of the aforementioned survey methodologies and requests were outlined in the initial communication to survey participants, as to be transparent.

CHAPTER 4: RESULTS

Purpose of Study

The purpose of this study was to investigate that when compared leadership induced culture is more critical than process within the discipline of global supply chains. This research explored how leadership influences the culture of a firm as well as how through cultural influence, firm performance is improved to a greater extent than through process.

Analysis

Based on the propositions and exploratory research in the pilot study, six firms with integrated global supply chains that met the aforementioned criteria were identified as candidates for data and information gathering. In addition, senior leaders of the firms' global supply chains were interviewed to supplement the archival data and survey information. The criteria for supply chain team selection were based on the following: firm size (at least $1 billion in annual revenue); must be a publically traded company in order to have access to financial information; must be global, having done business in multiple countries; must be fully integrated, with manufacturing, sourcing, logistics, distribution, and the planning function.

Interviews were conducted via phone and recorded using Audacity software (Audacity, 2017). The audio recordings were transcribed into narratives so that they were available for thematic analysis and citations in the paper. All of the senior leaders interviewed are to be offered the opportunity to receive a copy of the aggregated data from the interviews. Moreover, surveys were distributed to senior supply chain leaders at least at the level of director or senior staff. All survey participants were offered an opportunity to receive an aggregated copy of the survey data. Various macro themes and quotations were extracted from interviews and surveys.

The survey and interview information was categorized into attribute themes for data analysis and evaluation, which led to suggested strategies to leverage from a leadership and cultural perspective to improve team performance. Certain negative themes or detractors were identified as a suggested practice to avoid when building global supply chain teams.

Several macro commonalities emerged among the global supply chains and their respective teams. All of the supply chains had gone through a supply chain transformation. Also, all of the firms' supply chains used similar metrics to measure success and were categorized under the macro categories of safety, quality, customer service, and cost. Similarly, all teams were capital intensive.

The final analysis was concluded in a report that included a findings section, discussions and concluding remarks, and a section outlining the limitations of the research study. Suggestions were offered as a potential of expanding the phase of this study were also included.

Results Summary

All Surveyed Supply Chain Teams

Certain common themes emerged among all survey respondents, and a demonstrated universal agreement was shared, regardless of the overall firm performance within the marketplace, among the moderately or high performing supply

Table 21. All Survey Respondents (Agree/Strongly Agree)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with dimension)**	**Agree or Strongly Agree**
Using a 5-Point Likert Scale For Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree	
Supply Chain Leadership	Vision	-Our people know what our company stands for	100%
		-The talent management process is a formal process in my company	73.9%
		-A significant amount of time is dedicated to talent management at my company	73.9%
		-SCM is considered a business enabler in my company	78.3%
	Strategic Orientation	-SCM is more corporate driven in my company	70.6%
		-SCM is more locally driven in my company	26.1%
		-Top management supports our SCM strategy	86.9%
		-During the hiring process, SCM is discussed at my company	73.9%
	Mission Driven	-Leadership is more important than process in my SC team	65.2%
		-Leadership is more important than process in our SCM strategy	60.9%
		-Our leadership has high performance expectations	91.3%
		-Our leadership encourages cross-functional working relationships	95.6%
		-Our leadership has high performance expectations	100%

Table 21. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	Collaborative	-Collaboration is valued in my SC team -SCM teams collaborate well -Our leadership encourages cross-functional working relationships	87% 82.5% 91.3%
	Strength of Culture	-During the hiring process, culture is discussed at my company -Culture is critical to the SCM strategy in my company -Our company culture is a priority for our company leadership -Autonomy is encouraged -Teamwork is valued at my company	91.3% 100% 78.3% 43.5% 95.6%
Supply Chain Team Culture	Communication	-Working in teams is valued in my SC -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes	95.6% 86.9% 73.9% 52.2%
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team, in general, feels valued at our company -Team trust is evident in my SC	95.6% 91.3% 73.9% 65.3%
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company	82.6% 91.3% 73.9%

Table 21. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company	100% 91.3% 78.3%
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain process are developed with industrial engineering practices at my company	34.8%
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized functions in my company -Autonomous operations are more normal vs. standardization in our co.	69.6% 30.4%
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role	39.1% 39.1% 95.6% 91.3%
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -Lean manufacturing training is a common practice at our company -It is common to use Six Sigma training at our company	100% 91.3% 39.1%

Table 21. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company	100%
		-Good performance is rewarded at my company	95.6%
		-There are consequences for poor SCM performance at my company	82.6%
		-SCM is considered an income generator at my company	65.2%
		-I know how my role within SMC creates value for stakeholders of our company	95.2%
	Sustainable	-Our SCM business processes are consistent and repeatable	61.1%
		-I have the ability to influence my company with my role within SCM	95.6%
		-SCM creates stakeholder value in our company	95.6%
		-Our SCM is a long-term value-contributor to our company	95.6%

chain teams. Along the construct of vision, strong dimensions are centric to talent and engagement, generally understanding how the firm's team is connected to business results. A strong indicator is to this linkage is they know what their company stands for, with 100% agreeing or strongly agreeing. In addition, talent management is a focal point as it is a formalized process within their firms and a significant time allotment, and the global supply chain is universally considered a business enabler for their firms. Within the construct of strategic orientations, approximately 87% of respondents agreed or strongly agreed by indicating that top management supported their supply chain strategy, which demonstrated a strong connection to firm alignment.

The most prominent question, which is the genesis of my research, lies within the construct of being mission driven. The question is as follows: Which is more important within the global supply chain, leadership or process? Approximately 65% of all respondents indicated leadership is more important than process within the global supply chain. As illustrated through this research, leadership influences culture; hence, leadership and culture matter more than process. Within the construct of culture, 100% of the respondents considered it to be critical to the supply chain strategy, and firm culture are a priority for their leadership. Surprisingly, in the aggregate, only 52% of the respondents indicated their firm had a knowledge transfer process; in general, this is clearly an opportunity for supply chain firms. Almost universally and positively, the surveyed respondents referred to trust and being valued. Moreover, respondents indicated that the supply chain teams in general feel valued at their respective firms. A general observation is that a lack of trust is not a significant problem among moderately and high performing supply chain firms, as approximately 65% of surveyed respondents revealed that trust is evident within their firms. This response level is not overwhelming, but it still indicates a strong trust factor. Regarding a high performance culture, performance metrics exist at 100% of the firms surveyed; good performances are rewarded, and there are consequences for a poor performance. From the construct of value to stakeholders, according to the respondents surveyed, the supply chain function is considered an income generator for the firm. Surprisingly, though, only 61% of the surveyed supply chain respondents indicated they believe their supply chain processes are consistent and repeatable. One of the more important themes discovered was that respondents believe their supply chain creates stakeholder value and has the ability to be a long-term contributor to their firm.

High Performing Supply Chain Teams

When the data was reviewed, which involved comparing and contrasting high performing supply chain teams and overall supply chain teams, additional general themes became evident. Almost universally, high performing supply chains responded with a higher compliance rate among the construct of vision. However, the theme of the global supply chain was universally considered a business enabler for their firms. This response was at 62.5% agreeing or strongly agreeing for high performing teams as compared to 78.3% for moderately performing supply chain teams. One possible explanation for this result might be that high performing supply chain teams generally consider the entire firm more broadly and how they contribute accordingly, and not simply as the supply chain discipline.

Within the construct of being mission driven, as previously discussed, the most prominent question driving this research was as follows: Is leadership-induced culture or process more important within the global supply chain? Approximately 62.5% of all respondents indicated leadership is more important than process. Interestingly, compared to supply chains in general, high performing supply chains had a lower rating— 62.5% versus 65.2%, respectively. A plausible explanation for this finding

Table 22. High Performing Supply Chain Teams (Agree/Strongly Agree).

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
Using a 5-Point Likert Scale For Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree	
Supply Chain Leadership	Vision	-Our people know what our company stands for	100%
		-The talent management process is a formal process in my company	87.5%
		-A significant amount of time is dedicated to talent management at my company	100%
		-SCM is considered a business enabler in my company	62.5%
	Strategic Orientation	-SCM is more corporate driven in my company	100%
		-SCM is more locally driven in my company	0%
		-Top management supports our SCM strategy	100%
		-During the hiring process, SCM is discussed at my company	75%
	Mission Driven	-Leadership is more important than process in my SC team	62.5%
		-Leadership is more important than process in our SCM strategy	62.5%
		-Our leadership has high performance expectations	100%
		-Our leadership encourages cross-functional working relationships	100%
		-Our leadership has high performance expectations	100%

Table 22. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	Collaborative	-Collaboration is valued in my SC team -SCM teams collaborate well -Our leadership encourages cross-functional working relationships	87.5% 100% 87.5%
	Strength of Culture	-During the hiring process, culture is discussed at my company -Culture is critical to the SCM strategy in my company -Our company culture is a priority for our company leadership -Autonomy is encouraged -Teamwork is valued at my company	100% 100% 100% 37.5% 100%
Supply Chain Team Culture	Communication	-Working in teams is valued in my SC -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes	87.5% 100% 100% 62.5%
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team, in general, feels valued at our company -Team trust is evident in my SC	87.5% 87.5% 62.5% 62.5%
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company	100% 87.5% 75%

Table 22. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company	100% 100% 75%
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain process are developed with industrial engineering practices at my company	37.5%
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized functions in my company -Autonomous operations are more normal vs. standardized in our company -SCM is a functionally integrated process in our company	62.5% 12.5% 87.5%
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role	25% 37.5% 100% 87.5%
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -It is a practice to do Lean manufacturing training is a common practice at our company -It is common to use Six Sigma training at our company	100% 75% 25%

Table 22. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor SCM performance at my company -SCM is considered an income generator at my company -I know how my role within SMC creates value for the stakeholders of our company	100% 100% 75% 75% 100%
	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company -Our SCM is a long-term value-contributor to our company	75% 100% 100% 100%

could be high performing supply chains' better understanding of the significance of process compared to supply chains in general. However, it must be noted that all supply chain surveyed still viewed leadership as more important than process.

One of the more perplexing findings was that supply chains in general had a higher response rating in regard to the construct of trust in two questions. First, regarding trust being valued within the firm, supply chains in general responded at 95.6% versus 87.5% for high performing supply chains, respectively. Additionally, in regard to feeling valued at their firm, supply chains in general responded at rate of

91.3% as compared to the high performing supply chains' response rate of 87.5%. Without additional and more thorough research, a plausible explanation is not evident at this time.

Considering the construct of value to stakeholders, clear distinctions emerged between high performing supply chain teams and supply chain teams in general. Not surprisingly, high performing supply chain teams exhibited a noticeable gap in most statements and scored significantly higher—in some cases, over 34% higher in all but one tested statements. (There are consequences for poor performance, 82.6% versus 75%, respectively, for supply chains in general as compared to high performing supply chains.) One reasonable explanation for this significant gap is a more integrated understanding of how value is created for firms and the knowledge of the significance of overall firm value for high performing supply chains as compared to supply chains in general.

Moderately Performing Supply Chains

When evaluating and comparing the data from all supply chain teams in general versus moderately performing supply chains, expected themes emerged. At a macro-level, overall responses to survey data were generally lower in most percentages. Certain specifics are outlined below among noted constructs.

Within the construct of strategic orientation, a clear and noticeable difference was exhibited within the data concerning the statement of the supply chain being

Table 23. Moderately Performing Supply Chain Teams (Agree/Strongly Agree).

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with dimension)**	**Agree or Strongly Agree**
Using a 5-Point Likert Scale For Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree	
Supply Chain Leadership	Vision	-Our people know what our company stands for	100%
		-Talent management process is a formal process in my company	66.7%
		-A significant amount of time is dedicated to talent management at my company	60%
		-SCM is considered a business enabler in my company	66.7%
	Strategic Orientation	-SCM is more corporate driven in my company	53.3%
		-SCM is more locally driven in my company	40%
		-Top management supports our SCM strategy	80%
		-During the hiring process, SCM is discussed at my company	73.3%
	Mission Driven	-Leadership is more important than process in my SC team	66.7%
		-Leadership is more important than process in our SCM strategy	60%
		-Our leadership has high performance expectations	86.7%
		-Our leadership encourages cross-functional working relationships	93.3%
		-Our leadership has high performance expectations	100%

Table 23. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	Collaborative	-Collaboration is valued in my SC team	86.7%
		-SCM teams collaborate well	83.3%
		-Our leadership encourages cross-functional working relationships	93.3%
	Strength of Culture	-During the hiring process, culture is discussed at my company	86.7%
		-Culture is critical to the SCM strategy in my company	100%
		-Our company culture is a priority to our company leadership	66.7%
		-Autonomy is encouraged	46.7%
		-Teamwork is valued at my company	93.3%
Supply Chain Team Culture	Communication	-Working in teams is valued in my SC	100%
		-I am kept informed about SCM events by our leadership	80%
		-I am kept informed about events at our company at large	60%
		-Our company purposefully attempts to have knowledge transfer systems built into our processes	46.7%
	Trust	-Trust is valued at my company	100%
		-I feel valued at my company	93.3%
		-The SCM team, in general, feels valued at our company	80%
		-Team trust is evident in my SC	66.7%
	Customer Centric	-Customer service is a focus at my company	73.3%
		-We measure SCM customer service at my company	93.3%
		-We consider internal and external customer service at my company	73.3%

Table 23. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	High Performance Culture	-Performance is measured at my company	100%
		-Good performance is rewarded at my company	86.7%
		-There are consequences for poor performance at my company	80%
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain processes are developed with industrial engineering practices at my company	33.3%
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized functions in my company	73.3%
		-Autonomous operations are more normal vs. standardized in our company	40%
		-SCM is a functionally integrated process in our company	86.7%
	Standardization	-Most business processes are standard and similar at our company	46.7%
		-Most processes are standard across geographic sites at our company	40%
		-Product quality is stressed in my company	93.3%
		-Process quality is important in my role	93.3%
	Lean Tools Utilized	-Lean manufacturing is practiced at my company	100%
		-Lean manufacturing training is a common practice at our company	100%
		-It is common to use Six Sigma training at our company	46.7%

Table 23. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company	100%
		-Good performance is rewarded at my company	93.3%
		-There are consequences for poor SCM performance at my company	86.6%
		-SCM is considered an income generator at my company	60%
		-I know how my role within SMC creates value for the stakeholders of our company	93.3%
	Sustainable	-Our SCM business processes are consistent and repeatable	53.3%
		-I have the ability to influence my company with my role within SCM	93.3%
		-SCM creates stakeholder value in our company	93.3%
		-Our SCM is a long-term value-contributor to our company	93.3%

driven locally versus corporately. Supply chains in general indicated a positive response rate at 26.1% versus 40% for moderately performing supply chains, respectively. Although this finding is not surprising, it does, however, solidify how high performing supply chain teams outperform moderately performing supply chains. A logical explanation, based on the research, is as best practices occur as a result of knowledge acquisition, by operating a corporately driven supply chain, practices can easily be exploited across the firm more easily than those operating more at a local level.

From a customer centric construct perspective, a noticeable difference existed between supply chain firms in general and moderately performing supply chains regarding the focus on customer service at their firms. Data indicated that supply chains in general responded at an 82.6% level versus 73.3%, respectively. A reasonable interpretation of this data could be a responsiveness factor exhibited by higher performing supply chains, bringing problems to a solution at a higher rate, and hence creating value to a greater extent.

In summary, with the noted aforementioned gaps, most themes were generally lower across all constructs and therefore validated the claimed propositions. They also further solidified that within global supply chains, leadership influences culture, and culture influences firm performance more so than process.

Interviews

This research study compared three moderately performing supply chains to three high performing supply chains that demonstrated a greater performance as documented through the archival data. High performing to moderately less efficient supply chains were defined by archival data along the performance metrics, as illustrated in Table 20. Interviews were conducted with six senior supply chain executives who represented the team's performance. The interviews were semi-structured and followed an interview guide (Table 7). Using the outlined interview audience from Table 19, a semi-structured interview process was used to gather data for supply chain leadership, supply chain culture, and supply chain performance from respondents of a cross-functional group of supply chain teams. A semi-structured interview process was used; this method was a formal interview during which specific questions were asked in a particular order to support data gathering along strategic dimensions (Cohen & Crabtree, 2006). The interviews were completed via telephone and recorded through the computer using audacity software, except on in-person interview (Audacity, 2016). Thereafter, the audio recordings were transcribed via a transcription service (Scribie, Speechpad, 2017).

Documents

Archival documents, specific to income statements from the three public companies (Firms A, B, C, D, E, and F) were reviewed and examined along the quantitative financial metrics in order to provide a more objective perspective (Appendix 1). Since all six firms are publically traded, actual supply chain performance relative to the criteria used for determining high and moderately performing supply chains was measured along five generally accepted supply chain dimensions (Stewart, 1995; Gartner, 2015): change in revenue, earnings per share for the stock price, net income, gross profit percentage, and inventory turns (Table 20).

Survey Results

The data collection survey was sent via email to respondents as an invitation summarizing the purpose of the research: to identify attributes of high-performing supply chain teams. The constructs of leadership, culture, engineered process, and supply chain performance were surveyed through the 55 questions using a five-point

Likert scale, with ranges from strongly disagree to strongly agree. Associated measures of the constructs were also defined in the survey. The Survey Monkey tool (Survey Monkey, 2017) was used via an internet link (survey sample attached in Appendix 2). After researching and analyzing the data, the process for high-performing supply chains were investigated and reported. The research findings were shared with all participants. To be transparent, all of the aforementioned survey methodologies and requests were outlined in the initial communication to survey participants.

The foundational research proposition investigated was that in the highly engineered discipline of global supply chains, culture is more important than process. From the study, investigative research of respondent interview information was compartmentalized into four macro-level categories: team similarities, team culture, supply chain culture, and leadership bias.

At the central level of the research, most of the interviewed executives agreed that in the highly engineered discipline of SCM, leadership is more important than process. Two executives, one from a low to moderately performing supply chain This statement was not made lightly, as all of executives interviewed wrestled with the question as a distinct dilemma; all executives stressed the importance of process in the supply chain discipline.

The following information is in response to the survey data collected from the 23 respondents working within the six surveyed firms with global supply chains. Additionally, the analysis is derived from both high performing and moderately preforming supply chain teams, and it is segregated as such within the preceding summaries. All data analysis is reported specifically, and segregated accordingly, by respondents' survey information whereas any question or theme in separated by at least a 25% factor.

Within the construct of supply chain leadership, along the dimension of vision, high performing supply chain teams exhibited a significant difference within two areas of talent management. The specific areas of significant differences within high performing teams versus low to moderately performing teams include talent management as a formal process within high performing teams and high performing teams dedication of a significant amount of time deliberately to talent management. Executive commentary in reference to the construct of leadership was as follows:

> *"If you don't have strong leadership, process doesn't really matter"* (VP Integrated Supply Chain and Quality).

> *"Act now, do it today, get results"* (Senior Vice President of Supply Chain).

> *"I'm very adamant that leadership is first and foremost the strongest characteristic"* (Senior Vice President of Supply Chain).

> *"We want people to stretch. We want them to be able to do more than what is asked of them, and be happy about it"* (Vice President of Global Supply Chain).

"You cannot push people's excitement. You have to lead it, you have to draw it out of them" (Vice President of Global Supply Chain).

"It's the leadership that makes a bright supply chain" (Vice President of Global Supply Chain).

"I think we had a winning culture, I believe, and we expected to win" (Vice President and President of Global Supply Chain).

"Having the right people is more important than process" (Vice President and President of Global Supply Chain).

Executive commentary in regard to the construct of culture was as follows:

"From an overall culture standpoint we believe that delivery against performance begins with our people" (Senior Vice President of Global Supply Chain).

"We believe in servant leadership" (Senior Vice President of Supply Chain).

"I believe that the leadership was more important in my mind than having the best strategy or the best process" (Vice President and President of Global Supply Chain).

Executive commentary pertaining to the construct of supply chain team process engineering was as follows:

“Focus on the things that are most critical, or hardest to understand, or where people had the hardest time learning” (Senior Vice President of Global Supply Chain).

“Make sure everyone understood the very clear vision of what our supply chain business was, and why we existed” (Senior Vice President of Global Supply Chain).

Executive commentary on the construct of supply chain performance was as follows:

“We are a customer-centric organization” (VP Integrated Supply Chain and Quality).

“It starts first with asking our customers. I think that's the first barometer” (Senior Vice President of Supply Chain).

“Building a team of engaged people and ensuring that you provide leadership to continually grow that team, and to make sure you're not afraid to develop and invest in those individuals” (Vice President of Global Supply Chain).

“Surround yourself with incredible talent. Get smarter people than you are, get better people than you are. Get people that are willing to work harder than you are, and you'll probably be successful”(Vice President and President of Global Supply Chain).

Within the dimension of vision, the talent management process is a formal process within their firms. In addition, a significant amount of time is dedicated to talent management at my company. Within strategic orientation, the high performing supply teams have a 25% greater or more through top management's supporting supply chain management strategy. Also, within the construct of being mission driven, the two areas are significantly (and likely the most important distinction and key point of the research) different from low to moderately performing supply chain teams, whereby high performing supply chain teams indicated that leadership is more important than process, and, more specifically, that leadership is more important than process within the discipline of supply chain management.

Within the construct of culture, particularly the strength of culture, high performing supply chain teams value teamwork; also, during the hiring process, culture is discussed at my company. More significantly than is done at low to moderately performing supply chain teams. Regarding the construct of communication, it was noted that high performing supply chain teams are kept informed about SCM events by leadership more so than in moderately performing supply chain teams. Additionally, within the construct of trust, a significant difference exists: in high performing supply chain teams trust is generally valued. Also, within high performing supply chains, organizational trust is evident within the firm more so than with low to moderately performing supply chain teams. Regarding the construct of high performing culture, high performing supply chain teams noted that high performance is rewarded more so at firms than it is at moderately performing supply chains.

Within the construct of process engineering, high performing supply chain teams have their supply chain processes developed with industrial engineering principals more significantly than low to moderately performing supply chain teams. Moreover, high performing supply chain teams are generally more centralized than low to moderately performing supply chain teams, and the supply chain function is integrated with the firm itself within high performing supply chains. Closely related to process engineering is the construct of standardization, and high performing supply chain teams indicated that product quality and process quality are important within their role to a greater extent than in low to moderately performing supply chains, as are processes that are standard across geographic sites within their firm.

Within the construct of value to stakeholders, for high performing supply chain teams, SCM is considered an income generator at their firm and teams know how their role within SCM creates value for stakeholders more so than moderately performing supply chains. Also, within the construct of sustainability, high performing supply chains noted the discipline of supply chain management creates stakeholder value more than is done from low to moderately performing supply chains.

Additionally, high performing supply chain team members believe they have the ability to influence their company through their role within supply chain management more so than moderately performing supply chain teams. Lastly, high performing supply chain teams have processes that are more consistent and repeatable

Table 24. High Performing SC Teams vs. Moderately Performing SC Teams.

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension) 25% gap of high performing vs. moderately performing
Supply Chain Leadership	Vision	-The talent management process is a formal process in my company -A significant amount of time is dedicated to talent management at my company
	Strategic Orientation	-Top management supports our SCM strategy
	Mission Driven	-Leadership is more important than process in my SC team -Leadership is more important than process in our SCM strategy
	Strength of Culture	- During the hiring process, culture is discussed at my company - Teamwork is valued at my company
	Communication	-I am kept informed about SCM events by our leadership
Supply Chain Team Culture	Trust	- Trust is valued at my company - Organizational trust is evident in my company
	High Performance Culture	-Good performance is rewarded at my company
	Scientific Approach	-Most supply chain processes are developed with industrial engineering practices at my company

Table 24. (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension) 25% gap of high performing vs. moderately performing
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized functions in my company -SCM is a functionally integrated process in our company
Supply Chain Team Process Engineering	Standardization	-Product quality is stressed in my company - Most processes are standard across geographic sites in our company
Supply Chain Performance	Value to Stakeholders	- SCM is considered an income generator at my company - I know how my role within SCM creates value for the stakeholders of our company
	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company - Our SCM is a long-term value-contributor to our company

than those of moderately performing supply chain teams and believe their SCM is a long-term value-contributor to their firm.

Conversely, in several construct categories, the opposite existed, whereas low to moderately performing supply chain team occupied a 25% performance gap based on the survey responses from respondents. In some cases, the respondents' answers can be viewed as negative or as less than favorable regarding enlisting high supply chain performance.

Table 25. High Performing SC Teams vs. Moderately Performing SC Teams

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension) 25% gap of high performing vs. moderately performing
Supply Chain Leadership	Strategic Orientation	-SCM is more corporate driven in my company -During the hiring process, SCM is discussed at my company
	Vision	-SCM is considered a business enabler in my company
	Mission Driven	- Our leadership encourages cross-functional working relationships
	Collaborative	-Collaboration is valued in my organization - Our leadership encourages cross-functional working relationships
	Strength of Culture	-Our company culture is a priority for company leadership
Supply Chain Team Process Engineering	Lean Tools Utilized	-Lean manufacturing is practiced at my company

Within the construct of strategic orientation, within moderately performing supply chain teams, tends to be more corporately driven than the high performing teams. In addition, during the hiring process of moderately performing supply chains teams, their supply chain management process is discussed and focused on more substantially than it is for high performing supply chain teams. Within the construct of vision and mission driven, SCM is considered a business enabler in their firm, and their leadership encourages cross-functional working relationships more so than in high performing supply chain teams.

Within the construct of collaboration, moderately performing supply chain teams encourage cross-functional working relationships, and collaboration is valued more so than in high performing supply chain teams. Regarding the cultural construct, moderately performing supply chain teams indicate culture is critical to their firm, more so than those of high performing supply chain teams.

Lastly, regarding the construct of lean tools, moderately performing supply chain teams indicated that they practice using lean manufacturing tools at a 25% greater extent than high performing supply chain teams.

Validity Concerns

Construct Validity

The evidence supported P1, but some construct validity issues were addressed as a variation in firm performance was introduced into the study sample. Both high performing and moderately performing supply chains (as per the measurements in Table 20) and sufficient differences existed as to draw distinctions from the sample data. The archival data exhibited a sufficient spread between high-performing and low to moderately performing supply chains. A greater spread of firm performance was identified with sufficient gaps in performance since the pilot study was completed.

Internal Validity

Testing the cause and effect relationship between firm similarities, culture, supply chain culture, and leadership bias satisfied the internal validity measurement of the study. The interview and survey data supported P1 and. Additionally, the archival data demonstrated a sufficient spread between high and low to moderately performing supply chains. A greater spread of firm performance was identified and alternate firms were selected as a result of the pilot study.

External Validity

External validity was supported, proven and validated for P1, as the study findings are generalizable to the greater global supply chain network or to other disciplines. Survey data and interviews supported P2. The archival data demonstrated a sufficient spread between high and low-performing supply chains. A greater spread of firm performance was identified, increasing the firm size from three to six. A greater spread in firm performance was also selected since the pilot study was conducted.

Reliability

Although surveys and interviews consistently supported P2, measurement supported P1, indicating that the reliability of the survey instruments and archival data was strengthened since the pilot study. Interview and survey questions addressed the deficiencies associated with P1.

Summary

A clear and distinct pattern emerged during my comparing and contrasting of the survey results from the constituency groups of both high and moderately performing supply chain teams: in key critical areas, the aggregated high performing supply chain team consistently rated higher almost universally across most categories.

General and significant themes emerged from the research regardless of high performing or moderately performing supply chain teams. These themes are as follows: Communication and talent management are considered critical. Additionally, collaboration, cross- functional relationships, and culture are considered important at all the firms. Common foci include high expectations, performance, and customer service. Regarding the supply chain in particular, it is functionally integrated, practices a lean manufacturing, is corporately driven, and believes the supply chain creates firm value.

Conversely, negative patterns of detracting leadership affecting culture also emerged. Among the negative leadership detractors included, personal agendas, being disconnected, and the lack of building relationships within the firm were considered leadership detractors.

In summary, using a survey investigation methodology, senior executive interviews, and archival data, the study substantiated the claim that the highest performing supply chains leverage a strong winning culture designed and executed by leadership. Moreover, a robust engineering process is critical to a firm's success and is moderated by leadership, but if both are considered in isolation, engineering itself is considered less critical than leadership. A successful result is improved team performance as measured by improvements in revenue, adjusted EPS, net income, the inventory turns, operating margin, and inventory turns. Evidence exist that supports most significant claim made: that leadership is more important than process within global supply chains.

CHAPTER 5

DISCUSSION, CONCLUSIONS, and RECOMMENDATIONS

Purpose of Study

The purpose of this study was to offer evidence through research that, when compared, leadership is more critical than process within the discipline of global supply chains. Although both leadership and process are important in their own right and can both have positive impacts on firm performance, leadership through cultural implications can have a greater impact than process. This research investigates how leadership influences the culture of a firm, and through cultural influence, firm performance is improved to a greater extent than through process.

Interpretations and Findings

The intent of this dissertation was to bring clarity to the following research question: What matters most within global supply chains, people or process? More specifically, the research question was further clarified through three propositions, as illustrated in Figure 1. As a result of an extensive literature review of high-performing supply chain teams and culture and highly engineered processes within SCM, it was determined that significant deficiencies exist in linking the success of a firm's supply chain leadership to culture and its impact on firm performance. This paper proposes that leadership's influence of culture more significantly creates high-performing supply chain teams, more so than a highly engineered process alone.

Through the investigation of three propositions, the results of this research indicated that leadership's influence on culture is more critical than process within global supply chains. Six senior executives were interviewed, and four substantially indicated leadership was more important than process. Additionally, the two executives who viewed process as more important did so with just over a 50% mark. Therefore, in the aggregate, the research indicated that people were deemed important than process. Moreover, the surveyed population, through a survey of supply chain executives with 55 questions, indicated that leadership is more important than process at a 65% rate. This research demonstrated that supply chain team culture is a powerful component of a firm's DNA, and leadership influences it. Even though SCM firms tend to be heavily engineering-focused and process-orientated, supply chain team culture can influence the firm more profoundly than a firm's SCM strategy, and both begin with supply chain leadership.

Supply Chain Culture as a Function of Leadership

P1: Supply chain team culture is a function of supply chain team leadership.

Within the current literature, limited evidence has strongly suggested that the cultural dimension of the firm is a downstream product of its supply chain leadership. However, evidence exists linking leadership to performance (Denison, 1984). Through the aforementioned triangulated research, data evidence closes the research gap, and P1 is supported.

Supply Chain Team Performance is Influenced by Supply Chain Team Culture

P2: Supply chain team performance is a function of a high-performing supply chain team culture.

As research has shown, teams that collaborate and leverage the cultural dimension in their supply chain, developing and influencing an environment conducive to the integration of knowledge, increase the probability of supply chain integration, thus creating firm value and improving firm performance (McAdam & McCormack, 2001). This research clearly indicated with a high degree of evidence that culture is critical to global supply chains, and at high performing supply chains, it is discussed as early as the hiring process and is strongly supported by firm leadership. As discussed, and as the findings from both the interviews and surveys demonstrate, evidence exists that firm culture is critical to firm success. Based on the triangulated research, P2 is supported.

Engineering Moderates Supply Chain Team Culture and Performance

P3: Supply chain team engineering moderates the relationship between supply chain team culture and supply chain team performance.

Supply chain integration, or managing the global supply chain as one entity verses a group of disaggregated units, allows firms to leverage their SCM strategy to create maximum value. Teams that collaborate and leverage the cultural dimension in their supply chain increase the probability of supply chain integration and of creating value and improving performance (McAdam & McCormack, 2001). Moreover, research has shown that a lean and strong engineering process creates firm value. Additionally, the best-value chains apply SCM to create value using "speed, cost, and flexibility" (Ketchen & Hult, 2007). Although this research supports exiting research regarding the relationship between strong engineering and firm performance, clearly as referenced in the supporting evidence of P1 and P2, a leadership-influenced culture is more important than process. With that said, the best performing supply chains exhibit high levels of leadership culture and process. This research provides evidence in the form of interviews, archival data, and surveys. Therefore, P3 is supported.

In summary, based on a thorough literature review, a noticeable gap was identified between supply chain leadership's influence on culture and culture's influence on supply chain team and firm performance, even within the highly engineered discipline of global supply chains. Moreover, through triangulated evidence, the research offers an answer to the overarching focus of this paper: that people matter more than process within the highly engineered discipline of global supply chains.

Limitations of the Study

Although the expanded study offered substantial evidence supporting all three propositions, and though the limitations from the pilot study were fully addressed, noticeably deficient considerations still exist. To increase the generalizability of future studies, listed below are suggested ways to strengthen the study to an even greater extent.

This expanded study was doubled in size from three firms to six firms, but an even larger sample would increase the study's external validity. Moreover, there was a large disparity in firm size, with the sample having a represented population of small, mid- and large capitalized firms. Increasing the sample size, and specifically doing so within a similar firm size, might offer a new perspective and strengthen the study.

Additionally, all firms were United States centric, global in their reach, and conducted business in multiple countries, but the countries and even continents were not all consistent. With that said, there were clear and distinct similarities have done business in many of the same countries, but not the same. Moreover, firms had less in common with their peer group than in common. The study could potentially be strengthened by more closely grouping the similarities of countries where business is conducted.

The expanded study was certainly strengthened by adding firms that had a wider performance gap, as compared to the pilot study. Nonetheless, a future study could be strengthen by widening the firm performance to an even greater extent. Also, an additional metric was added to the expanded study as compared to the pilot study. However, more could be added to further increase the strength of the study. An increase sample size of survey respondents and interview respondents was added from the pilot study to the expanded study, but adding additional firms, surveys, and interview respondents could benefit a future study.

There were a reasonable numbers of similarities in regard to firm descriptions, with most being B2C firms. To further strengthen future studies, all firms could be alike in regard to their core customers, such as either B2B or B2C. Additionally, all of the firms were integrated supply chains, but only some of them were heavily capital intensive. Future studies could be specific to either highly or moderately capital intensive.

In summary, all noted and learned deficiencies from the pilot study were successfully included in this expanded study. With that said, most studies can be improved, especially those early in the expansion of limited knowledge, and such is the case with this study. I hope that future studies will consider the noted limitations of this research.

Recommendations

Evidence exists that this dissertation work has clearly improved the demonstrated gap that leadership influences culture in the highly engineered discipline of supply chains management, and people can have impact on firm performance more so than process. This research offers a significant theoretical contribution to supply chain leadership research. Additionally, as indicated within the section outlining the limitations of the study, it is possible to further add to the study by expanding this research and perhaps strengthening the research or adding additional perspectives.

Future research should consider increasing the sample size to a minimum of ten firms to increase the validity of the study. Additionally, selecting more specific and narrower aspects of leadership's influence on culture and firm performance should be strongly considered. A few suggestions might be to isolate the study to one continent only or, even more granularly, to one nation. Doing so might offer new insights as compared to the findings of this research. Moreover, the study could investigate a lone industry instead multi-industries focused on in this research. Also, the study could be expanded beyond the integrated supply chain, specifically within the manufacturing B2B group. Perhaps it could be expanded to an area such as the hospitability industry. Within service firms, there are often opportunities to deploy lean manufacturing and engineered principles. Therefore, the newly created knowledge can be leveraged well beyond the traditional global supply chain space.

Further, expanding the study into more granularly, another possibility to offer additionally research could be to focus more so on in terms of what did not work with global supply chains. Moreover, the failing attributes of firms could be specifically examined. Firms with global supply chains that have filed bankruptcy could be further studied, as was done with the framework in this study. As already noted, there are numerous opportunities to extend this research into other specific areas.

Conversely, and equally significant, are opportunities to improve the study by building on its foundational successes. A worthy study could more deeply explore the “why” behind people being more important within the global supply chain. In other words, a future study could apply the same research question but from a human resources perspective, thus affording an understanding of the psychological and sociological aspect of leadership and culture through the global supply chain. By extending the research question to other disciplines, additional knowledge creation might occur for the disciplines and, new insights might be discovered that offer additional benefits to the discipline of global supply chains.

Implications for Academic Research

Since a gap within the academic literature existed within the context of leadership’s influence of the culture of global supply chain teams, ample opportunity exists to conduct additional academic research within this discipline.

As pervious mentioned, although sufficient evidence exist to support the propositions as outlined within the expanded study, nonetheless, from an academic validity perspective, increased firm size with the same study would lend credibility to the generalizability of the research. Moreover, during the expanded study, within the survey data of both moderately and high performing supply chain teams, both agree and strongly agree and disagree and strongly disagree were categorized together. Since survey results indicated respondents answered the some questions in all categories, future academic research could study more deeply why there are degrees of such responses, the motivations, and the downstream results of practices and beliefs.

Additionally, and as a result of the evidence gathered from the expanded study, clearly the moderating variable, engineering and process, can have an impact on the degree of firm performance. Another avenue of research expanding on the knowledge created from the expanded study might consider the implications and severity of impact the moderating variable, engineering and process. Specifically, increasing or decreasing the influence of engineering and process on supply chain culture as influenced by supply china leadership, would have what impact and what outcome?

Naturally as the future studies are conducted and are additive to the knowledge created as a result of this research, more ideas for future academic research will surface and be presented as opportunities to increase the knowledge-base of supply chain's leadership on culture and culture's influence on firm performance.

Conclusions

The research investigated specific leadership and cultural attributes of supply chain teams that enable the transformation of a firm's working supply chain into a high-performing supply chain, or into a higher performing supply chain than it currently is operating as, thereby increasing overall firm value. The findings of the research indicate that throughout global supply chains, the practice of leadership, as it influences culture, is considered more impactful and value creating than the practice of process. Specifically, this paper proposes that culture creates high-performing supply chain teams more so than a highly engineered process alone.

Through the previously stated propositions, a new contribution emerged in successfully navigating culture, thus offering new insight into the attributes necessary to build high-performing teams, germane to high-performing supply chain teams. This research demonstrated that a firm's performance can be improved with a deliberate and focused SCM strategy. Most importantly, this research proved that the highest performing SCM teams integrate highly engineered processes with team leadership to enable a high-performing culture.

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Firm C, FORM 10-K Overview, Investor Relations, For the Fiscal Year Ended December 31, 2015, October, 2016.

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APPENDIX LETTERS AND TITLES

APPENDIX A

SELECTED FINANCIAL DATA FROM AMAZON.COM

Item 6. ***Selected Consolidated Financial Data***

The following selected consolidated financial data should be read in conjunction with the consolidated financial statements and the notes thereto in Item 8 of Part II, "Financial Statements and Supplementary Data," and the information contained in Item 7 of Part II, "Management's Discussion and Analysis of Financial Condition and Results of Operations." Historical results are not necessarily indicative of future results.

	Year Ended December 31,				
	2015	2014	2013	2012	2011
	(in millions, except per share data)				
Statements of Operations:					
Net sales	$ 107,006	$ 88,988	$ 74,452	$ 61,093	$ 48,077
Income from operations	$ 2,233	$ 178	$ 745	$ 676	$ 862
Net income (loss)	$ 596	$ (241)	$ 274	$ (39)	$ 631
Basic earnings per share (1)	$ 1.28	$ (0.52)	$ 0.60	$ (0.09)	$ 1.39
Diluted earnings per share (1)	$ 1.25	$ (0.52)	$ 0.59	$ (0.09)	$ 1.37
Weighted-average shares used in computation of earnings per share:					
Basic	467	462	457	453	453
Diluted	477	462	465	453	461
Statements of Cash Flows:					
Net cash provided by (used in) operating activities	$ 11,920	$ 6,842	$ 5,475	$ 4,180	$ 3,903

	December 31,				
	2015	2014	2013	2012	2011
	(in millions)				
Balance Sheets:					
Total assets	$ 65,444	$ 54,505	$ 40,159	$ 32,555	$ 25,278
Total long-term obligations	$ 18,161	$ 15,675	$ 7,433	$ 5,361	$ 2,625

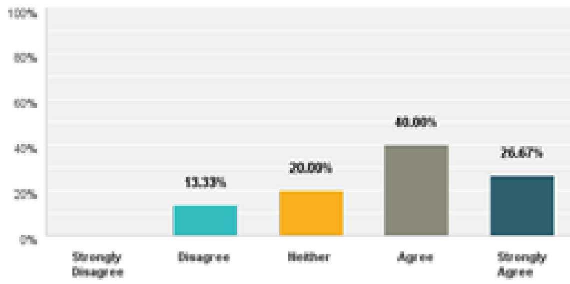
(1) For further discussion of earnings per share, see Item 8 of Part II, "Financial Statements and Supplementary Data—Note 1—Description of Business and Accounting Policies."

APPENDIX B

SAMPLE OF SURVEY QUESTIONS AND HISTOGRAM

Q2: The talent management process is a formal process in my company.

Answered: 15 Skipped: 0



Powered by SurveyMonkey

Q2: The talent management process is a formal process in my company.

Answered: 23 Skipped: 0

Answer Choices	Responses	
Strongly Disagree	0.00%	0
Disagree	8.70%	2
Neither	17.39%	4
Agree	39.13%	9
Strongly Agree	34.78%	8
Total		**23**

Powered by SurveyMonkey

APPENDIX C

SURVEY QUESTIONS FOR EXPANDED STUDY

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)
Using a 5-Point Likert Scale For Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree
Supply Chain Leadership	Vision	-Our people knows what our company stands for -Talent management process is a formal process in my company -A significant amount of time is dedicated to talent management at my company -SCM is considered a business enabler in my company
	Strategic Orientation	-SCM is more corporate driven in my company -SCM is more locally driven in my company -Top management supports our SCM strategy -During the hiring process, SCM is discussed at my company
	Mission Driven	-Leadership is more important than process in my firm -Leadership is more important than process in our SCM strategy -Our leadership has high performance expectations -Our leadership encourages cross-functional working relationships -Our leadership has high performance expectations
	Collaborative	-Collaboration is valued in my organization -SCM teams collaborate well -Our leadership encourages cross-functional working relationships
	Strength of Culture	-During the hiring process, culture is discussed at my company -Culture is critical to the SCM strategy in my company -Our company culture is a priority to our company leadership -Autonomy is encouraged -Teamwork is valued at my company
Supply Chain Team Culture	Communication	-Working in teams is valued in my organization -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team in general, feels valued at our company -Organizational trust is evident in my company

APPENDIX C. (continued)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with Dimension)**
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain process are developed with industrial engineering practices at my company
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized in my company -Autonomous operations are more normal vs standardization in our company -SCM is a functionally integrated process in our company
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -It is a practice to do lean manufacturing training at our company -It is common to use Six Sigma training at our company
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor SCM performance at my company -SCM is considered an income generator at my company -I know how my role within SMC creates value for stakeholders of our company
	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company -Our SCM is a long-term value-contributor to our company

APPENDIX D

SEMI-STRUCTURED QUESTIONS FOR EXPANDED STUDY

Model Construct	**Semi-Structured Interview Questions**
Supply Chain Leadership	-Are you a consumer products company (B2C) or business to business (B2B) company? -What size is your firm? -Is your firm more global or domestic regarding its markets? -What top leadership attributes, in your opinion, most impact your firm's performance? -What top leadership detractors, in your opinion, diminish firm performance? -What are the pillars of SCM strategy? -Do you consider leadership or process more important, and why? -Average wage of hourly employees? -At, above, or below market for professional mangers?
Supply Chain Team Culture	-What top leadership attributes, in your opinion, most impact your SC team's performance? -What top leadership detractors, in your opinion, diminish SC team performance? -Describe your firm's culture. -Describe your SCM culture.
Supply Chain Team Process Engineering	-How frequently do you meet on SCM issues? -How much time is dedicated to SCM issues? -What are the pillars of SCM strategy? -To what extent does your company practice lean principals within your supply chain? -How long has your company practiced a SCM strategy? -How long has your company practiced a lean manufacturing strategy? -Do you consider leadership or process more important, and why? -Describe your SCM process.
Supply Chain Performance	-Define your objective measures of success? -What imperatives were must haves to deliver the SC team's success? -Was there one particular attribute/item that more impact than the other, what was it? -Length of time it has taken to for your SCM strategy to generate firm acceptable value?

APPENDIX E

ALL SURVEY RESPONDENTS (AGREE/STRONGLY AGREE)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with dimension)**	**Agree or Strongly Agree**
Using a 5-Point Likert Scale For Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree	
Supply Chain Leadership	Vision	-Our people know what our company stands for	100%
		-The talent management process is a formal process in my company	73.9%
		-A significant amount of time is dedicated to talent management at my company	73.9%
		-SCM is considered a business enabler in my company	78.3%
	Strategic Orientation	-SCM is more corporate driven in my company	70.6%
		-SCM is more locally driven in my company	26.1%
		-Top management supports our SCM strategy	86.9%
		-During the hiring process, SCM is discussed at my company	73.9%
	Mission Driven	-Leadership is more important than process in my SC team	65.2%
		-Leadership is more important than process in our SCM strategy	60.9%
		-Our leadership has high performance expectations	91.3%
		-Our leadership encourages cross-functional working relationships	95.6%
		-Our leadership has high performance expectations	100%

APPENDIX E (continued)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with dimension)**	**Agree or Strongly Agree**
	Collaborative	-Collaboration is valued in my SC team -SCM teams collaborate well -Our leadership encourages cross-functional working relationships	87% 82.5% 91.3%
	Strength of Culture	-During the hiring process, culture is discussed at my company -Culture is critical to the SCM strategy in my company -Our company culture is a priority for our company leadership -Autonomy is encouraged -Teamwork is valued at my company	91.3% 100% 78.3% 43.5% 95.6%
Supply Chain Team Culture	Communication	-Working in teams is valued in my SC -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes	95.6% 86.9% 73.9% 52.2%
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team, in general, feels valued at our company -Team trust is evident in my SC	95.6% 91.3% 73.9% 65.3%

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with dimension)	Agree or Strongly Agree
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company	82.6% 91.3% 73.9%
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company	100% 91.3% 78.3%
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain process are developed with industrial engineering practices at my company	34.8%
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized functions in my company -Autonomous operations are more normal vs. standardization in our company -SCM is a functionally integrated process in our company	69.6% 30.4% 86.9%
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role	39.1% 39.1% 95.6% 91.3%

APPENDIX E (continued)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with dimension)**	**Agree or Strongly Agree**
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -Lean manufacturing training is a common practice at our company -It is common to use Six Sigma training at our company	100% 91.3% 39.1%
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor SCM performance at my company -SCM is considered an income generator at my company -I know how my role within SMC creates value for stakeholders of our company	100% 95.6% 82.6% 65.2% 95.2%
	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company -Our SCM is a long-term value-contributor to our company	61.1% 95.6% 95.6% 95.6%

APPENDIX F

ALL SURVEY RESPONDENTS (STRONGLY DISAGREE/DISAGREE)

Model Constructs	**Dimensions of Constructs**	**Measures (specific scales, questions, metrics, etc., associated with Dimension)**	**Disagree or Strongly Disagree**
Using a 5-Point Likert Scale For Ratings		Strongly Disagree, Disagree, Neither, Agree, Strongly Agree	
Supply Chain Leadership	Vision	-Our people know what our company stands for	0%
		-Talent management process is a formal process in my company	8.7%
		-A significant amount of time is dedicated to talent management at my company	17.4%
		-SCM is considered a business enabler in my company	8.7%
	Strategic Orientation	-SCM is more corporate driven in my company	17.4%
		-SCM is more locally driven in my company	47.8%
		-Top management supports our SCM strategy	0%
		-During the hiring process, SCM is discussed at my company	13.1%
	Mission Driven	-Leadership is more important than process in my SC team	8.7%
		-Leadership is more important than process in our SCM strategy	8.7%
		-Our leadership has high performance expectations	0%
		-Our leadership encourages cross-functional working relationships	0%
		-Our leadership has high performance expectations	0%

APPENDIX F (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)	Disagree or Strongly Disagree
	Collaborative	-Collaboration is valued in my SC team -SCM teams collaborate well -Our leadership encourages cross-functional working relationships	4.4% 8.7% 0%
	Strength of Culture	-During the hiring process, culture is discussed at my company -Culture is critical to the SCM strategy in my company -Our company culture is a priority to our company leadership -Autonomy is encouraged	4.4% 0% 13.1% 21.7%
		-Teamwork is valued at my company	0%
Supply Chain Team Culture	Communication	-Working in teams is valued in my SC -I am kept informed about SCM events by our leadership -I am kept informed about events at our company at large -Our company purposefully attempts to have knowledge transfer systems built in our processes	0% 0% 8.7% 39.1%
	Trust	-Trust is valued at my company -I feel valued at my company -The SCM team in general, feels valued at our company -Team trust is evident in my SC	0% 0% 17.4% 4.4%

APPENDIX F (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)	Disagree or Strongly Disagree
	Customer Centric	-Customer service is a focus at my company -We measure SCM customer service at my company -We consider internal and external customer service at my company	8.7% 4.4% 17.4%
	High Performance Culture	-Performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor performance at my company	0% 4.4% 4.4%
Supply Chain Team Process Engineering	Scientific Approach	-Most supply chain process are developed with industrial engineering practices at my company	30.4%
	Workflow Integration	-Centralized functions are more prevalent vs. decentralized in my company -Autonomous operations are more normal vs standardization in our company -SCM is a functionally integrated process in our company	8.7% 30.4% 8.7%
	Standardization	-Most business processes are standard and similar at our company -Most processes are standard across geographic sites at our company -Product quality is stressed in my company -Process quality is important in my role	43.5% 39.1% 0% 4.4%

APPENDIX F (continued)

Model Constructs	Dimensions of Constructs	Measures (specific scales, questions, metrics, etc., associated with Dimension)	Disagree or Strongly Disagree
	Lean Tools Utilized	-Lean manufacturing is practiced at my company -It is a practice to do lean manufacturing training at our company -It is common to use Six Sigma training at our company	0% 8.7% 43.5%
Supply Chain Performance	Value to Stakeholders	-SCM performance is measured at my company -Good performance is rewarded at my company -There are consequences for poor SCM performance at my company -SCM is considered an income generator at my company -I know how my role within SMC creates value for stakeholders of our company	0% 4.4% 0% 26.1% 0%
	Sustainable	-Our SCM business processes are consistent and repeatable -I have the ability to influence my company with my role within SCM -SCM creates stakeholder value in our company -Our SCM is a long-term value-contributor to our company	26.1% 0% 0% 0%