



THE IMPACT OF SUPPLY CHAIN MANAGEMENT BUSINESS PROCESSES ON  
COMPETITIVE ADVANTAGE AND ORGANIZATIONAL PERFORMANCE

THESIS

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AFIT/LSCM/ENS/12-14

**DEPARTMENT OF THE AIR FORCE  
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THESIS

Presented to the Faculty

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In Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Logistics and Supply Chain Management

John F. Perry II, BS

Captain, USAF

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### **Abstract**

Organizational performance has routinely been viewed through a limited scope primarily focused on functions, practices, and resources directly controlled by the focal organization, but supply chain management (SCM) has broadened this scope to incorporate all organizations along the supply chain. This shifted the notion of competition from that of between individual organizations to between supply chains. Supply chain management is an ever growing field; multiple SCM frameworks exist today and are being further developed and defined.

Successful firms must reside on the leading edge of management techniques, theories, and practices in order to stay competitive in an ever growing, more constrained, increasingly diverse, and rapidly changing global economy. Supply chain management is at the forefront of such management techniques, theories, and practices. Supply chains vary from firm to firm and from industry to industry. Firms have limited resources and a desire to know if the development and implementation of SCM within their firm is, in fact, going to equate to enhanced organizational performance and competitive advantage.

This thesis conceptualized and measured three of the eight key business processes (customer relationship management (CRM), order fulfillment (OF), and returns management (RM)) across the supply chain according to The Global Supply Chain Forum framework. Do these key business processes lead to increased firm performance and a competitive advantage? This thesis developed a survey and collected data from private organizations and, through statistical analysis, measured the strategic development of the CRM, OF, and RM processes of organizations and their relationship to competitive advantage and organizational performance. The results of this thesis

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found each of the processes were positively related to competitive advantage and organizational performance. The results will serve as value to both academics and practitioners by expanding existing SCM literature and provide firms with a deeper understanding of how SCM business processes truly measure up.

*This thesis is dedicated to my amazing wife, whose optimism, support, understanding, and love made this journey possible. This thesis is also dedicated to my son, who serves as a constant inspiration in my life and reminder of just how blessed my wife and I are.*

## **Acknowledgments**

I would first like to express my sincere appreciation to my faculty advisor, Dr. William Cunningham III, for his honesty, patience, and mentorship from the beginning of my AFIT career through the completion of this thesis. His expertise and charisma made this endeavor an experience I will always cherish. I would also like to thank my committee members, Lt Col Sharon Heilmann and Maj Dan Mattioda, for sharing their knowledge, insights, and recommendations that were critical to the completion of this thesis. I couldn't have asked for a better committee; they were invaluable. I would also like to thank Lt Col Joseph Skipper for sharing his enthralling vision of supply chain management which served as the catalyst for this research. I am also extremely grateful for not only having Lt Col Sharon Heilmann on my committee but also as my academic advisor. She made this program an extraordinary experience I will always be grateful for.

John F. Perry II

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# **THE IMPACT OF SUPPLY CHAIN MANAGEMENT BUSINESS PROCESSES ON COMPETITIVE ADVANTAGE AND ORGANIZATIONAL PERFORMANCE**

## **I. Introduction**

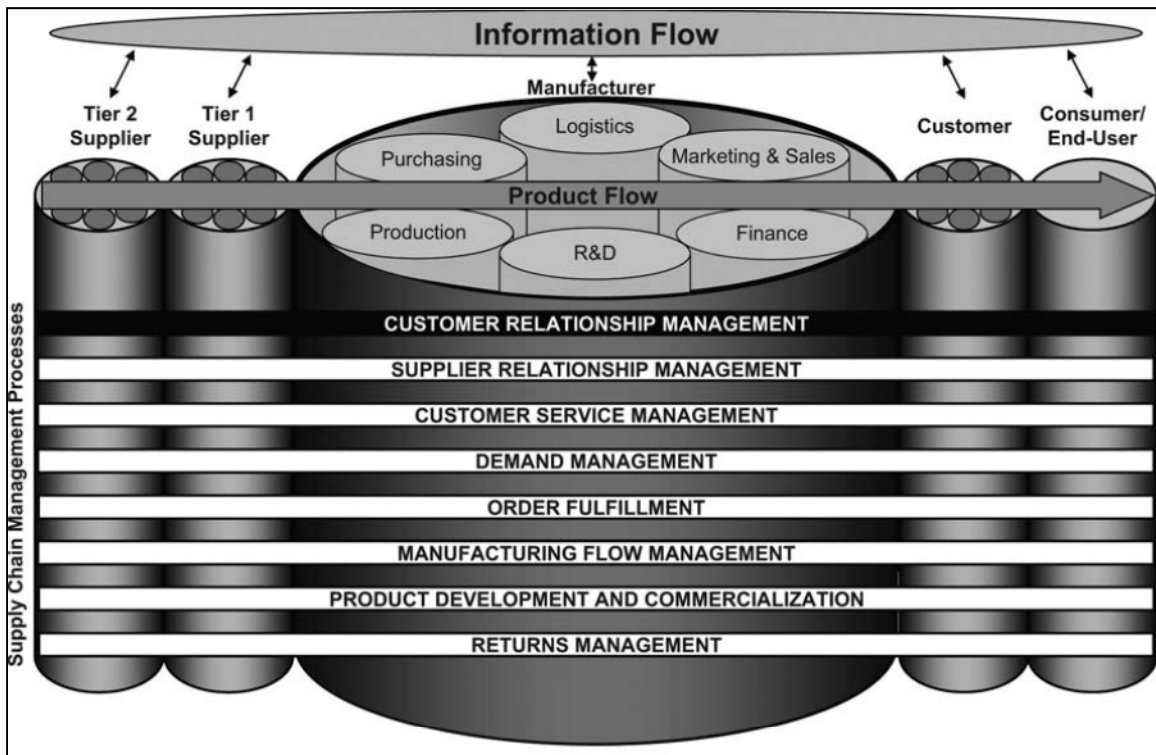
Supply chain management (SCM) involves not only the integration of key business processes within the organization but also the integration of these processes throughout the entire supply chain (Croxton, Garcia-Dastugue, Lambert, & Rogers, 2001). “Leading-edge companies have realized that the real competition is not company against company, but rather supply chain against supply chain” (Cooper, Lambert, & Pagh, 1997: 3). Given this approach to organizational success and competition, SCM may present a key opportunity for organizations to enhance performance and establish a competitive advantage.

This thesis used the definition of SCM as defined by the Global Supply Chain Forum (GSCF). “The GSCF, a group of non-competing firms and a team of academic researchers, has been meeting regularly since 1992 with the objective to improve the theory and practice of SCM” (Lambert, 2008: 2). According to the GSCF, “supply chain management is the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for the customers and other stakeholders” (Lambert, Cooper, & Pagh, 1998: 1).

The GSCF defines eight key SCM business processes. Fully implementing each of the eight processes at once may prove to be difficult and challenging but, may also be necessary in an attempt to avoid sub-optimization (Lambert, Garcia-Dastugue, & Croxton, 2005). This research will delve deeper into the implications of implementing three of the eight processes. Determining the potential impacts of implementing any one

or all of the eight processes may prove to serve great value to the field of SCM by further developing a way ahead for SCM implementation. The customer relationship management (CRM), order fulfillment (OF), and returns management (RM) process share distinct relationships and may be able to enhance organizational performance when implemented individually or together. Measuring competitive advantage and organizational performance associated with the development of these processes is a necessary component and step toward capturing the potential benefits SCM may have on the organization.

The eight key processes identified and depicted in Figure 1 run along the entire supply chain, within and across firms, in cooperation with the six functions: purchasing, logistics, marketing & sales, production, research and development, and finance (Croxtton et al., 2001).



**Figure 1. Supply Chain Management (Lambert, 2010: 5)**

Lambert lists and briefly describes each of the supply chain management processes:

- Customer Relationship Management – provides the structure for how relationships with customers are developed and maintained. Cross-functional customer teams tailor product and service agreements to meet the needs of key accounts, and segments of the other customers.
- Customer Service Management – provides the firm’s face to the customer, a single source of customer information, and the key point of contact for administering the product service agreements.
- Demand Management – provides the structure for balancing the customers’ requirements with supply chain capabilities, including reducing demand variability and increasing supply chain flexibility.
- Order Fulfillment – includes all activities necessary to define customer requirements, design a network, and enable the firm to meet customer requests while minimizing the total delivered cost.
- Manufacturing Flow Management – includes all activities necessary to obtain, implement and manage manufacturing flexibility and move products through the plants in the supply chain.
- Supplier Relationship Management – provides the structure for how relationships with suppliers are developed and maintained. Cross-functional teams tailor product and service agreements with key suppliers.
- Product Development and Commercialization – provides the structure for developing and bringing to market products jointly with customers and suppliers.

- Returns Management – includes all activities related to returns, reverse logistics, gatekeeping, and avoidance (Lambert, Garcia-Dastugue, & Croxton, 2005: 28).

Each of the key processes has sub-processes at the strategic and operational level that are inherent to that process, but these sub-processes are also where interfaces amongst the key processes occur (Croxton et al., 2001). Analysis of these interfaces can lead to an evaluation of the level and strength of the relationships between the key processes. The strategic level is primarily focused on establishing, managing and providing implementation guidance for the process as opposed to the operational level, which “is the actualization of the process once it has been established” (Croxton et al., 2001: 15).

While the GSCF has developed and defined eight key business processes to be developed and implemented within and throughout the supply chain, this research will specifically focus on the extent to which the strategic development of the CRM, OF, and RM processes impact competitive advantage and organizational performance. With a growing level of theoretical and practical importance, SCM has proven to be a pillar in today’s competitive global market and this research will provide a clearer understanding of how specific processes comprising SCM contribute to organizations in pursuit of establishing a competitive edge and enhancing performance.

## **II. Literature Review**

The purpose of this section is to briefly introduce and provide a recent history of supply chain management (SCM) and customer relationship management (CRM), order fulfillment (OF), returns management (RM), competitive advantage, and organizational performance as it relates to literature that has significantly contributed to the field of SCM. A review of the literature will provide the foundation for the research model developed and hypotheses evaluated in this thesis.

### ***Supply Chain Management***

SCM is a widely recognized and steadily growing multidisciplinary field. A wide variety of studies have developed and contributed to the evolving foundation of supply chain management continually over the last 20 years (Cavinato, 1991; Cooper & Ellram, 1993; Croxton et al., 2001; Lambert, Cooper, & Pagh, 1998; Lambert, 2008; Li, Rao, Ragu-Nathan, & Ragu-Nathan, 2005; Mentzer, DeWitt, Keebler, Min, Nix, Smith, & Zacharia, 2001). The theoretical and practical importance of the management of the supply chain has been widely recognized through numerous studies (Cavinato, 1991; Cooper & Ellram, 1993; Tan, Kannan, & Handfield, 1998).

"A supply chain is defined as a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer" (Mentzer et al., 2001: 4).

Mentzer et al. (2001) investigated the numerous definitions and approaches to supply chain management throughout history and stated that, "it is important to realize that implicit with these definitions is the fact that supply chains exist whether they are managed or not" (4).

SCM has often been associated with logistics. Associations include supply chain management as a subset of logistics, logistics as a subset of SCM, logistics and SCM as interchangeable, and logistics and SCM partially overlapping (Larson, Poist, & Halldorsson, 2007). Larson et al. (2007) studied the confusion that stems from this distinction among business executives through a survey. Croxton et al. (2001) contend that there is an increasing understanding that SCM encompasses much more than logistics. Cooper et al. (1997) further addressed the notion that SCM has a much larger scope than logistics and that logistics along with other business processes are subsumed by SCM. Cooper et al. (1997) emphasized this philosophy by stating, “logistics is never going to own the product development process or the customer for the matter” (11). This research identified logistics as a business function identified by the Global Supply Chain Forum (GSCF) framework (Lambert, 2008).

Firms that are going to be successful already know or must quickly realize that in today’s fast paced and interconnected business environment infused with mass globalization a firm will not survive in isolation but rather a single entity of an integrated supply chain (Tan, Kannan, Handfield, & Ghosh, 1999). Researchers have consistently acknowledged that today’s business environment is no longer reflective of firm versus firm but has progressed to that of supply chain versus supply chain (Cooper & Ellram, 1993; Cooper, Lambert & Pagh, 1997; Mentzer et al., 2001). Cooper and Ellram’s (1993) study provided insight into the difficult transition from a traditional firm versus firm perspective to a supply chain versus supply chain perspective and provided comparisons between the more traditional approach and a supply chain philosophy. Several conditions must be present for successful SCM adoption; “the single most

important prerequisite is a change in the corporate cultures of all members of the supply chain" (Tan, Kannan, & Handfield, 1998: 4). Cooper and Ellram (1993) identified three reasons to form supply chains: "1) to reduce inventory investment in the chain, 2) to increase customer service, and 3) to help build a competitive advantage for the channel" (14).

The implicit existence of supply chains highlights the need for firms to not only acknowledge upstream and downstream business entities but to also build sustainable and mutually beneficial relationships with their upstream and downstream partners (Frohlich & Westbrook, 2001; Lambert, Knemeyer, & Gardner, 2004). Frohlich and Westbrook (2001) found a positive relationship between a firm's rate of performance improvement and the level of integration between the firm and the firm's suppliers and customers. This leads to another significantly addressed theory from SCM literature; practitioners and academicians alike agree that supply chain management is a means to create and sustain a competitive advantage and enhance organizational performance for the firm and for the entire supply chain (Cooper, Lambert, & Pagh, 1997; Lambert, Knemeyer, & Gardner, 2004; Li et al., 2005; Mentzer et al., 2001; Tan, Kannan & Handfield, 1998; Tan et al., 1999).

The field of SCM is continually being recognized as an essential field of study through academic research and by practitioners from a wide variety of disciplines and perspectives. The literature on supply chain management continues to grow as a result, but the definition of "supply chain management" is not consistent. SCM literature openly acknowledges the different definitions of "supply chain management" that exist (Chen & Paulraj, 2004; Croom, Romano, & Giannakis, 2000; Larson, Poist, & Halldorsson, 2007;

Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006; Mentzer et al., 2001). "Although research interests in and the importance of SCM are growing, scholarly materials remain scattered and disjointed, and no research has been directed towards a systematic identification of the core initiatives and constructs involved in SCM " (Chen & Paulraj, 2004: 131). The literary and practical inconsistency in defining "supply chain management" may serve as an impediment to the advancement of the field of SCM (Mentzer et al., 2001). A sample of the definitions of SCM used in the literature is provided in Table 1. This research used Lambert et al.'s (1998) definition of SCM: "supply chain management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders" (1).

**Table 1. Sample of Supply Chain Management Definitions**

<b>Sample of Supply Chain Management Definitions</b>	
<b>Authors</b>	<b>Definition</b>
(Cooper & Ellram, 1993: 13)	Supply chain management is defined as an integrative philosophy to manage the total flow of a distribution channel from the supplier to the ultimate user.
(Mentzer et al., 2001: 18)	Supply chain management is defined as the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.
(Tan, Kannan, & Handfield, 1998: 3)	Supply chain management encompasses materials/supply management from the supply of basic raw materials to final product (and possible recycling or re-use). SCM focuses on how firms utilize their suppliers' processes, technology, and capability to enhance competitive advantage. It is a management philosophy that extends traditional intra-enterprise activities by bringing trading partners together with a common goal of optimization and efficiency.

There is also limited agreement and understanding on how to measure the performance of the supply chain; measuring the performance of the supply chain is difficult (Chen & Paulraj, 2004; Gunasekaran & Kobu, 2007; Lambert & Pohlen, 2001). Lambert and Pohlen (2001) suggest that, "many measures identified as supply chain metrics are actually measures of internal logistics operations as opposed to measures of supply chain management" (2). Developing functional SCM performance measures is still in the early stages. The consequences of failing to adequately measure supply chain performance are clearly addressed by Lambert and Pohlen (2001) and Gunasekaran and Kobu (2007). Consequences identified in Lambert and Pohlen's (2001) study included a firm's "failure to meet consumer/end user expectations, sub-optimization of departmental or company performance, missed opportunities to outperform the competition, and conflict with the supply chain" (1).

Similar to a limited consensus on the definition of SCM is the fact that a variety of SCM frameworks have been introduced and evaluated in SCM literature (Croxton et al., 2001; Lambert, Garcia-Dastugue, & Croxton, 2005; Li et al., 2006; Supply Chain Council, Inc, 2010; Tan, Kannan, & Handfield, 1998). The different frameworks primarily differ in the number of and definition of the primary/key practices/processes included but many of the activities are similar. This study used the GSCF's SCM framework which identifies and defines eight key business processes: CRM, customer service management, demand management, OF, manufacturing flow management, supplier relationship management, product development and commercialization, and RM (Croxton et al., 2001). This framework also identifies six typical functions: marketing,

research and development, logistics, production, purchasing, finance (Croxton et al., 2001).

Tan et al. (1998) and Li et al. (2006) explored the relationship between SCM practices, firm performance, and competitive advantage. Li et al.'s (2006) research supported their hypotheses: 1) firms with high levels of SCM practices will have high levels of organizational performance and 2) firms with high levels of supply chain management practices will have high levels of competitive advantage. Li et al.'s (2006) study took an aggregate approach to evaluate supply chain management practices, whereas, Tan et al.'s (1998) study tested the relationship between specific SCM practices, supplier performance, and firm performance.

### ***Customer Relationship Management***

The phenomena of managing relationships with customers is unanimously recognized as an essential component to an organization and has become increasingly popular amongst academicians and practitioners in a wide variety of academic fields and industries (Lambert, 2010; Payne & Frow, 2005; Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Scheffer, 2002; Sin, Tse, & Yim, 2005). This area of study is most often referred to as CRM. Although, the management of customer relationships is widely recognized as an essential component of an organization because of the expected benefits likely to occur if done well and the likely detriments to arise if neglected, the determination of what exactly constitutes CRM and its implementation remains to be a prominent point of contention in CRM literature and in practice has proven to be nothing short of extremely difficult (Payne & Frow, 2005; Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Scheffer, 2002; Sin, Tse, & Yim, 2005). The multiple definitions,

frameworks, and concepts of CRM that have been presented throughout the years may exacerbate the difficulty in determining what truly comprises CRM and its implementation but also reinforce the notion of its strategic importance.

It is universally understood that a successful firm has customers. With a shift from a brand-centric marketing approach towards a customer-centric approach (Mithas, Krishnan, & Fornell, 2005; Reinartz, Krafft, & Hoyer, 2004), the realization of how important customers are to a firm's success and that customers are not created equally, in terms of economic value, nor should be treated as such has driven the importance of recognizing CRM at the strategic level (Lambert, 2010; Payne & Frow, 2005; Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Schefter, 2002; Sin, Tse, & Yim, 2005).

"All customers do not contribute equally to the firm's success and the goal is to identify those customers who desire and deserve special treatment so that offerings can be tailored to meet their needs while achieving the firm's profit goals for the customer" (Lambert, 2010: 12). Reinartz et al. (2004) make a clear argument that the number of relationships a firm chooses to develop with customers is much less important than is the type of relationship the firm chooses to forge with selected customers and that these relationships can be expected to evolve and change over time. The desired type and profitability of customer relationships can vary across industries, companies, and between customers and if this is not considered firm's may expend resources to build relationships with the wrong customers or build the wrong type of relationship with the right customer (Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Schefter, 2002).

"For a business to maximize its long-term performance in such aspects as customer satisfaction, trust, return on sales, and return on investment, it must build,

maintain, and enhance long-term and mutually beneficial relationships with its target buyers" (Sin, Tse, & Yim, 2005: 1267). The idea of creating mutually beneficial relationships that create a win-win situation between the firm and the customer is a key factor of successful CRM (Boulding et al., 2005; Sin, Tse and Yim, 2005; Lambert, 2010) and if this factor is abandoned than it may impede the likelihood of obtaining a customer's "full and sustained commitment" (Lambert, 2010: 11).

Another highly recognized factor of growing importance to successful CRM is the level of involvement of multiple business functions within the CRM process (Lambert, 2010; Payne & Frow, 2005; Reinartz, Krafft, & Hoyer, 2004; Sin, Tse, & Yim, 2005) even when a business function doesn't have direct contact with the customer it can still have a tremendous impact on the customer (Lambert, 2010).

CRM has often been associated with information technology and the role of information technology within CRM (Lambert, 2010; Mithas, Krishnan, & Fornell, 2005; Payne & Frow, 2005; Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Scheffer, 2002; Sin, Tse, & Yim, 2005). Reinartz et al. (2004) contend that there exists a misconception in that companies view CRM as an investment in technology or software. Lambert (2010) further suggests technology is a tool and "to be successful, management must place its primary focus on the CRM process and the people and the procedures that make the technology effective" (6). Rigby et al. (2002) warn against associating more technology with leading to a better organization as it is identified as one of the four perils to avoid with CRM and conveyed that "installing CRM technology before creating a customer-focused organization is perhaps the most dangerous pitfall" (103). This is not to say that technology doesn't play a role in CRM or can assist in the successful

implementation of CRM through capturing vital CRM data accurately and adding to firm intelligence (Sin, Tse, & Yim, 2005) but rather the strategic process should be in place whether CRM technology is utilized or not (Lambert, 2010; Payne & Frow, 2005).

A collection of definitions of CRM presented in CRM literature over the past several years is provided in Table 2.

**Table 2. Sample of Customer Relationship Management Definitions**

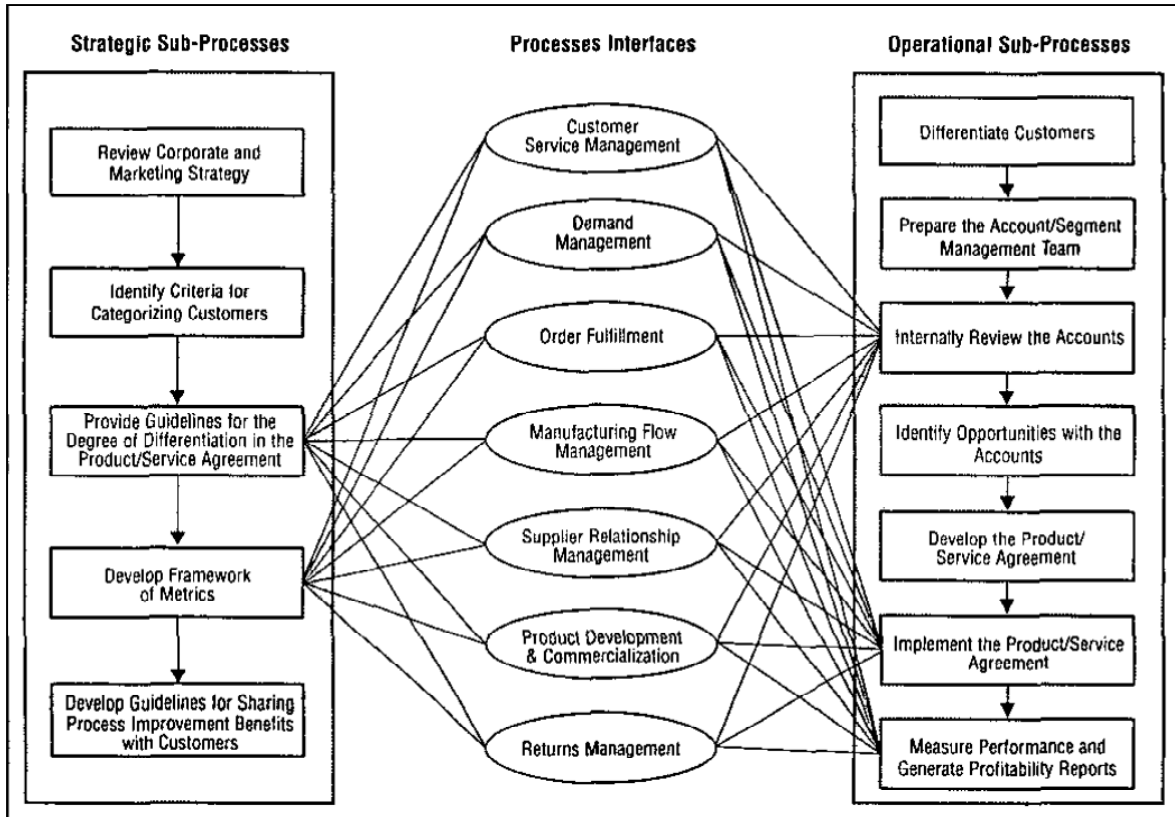
<b>Customer Relationship Management Definitions</b>	
<b>Author</b>	<b>Definition</b>
(Tan, Kannan, & Handfield, 1998: 109)	...comprises the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction.
(Rigby, Reichheld, & Schefter, 2002: 102)	CRM aligns business processes with customer strategies to build customer loyalty and increase profits over time.
(Reinartz, Krafft and Hoyer, 2004: 294)	...a systematic process to manage customer relationship initiation, maintenance, and termination across all customer contact points to maximize the value of the relationship portfolio.
(Payne & Frow, 2005: 168)	CRM is a strategic approach that is concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders. CRM provides enhanced opportunities to use data and information to both understand customers and cocreate value with them. This requires a cross-functional integration of processes, people, operations, and marketing capabilities that is enabled through information, technology, and applications.
(Sin, Tse, & Yim, 2005: 1266)	...a comprehensive strategy and process that enables an organization to identify, acquire, retain, and nurture profitable customers by building and maintaining long-term relationships with them.
(Reimann, Schilke, & Thomas, 2010: 329)	...the firms' practices to systematically manage their customers to maximize value across the relationship lifecycle.

CRM is regularly acknowledged as a vital business process that should be considered an integral part of an organization's strategy. The process of managing relationships serves as a benefit for the firm (Reinartz, Krafft, & Hoyer, 2004). According to Lambert (2010), "CRM has become a critical business process as a result of: competitive pressures; the need to achieve cost efficiency in order to be a low-cost, high-quality supplier; a recognition of the fact that customers are not equal in terms of their profitability; and, knowledge that customer retention can significantly affect profitability" (5). Through collaboration, cooperation, and communication "firms can work with individual customers to offer customized solutions, create relationship value, enhanced customer loyalty, and reduce the cost of doing business" (Sin, Tse, & Yim, 2005: 1268). CRM provides a litany of reasons for organizations to ensure relationships with customer are established, defined, and managed and when organizations are successful additional benefits include: gathering data quickly, identifying valuable customers over time, increasing customer loyalty, reductions in the cost of serving loyal customers, increasing the likelihood of acquiring profitable customers in the future, and eventually, increasing corporate profitability (Rigby, Reichheld, & Schefter, 2002).

Lambert (2008) provided a structure and method of implementation for the CRM process as identified and developed by the GSCF. The CRM definition used for this thesis was provided by Lambert et al. (2005) and is defined as the SCM process that "provides the structure for how relationships with customers are developed and maintained. Cross-functional customer teams tailor product and service agreements to meet the needs of key accounts, and segments of the other customers" (28). The organization's business mission should entail identifying key customers and customer

segments and working with those identified to “improve processes and eliminate demand variability and non-value added activities” (Croxtton et al., 2001: 15). For maximum results it is imperative the all of the business functions should be involved in the relationship to increase the amount of useful knowledge generated and to avoid failing to follow through and meet promises made to customers in a profitable manner because functions that may not have direct contact with the customer may well have an influence on the customer (Lambert, 2010). Product and service agreements (PSA) are referred to as a multitude of various names that may vary in the level of formality from company to company; however, it is advised that agreements be formally written documents to maximize results (Lambert, 2010).

Establishing the framework for managing relationships with customers is the primary objective of the strategic level of CRM while segmenting customers and writing and implementing PSAs is the major goal at the operational level (Croxtton et al., 2001). The CRM process, as seen in Figure 2, is comprised of five strategic sub-processes and seven operational sub-processes.



**Figure 2. Customer Relationship Management Process (Croxtan et al., 2001: 15)**

The CRM process should have strategic and operational management teams that utilize cross-functionality when possible (Lambert, 2008). "At the strategic level, the customer relationship management process provides the structure for how relationships with customers will be developed and managed" (Lambert, 2008: 30). To ensure improvement opportunities are exploited it is important that both parties, the customer and the supplier, align their functional expertise in the implementation of the other SCM processes as defined by the GSCF (Lambert, 2008). The strategic sub-processes of the CRM process include the five sub-processes exhibited in Table 3. **Table 3**

**Customer Relationship Management Strategic Sub-Processes**

<b>Customer Relationship Management Strategic Sub-Processes</b>
---

- |  |
|--|
| <ol style="list-style-type: none"> <li>1. Review Corporate and Marketing Strategy</li> <li>2. Identify Criteria for Segmenting Customers</li> <li>3. Provide Guidelines for the Degree of Differentiation in the PSAs</li> <li>4. Develop Framework of Metrics</li> <li>5. Develop Guidelines for Sharing Process Improvement Benefits with Customers</li> </ol> |
|--|

(Croxtton et al., 2001)

The operational sub-processes are developed after the strategic sub-processes have been established and adequately developed. "At, the operational level, the customer relationship management process deals with writing and implementing the PSAs" (Croxtton et al., 2001: 16). The operational sub-processes of the CRM process include seven sub-processes provided in Table 4.

**Table 4. Customer Relationship Management Operational Sub-Processes**

<b>Customer Relationship Management Operational Sub-Processes</b>
1. Segment Customers
2. Prepare the Account/Segment Management Team
3. Internally Review the Accounts
4. Identify Opportunities with the Accounts
5. Develop the PSAs
6. Implement the PSAs
7. Measure Performance and Generate Profitability Reports

(Croxtton et al., 2001)

The CRM process is primarily responsible for identifying valuable customers and customer segments and developing PSA that vary in the level of customization, responsibility, service, and other factors addressed in the PSA specific to those customers and segments to ultimately incur a successful long-term and short-term impact on the organization (Croxtton et al., 2001). It should be noted that at a minimum, each of the processes is responsible for reporting process performance to the customer relationship and supplier relationship management processes (Croxtton et al., 2001). These two

processes can also be viewed as the upstream and downstream links between inter-firm activities (Croxtton, 2003).

It is important for an organization to realize and identify the economic benefits of developing and implementing a CRM process as this can be an indicator when evaluating the firm's performance. Past literature has presented considerable motivation for firms to pursue and commit resources to the development of a well developed and managed CRM process. Boulding, Staelin, Ehret and Johnston. (2005) suggest that a practical link between implementing customer relationship management activities and enhanced firm performance needs to be present prior to an organization committing to developing their CRM process or activities and found that majority of the notable CRM articles analyzed in their research exhibited enhanced firm performance through CRM activities. Lambert (2008) provides a summary of the financial impacts the CRM process can have on a firm such as: increased sales through strengthened relationships with profitable customers and selling higher margin products, decreased cost of goods sold by improving plant productivity, and decreased expenses through improved targeted marketing efforts and reduced overhead (32). Mithas et al. (2005) found a positive relationship between CRM and customer satisfaction and suggested that customer satisfaction had a significant impact on a firm's economic performance through reduced complaints, increased customer loyalty, reduced costs associated with warranties, complaints, defective goods, and service costs. In CRM, "marketers assess the lifetime value of each customer individually to decide whether to build a relationship with him/her and provide customized offerings", which "should enhance company profit by

focusing on profitable customers via more customized offerings and reducing the subsidization of unprofitable customers” (Sin, Tse, & Yim, 2005: 1267).

In today’s global business environment, competition has become more and more steep so it is in the best interest of firm’s to capture a competitive advantage when feasible. “Customer relationship management has generally been assumed to create a competitive edge for an organization” (Sin, Tse, & Yim, 2005: 1264). The enhanced understanding of the firms connected through the CRM process and the knowledge gained about the customer from such a relationship can increase a firm’s competitiveness” (Sin, Tse, & Yim, 2005). Mithas et al. (2005) draws a relationship between increased familiarity with data management through CRM applications and the development of a competitive advantage by leveraging captured data to better meet the needs of the customer.

Developing, implementing, and capturing the intended results and benefits from the CRM remains to be challenging (Payne & Frow, 2005; Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Schefter, 2002; Sin, Tse, & Yim, 2005). Rigby et al. (2002) and Boulding et al. (2005) address some of the more common challenges associated with CRM. Rigby et al. (2002) provided a detailed study that identified four “pitfalls” (or difficulties) managers fall into when attempting to implement CRM that were identified as: (1) implementing CRM before creating a customer strategy, (2) implementing CRM before changing the organization to match, (3) assuming more CRM technology is better, (4) stalking, instead of earning, customers. While firms intend to benefit from CRM, the Gartner Group found that 55% of CRM projects fail to produce results and 20% of initiatives actually damaged previously established customer relationships (Rigby,

Reichheld, & Schefter, 2002). Organizations regularly misuse CRM technology by substituting and depending on the technology in place of the strategic development of the process which is often times neglected which in turn increases the likelihood of a botched attempt to reap the desired benefits (Lambert, 2010; Reinartz, Krafft, & Hoyer, 2004; Rigby, Reichheld, & Schefter, 2002).

Known as the vital process that links the focal firm to the customer (Croxtton et al., 2001), CRM has widely been recognized as a critical factor of corporate success (Sin, Tse, & Yim, 2005). CRM has been shown to have a positive relationship with organizational performance (Reinartz, Krafft, & Hoyer, 2004; Sin, Tse, & Yim, 2005), improved customer knowledge and satisfaction (Mithas, Krishnan, & Fornell, 2005), and been associated with providing a competitive advantage by facilitating a learning relationship between a firm and its customer (Sin, Tse, & Yim, 2005).

### ***Order Fulfillment***

OF has been researched and referred to by different names throughout history such as the OF process (Croxtton, 2003; Lambert, 2008; Lin & Shaw, 1998), dyadic OF process (Forslund, 2006), and the order management cycle (Shapiro, Rangan, & Sviokla, 1992). Explicit definitions and activities that comprise the OF process vary slightly from author to author but generally speaking, the common thread amongst the different views of OF is that the process includes activities required to receive an order from a customer and deliver that order to the customer (Croxtton, 2003; Forslund, 2006; Forslund, 2007; Lambert, 2008; Lin & Shaw, 1998; Shapiro, Rangan, & Sviokla, 1992).

OF is consistently recognized as an essential process to a firm and successful OF requires the attention of the firm's management. The customer's order is the catalyst

that starts the OF process and puts the supply chain in motion (Croxtton, 2003; Forslund, 2007; Lambert, 2008). The OF process may provide the only interaction between the customer and the firm and therefore, could ultimately be the dominate factor in determining the customer's overall experience and perception of the firm (Croxtton, 2003; Lambert, 2008; Shapiro, Rangan, & Sviokla, 1992).

Shapiro et al. (1992) stress the intimate connection between the order and the customer through the OF management cycle. "Every time the order is handled, the customer is handled" and "every time the order sits unattended, the customer sits unattended" (Shapiro, Rangan, & Sviokla, 1992: 113). Shapiro et al. (1992) further contend that "customers want their orders handled quickly, accurately, and cost-effectively" and that the OF process is growing in the level of complexity required to successfully meld the connection between the customer and firm (118).

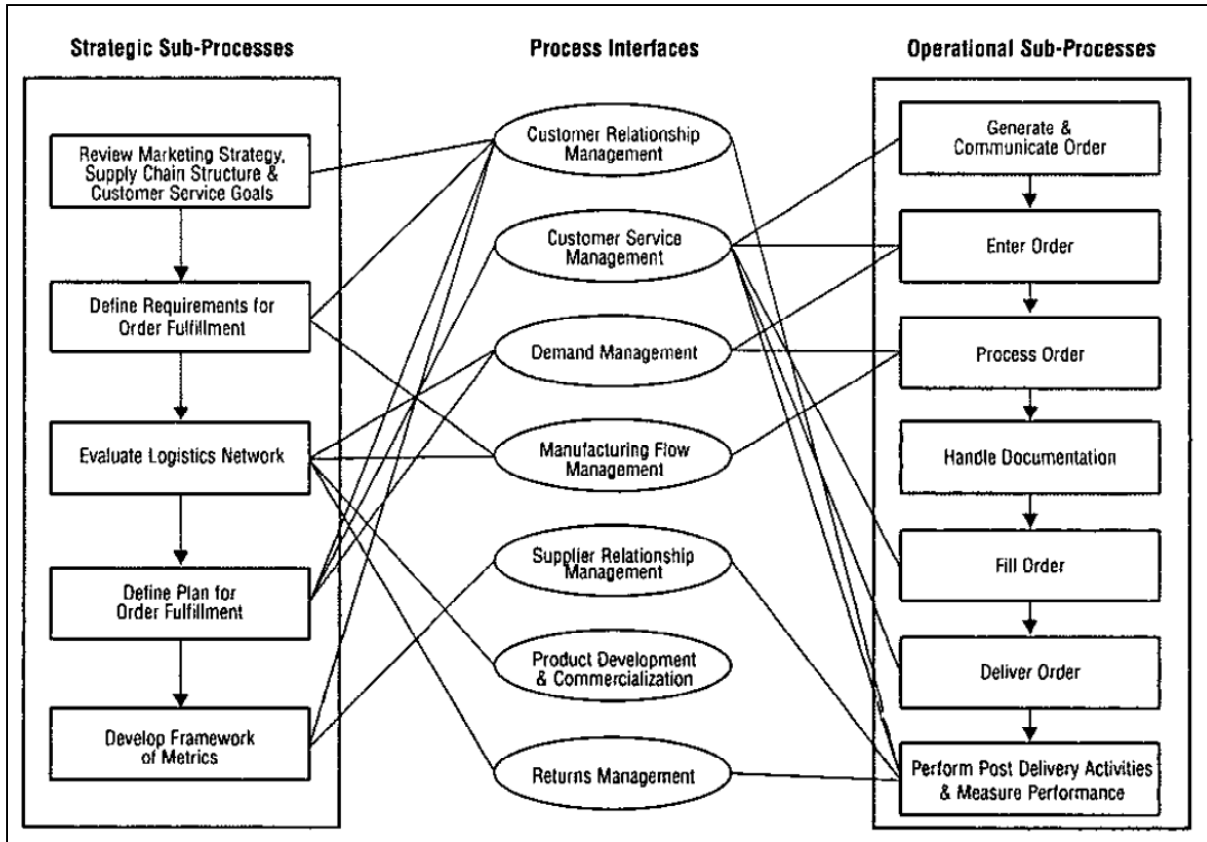
Forslund's (2007) study focused on the impact and importance of the quality of information between the customer and firm within the OF process and how this can influence the supply chain. "In the order fulfillment process the supplier is dependent on both the customer's information and information internal to the supplier" (Forslund, 2007: 516). Forslund (2007) introduces the notion that "the supplier is the information customer in the order fulfillment process" (517). From this perspective both parties are highly dependent on one another and each party serves as a customer and as a supplier for all transactions.

Lin and Shaw (1998) provide an argument as to why and a way ahead for how a firm can reap major benefits from reengineering the OF process. The OF process is important and should be acknowledged as a process that can have a major impact on the

entire supply chain because of the growing importance and dependence on outsourcing, activities of the OF take place within the entire supply chain, and variation of the OF process can determine the type of supply chain (Lin & Shaw, 1998). Lin and Shaw (1998) introduced the main objective of the OF process characterized by two dimensions: “(1) delivering qualified products to fulfill customer orders at the right time and right place, and (2) achieving agility to handle uncertainties from internal or external environments” (199). Components intrinsic to the OF process like order processing times, material lead times, assembly lead times, and distribution lead times are distributed across the supply chain and variation associated with these lead times can compound and cause a ripple effect throughout the entire supply chain if not controlled (Lin & Shaw, 1998).

Croxton (2003) provides a structure and method of implementation of the OF process. “Order fulfillment is a key process in managing the supply chain. The order fulfillment process involves more than just filling orders. It is about designing a network and a process that permits a firm to meet customer requests while minimizing the total delivered cost” (Croxtion, 2003: 19). “Order fulfillment spans the boundaries among internal functions, suppliers, and customers, creating value by leveraging the operational and informational resources of a variety of partners in a supply chain network to ultimately meet end-customer requirements in a cost effective manner” (Davis-Sramek, Germain, & Stank, 2010: 217). The OF definition used for this thesis was provided by Croxton (2003) and is defined as the SCM process that “includes all activities necessary to define customer requirements, design the logistics network, and fill customer orders” (20).

Once a customer makes an order it is critical that the supplier (focal firm) deliver the product and/or service as promised to and expected by the customer or risk forfeiting future business to that customer (Davis-Sramek, Germain, & Stank, 2010). The OF process also provides an opportunity for the firm to solidify and improve the current and future relationship with a customer. Croxton (2003) affirms that real opportunities are actualized when a firm extends the OF process to supply chain partners which can lead to true process improvement. The OF process should warrant the attention of a firm's strategic management and be recognized as a key business process (Croxton, 2003). Establishing the structure to be implemented is the key focus of the strategic level of OF and implementation of the established structure is the primary focus at the operational level (Croxton, 2003). The OF process, as seen in Figure 3, is comprised of five strategic sub-processes and seven operational sub-processes.



**Figure 3. Order Fulfillment Process (Croxtan, 2003: 21)**

The OF process should have strategic and operational management teams that include members that represent multiple functional areas and include members from supply chain partners if possible (Croxtan, 2003). "At the strategic level, the process team designs the operational OF process. This includes designing the network, establishing policies and procedures, and determining the role of technology in the process" (Croxtan, 2003: 22). The strategic sub-processes of the OF process include the five sub-processes exhibited in Table 5.

**Table 5. Order Fulfillment Strategic Sub-processes**

<b>Order Fulfillment Strategic Sub-Processes</b>
1. Review Marketing Strategy, Supply Chain Structure and Customer Service Goals
2. Define Requirements for Order Fulfillment
3. Evaluate Logistics Network
4. Define Plan for Order Fulfillment
5. Develop Framework of Metrics

(Croxtan, 2003)

The operational sub-processes are developed after the strategic sub-processes have been established and adequately developed. "The operational process is the execution of the process once it has been established" (Croxtan, 2003: 21). The day-to-day activities take place at the operational level (Croxtan, 2003). The operational sub-processes of the OF process include seven sub-processes provided in Table 6.

**Table 6. Order Fulfillment Operational Sub-processes**

<b>Order Fulfillment Operational Sub-Processes</b>
1. Generate and Communicate Order
2. Enter Order
3. Process Order
4. Handle Documentation
5. Fill Order
6. Deliver Order
7. Perform Post Delivery Activities and Measure Performance

(Croxtan, 2003)

The order fulfillment process primarily “involves generating, filling, delivering and servicing customer orders” and may be the only point of interaction with the customer (Croxtan, 2003: 19). An OF process that is capable of meeting the requests of customers while accounting for delivery costs is critical and requires coordination and communication with the other processes (Croxtan, 2003).

OF requires a substantial amount of coordination with the CRM process throughout the strategic level. Development of the network, establishment of policies

and procedures, and determining what technology to use are all central to, but not entirely limited to, the customer and the firm's strategy. CRM provides much of the necessary information and coordination with the order fulfillment process to ensure that customers' primary needs can be met and customization levels can be determined (Croxtton, 2003). CRM also works with OF process to ensure customer's lead-times are defined, customer satisfaction and service policies are developed, and ultimately ensure that OF metrics are aligned with those of the organization while measuring what the customer deems important (Croxtton, 2003).

It is important to understand that orders are not created equally and in turn should not all be treated the same way; orders can impact the firm differently and come from different customers whom may present different levels of profitability and relationship potential (Shapiro, Rangan, & Sviokla, 1992). "The best orders come from customers who are long-term, fit the company's capabilities, and offer healthy profits" (Shapiro, Rangan, & Sviokla, 1992: 115). The OF process can have an impact the bottom line of the firm and its supply chain partners by influencing total sales volume, repeat business, total share of market, order-to-cash cycle, delivery lead-time, inventory levels, handling costs, services provided to different customers, and improved asset utilization (Croxtton, 2003). It is important that strategic and operational policies and a logistics network are developed to address such factors.

The OF process is also a vital factor in achieving customer satisfaction and presents an opportunity to improve operations and achieve a competitive advantage (Davis-Sramek, Germain, & Stank, 2010; Forslund, 2006; Shapiro, Rangan, & Sviokla, 1992). "The shift has been to create a competitive advantage by successfully 'pushing

the envelope' through leveraging the 'intangibles' in the firm's order fulfillment process, such as the ease of doing business, delivery dependability, and responsiveness to requests" (Davis-Sramek, Germain, & Stank, 2010: 216). It must be noted that creating a competitive advantage through service offered and provided is only an advantage if the customer values the service and perceives it as a benefit (Davis-Sramek, Germain, & Stank, 2010).

Successful implementation of the OF process does present challenges anchored by its inherent level of complexity "because it is composed of several activities, executed by different functional entities, and heavily interdependent among the tasks, resources, and agents involved in the process" (Lin & Shaw, 1998: 199). Lin and Shaw (1998) identified challenges on improving the OF process which include: "the transparency of information, reduction in variability, synchronization of materials flow, management of critical resources, and the configuration of a supply chain network" (210).

Recognized as the process that puts the supply chain in motion (Croxtton, 2003; Forslund, 2007; Lambert, 2008), the OF process is a key SCM business process that deserves adequate attention from top management. The OF process can have an impact on a firm's profit (Croxtton, 2003), customer satisfaction (Forslund, 2006), and present an opportunity for a firm to differentiate itself based on services and leverage capabilities to create a competitive advantage (Davis-Sramek, Germain, & Stank, 2010; Shapiro, Rangan, & Sviokla, 1992).

### ***Returns Management***

The returns process has been identified as RM (Rogers et al., 2002), enterprise RM (Norek, 2002), reverse supply chain (Guide Jr., Harrison & Van Wassenhove, 2003),

and reverse logistics (Fleischmann, Bloemhof-Ruwaard, Dekker, Laan, Nunen, & Van Wassenhove, 1997). Each of the aliases possesses a slightly different definition and number of activities associated with the process, but in general, the common trait amongst the different definitions is the reverse flow of product. "Returns management literature has roots in both the marketing and logistics disciplines, with the early focus on reverse channels and reverse logistics, respectively" (Mollenkopf, Russo, & Frankel, 2007: 570).

The management of returns is continuing to garner an increased amount of attention for reasons that are numerous. Mollenkopf et al. (2007) contends that "effective management is important because returns can erode profitability for a firm and can impact relationships with customers and end-users, as well as impact a firm's reputation with stockholders" (569). Mollenkopf et al. (2007) further stress the importance for firms to manage returns at the strategic level to avoid missing opportunities to maximize value created for the firm and customers.

Guide et al.'s (2003) study centers on the closed-loop supply chain, of which, the reverse supply chain is an integral part. Guide et al. (2003) suggest that, in a rapidly changing world, the reverse supply chain must be included in a firm's supply chain and that firms ought to posture themselves to be able to take advantage of all types of product returns. "A company with the right business model must implement it carefully and integrate the reverse-supply-chain processes" (Guide Jr., Harrison & Van Wassenhove, 2003: 4). Guide et al. (2003) also assert that practitioners and academicians often fail to fully recognize the reverse supply chain as a business process warranting a strategic

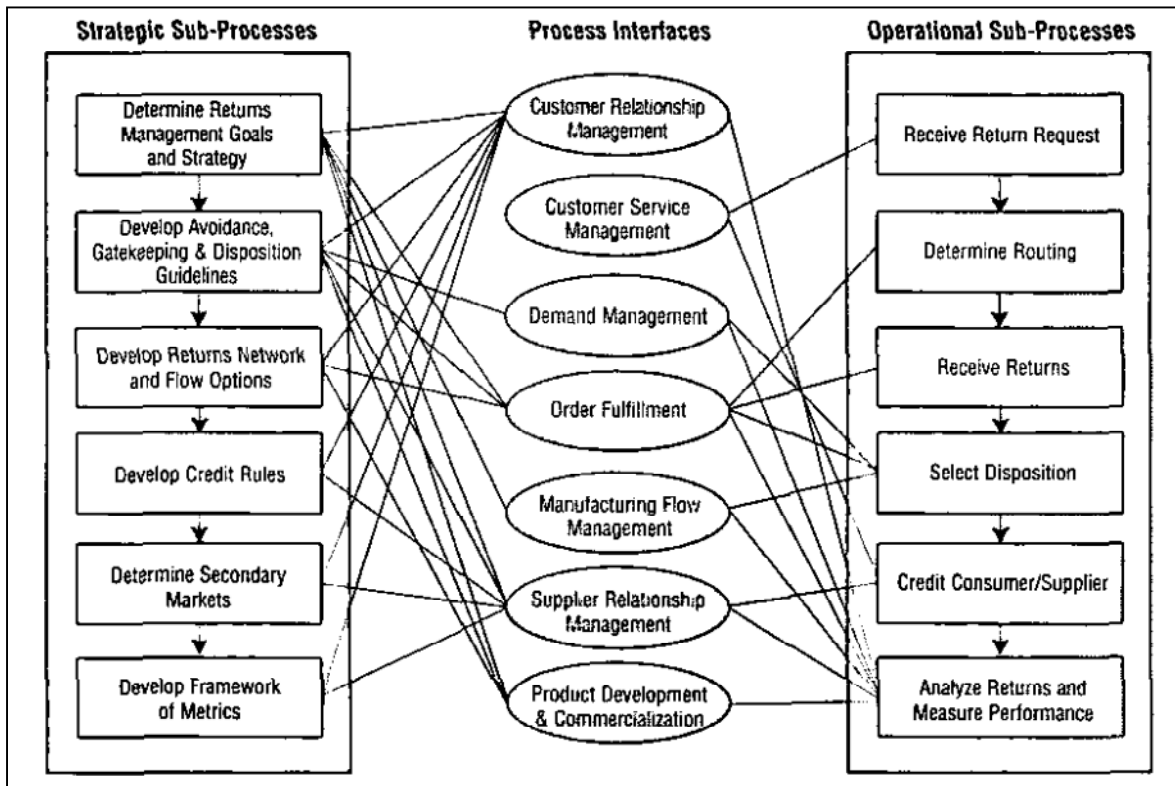
approach but rather, as a series of independent activities from an operational view failing to realize that this view does not exploit profitability potential.

Krikke, Blanc, and Velde's (2004) research conveys the idea that it may be in a firm's best interest to start paying as much attention to the reverse supply chain as is paid to the forward flow of product for multiple reasons. "Commercial returns are also increasing due to trends such as product leasing, catalogue/internet sales, shorter product replacement cycles, and increased warranty claims. Moreover, companies are increasingly willing to buy back returns actively for economic gain" (Krikke, Blanc, & Velde, 2004: 23).

Rogers et al.'s (2002) study asserts that reverse logistics, closed-loop SCM, and returns have been used to describe activities in RM but, these terms do not fully capture the RM process in its entirety and provide further discussion about the specific distinctions. "Returns management is a critical supply chain management process that requires planning and effective execution throughout the supply chain" (Rogers et al., 2002: 1). RM primarily involves the backward and forward physical flow of customer returns and the establishment and implementation of strategies that utilize avoidance and gatekeeping techniques to mitigate unnecessary cost (Rogers et al., 2002). The RM definition used for this thesis was provided by Lambert et al. (2005) and is defined as the SCM process that "includes all activities related to returns, reverse logistics, gatekeeping, and avoidance" and this is the definition used for this thesis (28).

Returns can account for substantial financial losses in the form of unsatisfied customers, wasted product, wasted time, and/or in the form of resources dedicated to returning product back to the market. Establishing the structure to be implemented is the

primary focus of the strategic level of RM and implementation of the established structure is the main focus at the operational level (Rogers et al., 2002). The RM process, as seen in Figure 4, is comprised of six strategic sub-processes and six operational sub-processes.



**Figure 4. Returns Management Process (Rogers et al., 2002: 6)**

Ideally, cross-functional management teams are developed and utilized to lead both the strategic and operational sub-processes (Rogers et al., 2002). The established cross-functional team should not exclude external members when there is an opportunity to include members' supply chain partners (Rogers et al., 2002). "The objective of the strategic portion of the returns management process is to construct a formalized structure through which the operational process is executed" (Rogers et al., 2002: 6). The strategic

sub-processes of the returns management process include the following six sub-processes as seen in Table 7.

**Table 7. Returns Management Strategic Sub-processes**

<b>Returns Management Strategic Sub-processes</b>
1. Determine Returns Management Goals and Strategy
2. Develop Return Avoidance, Gatekeeping and Disposition Guidelines
3. Develop Returns Network and Flow Options
4. Develop Credit Rules
5. Determine Secondary Markets
6. Develop Framework of Metrics

(Rogers et al., 2002)

After the strategic sub-processes have been established and adequately developed the operational sub-processes are developed. "The operation portion is the realization of the process that has been established at the strategic level" (Rogers et al., 2002: 5). The operational sub-processes of the RM process include the following six sub-processes as seen in Table 8.

**Table 8. Returns Management Operational Sub-processes**

<b>Returns Management Operational Sub-Processes</b>
1. Receive Return Request
2. Determine Routing
3. Receive Returns
4. Select Disposition
5. Credit Customer/Supplier
6. Analyze Returns and Measure Performance

(Rogers et al., 2002)

RM requires a great deal of coordination with CRM at the strategic level and involves interfaces between the two processes at the RM sub-processes. Understanding customer needs and expectations is an early requirement that is required prior to designing the RM network (Rogers et al., 2002). RM guidelines, policies, and procedures are likely to be addressed in the PSAs to ensure customers are aware and CRM will also

ensure the returns process meets the expectations of customers (Rogers et al., 2002). The development of credit rules will also involve CRM because these determinations will most likely have to be addressed in the PSAs (Rogers et al., 2002). When determining secondary markets CRM may need to assist with developing programs that benefit the affected parties (Rogers et al., 2002). Finally, the development of key metrics should be done with CRM to be included in the PSAs that address the customer's bottom line (Rogers et al., 2002).

The RM process also requires many interactions with the OF process at the operational level. These interactions include determining routing of returns, managing the flow of returns, where to execute dispositions, and providing necessary feedback to the OF process to mitigate returns through avoidance (Rogers et al., 2002).

It is important to consider each type of return and ensure appropriate procedures are developed to effectively respond to each type of return identified; the type of return may dictate the impact to the firm and supply chain partners (Rogers et al., 2002). It is important that the manager establishes policies and procedures that address each type of return because each type may have different effects on the organization (Rogers et al., 2002). This study grouped returns into five categories as established by Rogers et al. (2002): “consumer returns, marketing returns, asset returns, product recalls, and environmental returns” (3). Returns can be classified in many different ways; Krikke et al.'s (2004) research categorized returns by four main types: “end-of-life returns, end-of-use returns, commercial returns, and reusable items” (26).

Customer returns can represent a valuable percentage of total revenue and costs and for this reason, the returns process deserves management's attention (Rogers et al.,

2002). "Marketing returns consist of product returned from a position forward in the supply chain, often due to slow sales, quality issues, or the need to reposition inventory...marketing returns can represent a significant percentage of sales" (Rogers et al., 2002: 3). Asset returns are typically considered as items the firm wants to see returned and primarily consist of recapturing and repositioning an asset (Rogers et al., 2002). "Product recalls are a form of return that are usually initiated because of a safety or quality issue" (Rogers et al., 2002: 4). Product recalls occur in a variety of different industries and the frequency of product recalls is increasing (Krikke, Blanc, & Velde, 2004). "Environmental returns include the disposal of hazardous material or abiding by environmental regulations. Environmental returns are different from other types of returns because they might include regulatory compliance that limits the set of options" (Rogers et al., 2002). Waste reduction is an emerging concern in industrialized countries and several countries have required producers to be responsible for the products entire life cycle through environmental legislation (Fleischmann et al., 1997). Going "green" can also be used as a marketing method (Fleischmann et al., 1997).

Gatekeeping, return avoidance, disposition, and reverse logistics are all critical activities of returns management (Rogers et al., 2002). "Gatekeeping means making decisions to limit the number of items that are allowed into the reverse flow" (Rogers et al., 2002: 5). Successful gatekeeping implies that the determination of what products are accepted as returns are identified as early in the reverse flow as possible (Rogers et al., 2002). "Unannounced and unapproved returns result in inefficient use of processing, labor, refunds for product that should not have been issued, unnecessary obsolescence,

and missed opportunity costs of not seeing a pattern in product defects” (Norek, 2002: 36).

"Return avoidance means developing and selling the product in a manner such that return requests are minimized” (Rogers et al., 2002: 9). “Examples of avoidance include improving quality to decrease defective items and providing instructions that enable the customer to better operate the product” (Rogers et al., 2002: 9). Mollenkopf et al.’s (2007) study determined that firms found gatekeeping, at the operational level, oftentimes to be challenging for a multitude of reasons and contends that this is why returns avoidance is such a critical activity.

Disposition is another critical activity and “refers to the decision about what to do with returned product, which might include resale through secondary markets, recycle, remanufacture or transfer to a landfill” (Rogers et al., 2002: 10). The RM process team should work with its supply chain partners when establishing disposition rules (Rogers et al., 2002).

“Reverse logistics has been defined as ‘the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal’” (Rogers et al., 2002: 4). As previously discussed, reverse logistics has been used to describe the RM process but, as defined, fails to include "all activities involved in managing the backward flow of materials and information through the supply chain" (Rogers et al., 2002: 4).

It is generally recognized that RM has a direct financial impact on firms and presents an opportunity for firms to increase profits and can adversely impact a firm’s

financials if not recognized and given the appropriate level of strategic and operational attention. RM has been classified as the "problem child" of logistics and many companies have taken for granted the critical role RM can play in reducing costs and improving customer service when given the appropriate level of attention as treated as a strategic initiative (Norek, 2002). Norek (2002), Guide et al. (2003), Guide and Van Wassenhove. (2009), and Krikke (2004) all stress the notion that the value of returned products with shorter life-cycles, such as electronics, can be significantly influenced by a firm's returns process and the time it takes a product to get back to the market, if feasible; an inadequate returns process can increase the likelihood of product obsolescence and increase the amount of capital tied up in the reverse flow pipeline. "A slow reverse supply chain that takes 10 weeks to put the returned product back on the market translates to a loss of (approximately) 10% of the total value in that product" (Guide Jr. & Van Wassenhove, 2009: 10). Norek (2002) further suggests that an inadequate return process can have a direct impact on customer dissatisfaction from a negative return experience which, like the effects of stockouts, can equate to lost customers and this impact can be extremely difficult to quantify.

The management of returns has become increasingly more important and has garnered increasingly more attention from management but it must be noted that the management of returns is and will continue to be a challenging endeavor for management. "Given that reverse supply chains are not near a firm's core business, aligning their elements, obtaining the right resources, and getting top managers' attention is difficult" (Guide Jr., Harrison & Van Wassenhove, 2003: 4). In anticipation of "increased global competition, shortened life cycles, expanded environmental legislation,

and ever more lenient commercial take-back policies at resellers for customers,” it can be expected that product returns will increase (Guide Jr., Harrison & Van Wassenhove, 2003: 5). Mollenkopf et al. (2011) concluded that “product returns can present a significant challenge for manufacturing firms whose primary objective is usually geared towards producing and selling products to customers. The impact of returns is ignored, or at minimum, not well-understood in many firms” (391).

The RM process is a critical SCM process and is continually being recognized as such. Literature pertaining to the management of returns is expanding due to the potential profits that can be realized by the effective management of returns, an expected increase in the number of product returns, and the potential impact the RM process can have on a firm’s bottom line.

### ***Competitive Advantage***

“Competition is at the core of the success or failure of firms” (Porter, 1985: 1). The evaluation and understanding of one’s industry and resources is an important component of establishing a competitive advantage. Porter (1985) provides a framework and way ahead for firms to achieve and sustain a competitive advantage. Porter (1985) and various other studies (Barney, 1991; Bharadwaj, Varadarajan, & Fahy, 1993) seek to describe and identify various sources of competitive advantage. “A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors” (Barney, 1991: 102). There is no surprise that competitive advantage can be expected to lead an organization to superior performance (Bharadwaj, Varadarajan, & Fahy, 1993).

Competitive advantage “comprises capabilities that allow an organization to differentiate itself from its competitors and is an outcome of critical management decisions” (Li et al., 2006: 111). Competitive capabilities “are the attributes of an organization that attract customers; they are potential points of differentiation between an organization and its competitors” (Tracey, Vonderembse, & Lim, 1999: 414). Tracey et al.’s (1999) and Rondeau, Vonderembse, and Ragu-Nathan’s (2000) studies further investigated competitive capabilities. Competitive capabilities should also allow firms to establish higher levels of performance (Tracey, Vonderembse, & Lim, 1999).

With the emerging importance of SCM and growing competitiveness between supply chains it is in a firm’s best interest to seek out ways to capture a competitive advantage. Based on previous SCM studies, competitive advantage in this thesis was defined as “the extent to which an organization is able to create a defensible position over its competitors” (Li et al., 2006: 111).

### ***Organizational Performance***

In order to more adequately evaluate a business strategy, practices and initiatives, such as SCM, it is of interest to both practitioners and academics to understand the implications of utilizing such a strategy, practice or initiative. Dess (1984) asserts that “researchers frequently take the performance of organizations into account when investigating such organizational phenomena as structure, strategy and planning” (265). Throughout history, organizational performance has been utilized in a large number and variety of management studies (Li et al., 2006; Reinartz, Krafft, & Hoyer, 2004; Kannan & Tan, 2005; Tan, Kannan, & Handfield, 1998; Vickery, Calantone, & Droge, 1999).

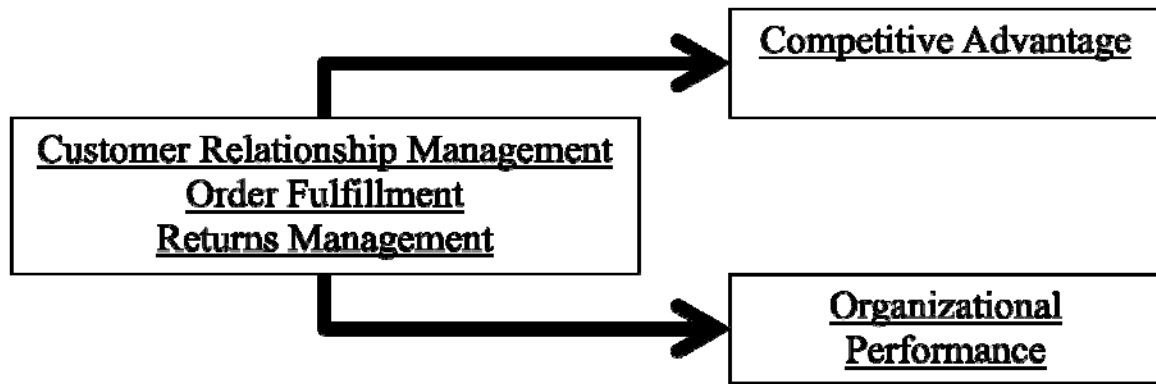
There is no consensus on the definition of organizational performance, nor on how it should be measured, but measuring organizational performance is inherently difficult to do (Dess & Robinson, 1984; Venkatraman & Ramanujam, 1986). Venkatraman et al.'s (1986) study provides a comparison, which includes both limitation and benefits, of different approaches to measuring organizational performance.

Organizational performance has been described along two dimensions: operational performance and financial performance (Stock, Greis, & Kasarda, 2000; Venkatraman & Ramanujam, 1986). Reimann et al.'s (2010) study described organizational performance along three dimensions: profitability, customer satisfaction, and market effectiveness. This thesis defined organizational performance as “how well an organization achieves its market-oriented goals as well as its financial goals” (Li et al., 2006: 111).

Multiple studies have measured organizational performance by utilizing financial and market indicators such as market share, return on investment, profit margin on sales, overall competitive position and the growth of market share, sales, and return on investment (Li et al., 2006; Stock, Greis, & Kasarda, 2000; Vickery, Calantone, & Droge, 1999). This thesis measured performance by utilizing financial and market indicators.

### ***Summary***

This chapter briefly introduced and provided a synopsis of literature specific to SCM and CRM, OF, RM, competitive advantage, and organizational performance as it relates to the field of SCM. Based on the literature reviewed, this thesis sought to compose and evaluate six hypotheses. Figure 5 presents the model that was developed and analyzed for this research.



**Figure 5. Research Model**

This research will attempt to address the following hypotheses:

*H<sub>1</sub>: The development of the customer relationship management process will be positively related to competitive advantage.*

*H<sub>2</sub>: The development of the customer relationship management process will be positively related to organizational performance.*

*H<sub>3</sub>: The development of the order fulfillment process will be positively related to competitive advantage.*

*H<sub>4</sub>: The development of the order fulfillment process will be positively related to organizational performance.*

*H<sub>5</sub>: The development of the returns management process will be positively related to competitive advantage.*

*H<sub>6</sub>: The development of the returns management process will be positively related to organizational performance.*

### **III. Methodology**

The purpose of this study was to determine the relationship between the strategic development of key supply chain management (SCM) business processes, as defined by the Global Supply Chain Forum (GSCF), competitive advantage and organizational performance. Online surveys were used to collect data. Data simulation, nonparametric, and bivariate correlation analysis were tools used to generate and analyze the data. Five measures were used in this study; customer relationship management (CRM), order fulfillment (OF), returns management (RM), organizational performance, and competitive advantage.

#### ***Procedures***

Data for this study were collected using a 163-item online survey administered to middle to top management executives from a variety of industries. Of the 163 items, 87 items were applicable to this study. The other 76 items were specific to two other studies that were conducted simultaneously and will not be addressed further in this research. The email contact distribution list was provided by the Council of Supply Chain Management Professionals and consisted of 800 executives. Fink (2009) identifies advantages and disadvantages of the online survey method. Advantages include obtaining worldwide information immediately, ease of follow-up reminders, and less demanding data processing. Disadvantages include respondents dependence on reliable internet access, software incompatibility, inconsistent viewing of survey, respondent mistrust, and being perceived as junk mail due to becoming an increasingly more common means of data collection. Fink (2009) contends that respondents are likely to delete the email if they do not recognize who the email is from. The survey was

administered from December 2011 to February 2012. The online survey was emailed to the respondents' provided email address. A link to the survey was emailed to members on the distribution list. The link was accompanied by a statement of purpose of the survey and research along with the researchers contact information. The survey also included a cover page that further described the purpose of the study, expectations of the participants, and encouragement to participate in the study. See Appendix A for the complete online survey that was sent to all potential participants. The completed surveys were immediately available to the researcher upon completion. Participation was strictly voluntary, all respondents' anonymity was maintained, and research findings were made available to respondents upon request. Participants were instructed to direct questions to the researchers using the provided contact information. In order to maximize participation, follow-up reminder emails were sent to participants on a weekly basis the last month the survey was open for participation.

The initial survey was pilot tested with a group of academicians with the purpose of collecting feedback on the instrument to identify confusing and/or misleading items, identify items and/or scale overlap, ensure item clarity and brevity, and identify the time required to complete the survey. Comments and observations were used to create the final survey.

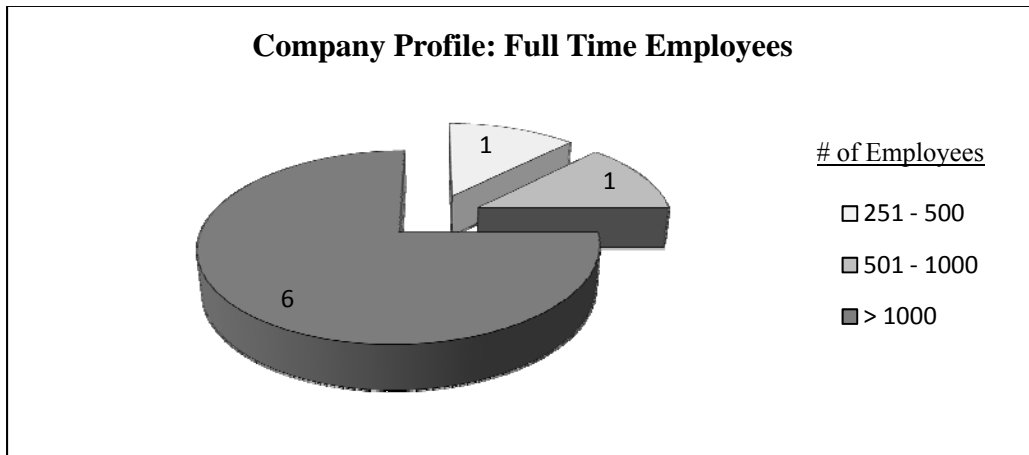
### ***Participants***

The survey population (N = 800) included middle to top management executives from a wide variety of industries representing different strategic business units. Contact information for the population was obtained from a Council of Supply Chain Management Professionals email database. Of the 800 executives invited to participate,

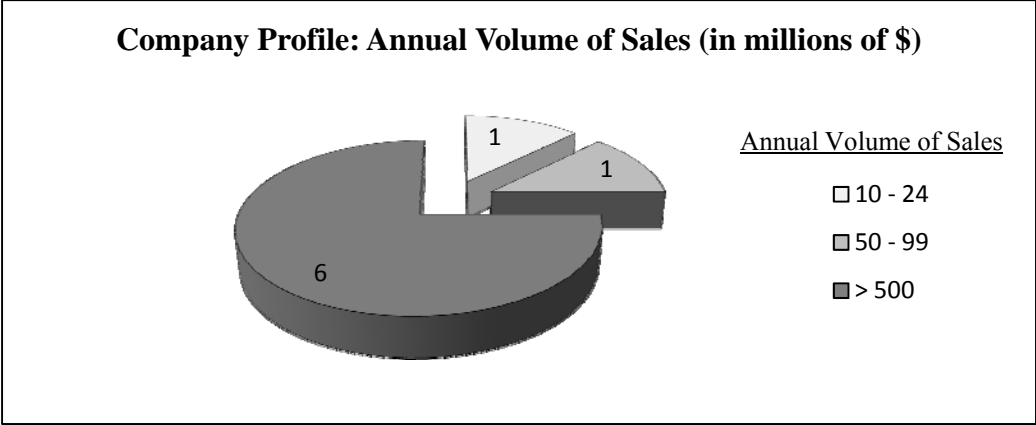
10 online surveys were attempted and 8 surveys were considered useable, resulting in a 1% response rate. One of the unusable surveys was missing vast majority of the data and the second unusable survey suffered from central tendency error in which the respondent chose “Neutral” for each item.

Demographic information was requested that included an individual and a company profile. Individual profile information was provided by the respondents. Current job titles included: Logistics Development Manager, Global Supply Chain Manager, Vice President (VP) Distribution & Fulfillment, Transportation Manager, VP of Supply Chain Management, Production Manager, Director of Supply Chain Initiatives, VP of Global Manufacturing Alliances. Three respondents had less than 2 years of experience in their current position (37.5%), three respondents had between 2 and 5 years of experience (37.5%), and two respondents had between 6 and 10 years of experience (25%). One respondent had been with their current organization for less than 2 years (12.5%), three respondents had been with their current organization between 6 and 10 years (37.5%), and four respondents had been with their current organization over ten years (50%). Production/Operations Management (37.5%), Logistics/Transportation/Distribution (75%), and Supply/Purchasing/Procurement (25%) were identified as functions that best describe the respondents’ current job responsibilities. Respondents were directed to choose each function that applied. Company profile information was also provided by the respondents. Of the eight useable responses, one respondent represented an organization with between 251 and 500 employees (12.5%), one respondent represented an organization with between 501 and 1000 employees (12.5%), and six respondents represented organizations with over 1,000

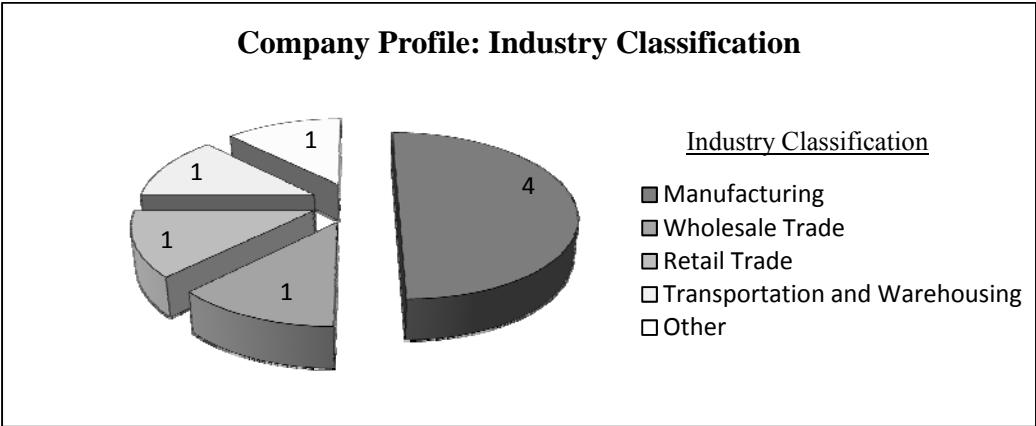
employees (75%), as seen in Figure 6. With respect to the organizations' annual volume of sales (measured in millions of dollars), one respondent represented an organization with an annual volume of sales between 10 and 25 million dollars (12.5%), one respondent represented an organization with an annual volume of sales between 50 and 100 million dollars (12.5%), and six respondents represented organizations with annual volume of sales greater than 500 million dollars (75%), as seen in Figure 7. In regards to industry classification, four respondents represented organizations from the manufacturing industry (50%), one respondent represented the wholesale trade (12.5%), the retail trade (12.5%), and the transportation and warehousing (12.5%) industries, and one respondent self identified as representing "Other" (12.5%), as seen in Figure 8.



**Figure 6. Company Profile: Full Time Employees**



**Figure 7. Company Profile: Annual Volume of Sales**



**Figure 8. Company Profile: Industry Classification**

To investigate whether or not there appeared to be a difference in the obtained data based on the information requested through the company profile section of the survey, the researcher utilized nonparametric (or distribution-free) statistical procedures using Statistical Package for the Social Sciences (SPSS) software. The researcher specifically sought to determine if the variables appeared to differ based on the items comprising the company profile section of the survey. Given the small sample size ( $n = 8$ ), the Wilcoxon Rank-Sum Test (WRST) was utilized. The WRST statistical analysis technique was utilized because of the lenient statistical assumptions required to perform a

statistical comparison of means as opposed to, for example, a t-test which requires the assumption of normality (Devore, 2004). The WRST is appropriate for small sample sizes (Devore, 2004). The only assumptions required to perform a valid WRST are: (1) the two samples are independent and random, (2) from continuous distributions with the same shape and spread, and (3) that  $\mu_1$  and  $\mu_2$  are the only differences between the distributions from which the samples are drawn (Devore, 2004). Each variable (CRM, OF, RM, competitive advantage, and organizational performance) was compared with respect to the organization's number of full time employees, organization's annual volume of sales (in millions of dollars), and industry classification. Each company profile item was categorized into two categories as seen in Table 9.

**Table 9. Company Profile (WRST Categories)**

Company Profile (Wilcoxon Rank Sum Test Categories)				
Company Profile Item	Category 1		Category 2	
# of Employees	> 1000	n = 6	≤ 1000	n = 2
Annual Volume of Sales	> 500	n = 6	≤ 500	n = 2
Industry Classification	Manufacturing	n = 4	Other	n = 4

The null hypothesis for the WRST was that there was no statistical difference between the means from each of the samples. There didn't appear to be a statistical difference in the means for the CRM, OF, CA, and OP variables with respect to the organization's number of employees, annual volume of sales, and industry classification ( $p > .05$ ).

There did appear to be a statistical difference in the means for the RM variable with respect to the organization's number of employees, annual volume of sales, and industry classification ( $p < .05$ ). Results from the WRST for the organization's number of employees, annual volume of sales, and industry classification are shown in Tables 10, 11, and 12 respectively.

**Table 10. Number of Employees (WRST Results)**

Test Statistics <sup>a</sup>					
	CRM_Variable	OF_Variable	RM_Variable	CA_Variable	OP_Variable
Wilcoxon W	26.50	25.00	3.00	26.50	5.50
Z	-.17	-.67	-2.01	-.17	-1.20
Asymp. Sig. (2-tailed)	.87	.50	.04	.87	.23
a. Grouping Variable: # of Employees					

**Table 11. Annual Volume of Sales (WRST Results)**

Test Statistics <sup>a</sup>					
	CRM_Variable	OF_Variable	RM_Variable	CA_Variable	OP_Variable
Wilcoxon W	26.50	25.00	3.00	26.50	5.50
Z	-.17	-.67	-2.01	-.17	-1.20
Asymp. Sig. (2-tailed)	.87	.50	.04	.87	.23
a. Grouping Variable: Annual Volume of Sales					

**Table 12. Industry Classification (WRST Results)**

Test Statistics <sup>a</sup>					
	CRM_Variable	OF_Variable	RM_Variable	CA_Variable	OP_Variable
Wilcoxon W	17.50	16.00	10.500	15.00	16.50
Z	-.15	-.58	-2.18	-.87	-.45
Asymp. Sig. (2-tailed)	.89	.56	.03	.38	.66
a. Grouping Variable: Industry Classification					

Given a low response rate of 1%, the researcher determined that generating simulated data based on the collected response data (n = 8) was necessary to adequately analyze the data using bivariate correlation analysis to test the proposed hypotheses. In order to obtain 95 percent confidence interval and a  $\pm .05$  precision level of the total number of executives invited to participate in the survey (N = 800), a representative sample of 260 respondents was sufficient (Ross, Clark, Padgett, & Renckly, 2002).

Tinsley and Tinsley (1987) endorsed and recommended a widely accepted guideline of

obtaining 5 to 10 subjects per item up to a total of about 300 in order to adequately utilize factor analysis. In order to faithfully meet the more stringent requirement, a sample of 400 data points for each item was generated utilizing the random number generator and the normal distribution function in Microsoft Excel. The mean and standard deviation of each item from the actual data was utilized to generate simulated data that was fairly representative of the actual response data for analysis purposes. It must be noted that 1% of the data collected may not be representative of the population. The normal distribution appeared to provide adequate variation in the data such that further statistical analysis appeared appropriate. This data was analyzed and conclusions were made based on the generated data which will be further discussed in the following chapter.

### ***Measures***

The survey was designed to measure five dimensions as well as individual and organizational characteristics. The five dimensions included CRM, OF, RM, competitive advantage, and organizational performance. The items used in each measure are listed in Table 13.

**Table 13. Survey Items**

<b>Variable</b>	<b>Item</b>
<b>Customer Relationship Management</b>	<ol style="list-style-type: none"><li>1. Our firm has developed a CRM process team.</li><li>2. Our firm utilizes cross-functional input within the CRM process.</li><li>3. Our firm ensures our CRM process is aligned with our corporate strategy.</li><li>4. Our firm identifies target segments that are critical to our organization's success.</li><li>5. Our firm develops guidelines for the degree of differentiation in PSAs.</li><li>6. Our firm documents our business relationships with customers through formal PSAs.</li><li>7. Our firm develops PSAs that do not enhance the profitability of the firm. (R)</li><li>8. Our firm provides customized PSAs for key customers.</li><li>9. Our firm provides standard PSAs for customer segments.</li><li>10. Our firm develops PSAs that do not enhance the profitability of our customers. (R)</li><li>11. Our firm develops metrics that are related to the customer's impact on our firm's profitability.</li><li>12. Our firm develops metrics that are related to our firm's impact on the customer's profitability.</li><li>13. Our firm's CRM metrics are tied back to our firm's financial performance.</li><li>14. Our firm does not measure customer profitability over time. (R)</li><li>15. Our firm's CRM metrics are aligned with other metrics used throughout the firm.</li><li>16. Our firm's people understand how their decisions/actions affect the CRM process.</li><li>17. Our firm's key suppliers do not understand how their decisions/actions affect the CRM process. (R)</li><li>18. Our firm's customers understand how their decisions/actions affect the CRM process.</li><li>19. Our firm uses guidelines for sharing process improvement benefits with customers.</li></ol>

Variable	Item
<b>Order Fulfillment</b>	<ol style="list-style-type: none"> <li>1. Our firm has developed an OF process team.</li> <li>2. Our firm utilizes cross-functional input within the OF process.</li> <li>3. Our firm understands how our OF process is tied to our customer service strategy.</li> <li>4. Our firm does not understand how our OF process is tied to our marketing strategy. (R)</li> <li>5. Our firm's OF process is designed around the customer.</li> <li>6. Our firm has not identified our core competencies within order fulfillment. (R)</li> <li>7. Our firm does not adhere to our order fulfillment budget. (R)</li> <li>8. Our firm works with customers to understand their order fulfillment requirements.</li> <li>9. Our firm regularly improves the structure of our logistics network.</li> <li>10. Our firm differentiates order fulfillment terms/policies for each customer segment based on profitability.</li> <li>11. Our firm establishes rules for how product is allocated between customers/customer segments.</li> <li>12. Our firm utilizes technology to support our order fulfillment activities.</li> <li>13. Our firm has not established ordering rules that minimize demand variability (e.g. payment terms, minimum order sizes, etc). (R)</li> <li>14. Our firm has order fulfillment metrics that are tied back to financial performance.</li> <li>15. Our firm does not have performance goals that are related to order fulfillment. (R)</li> <li>16. Our firm has order fulfillment goals that are understood throughout the firm.</li> <li>17. Our firm's order fulfillment metrics are not aligned with other metrics used throughout the firm. (R)</li> <li>18. Our firm's people understand how their decisions/actions affect the order fulfillment process.</li> <li>19. Key suppliers do not understand how their decisions/actions affect the OF process.</li> <li>20. Our firm's customers do not understand how their decisions/actions affect the OF process. (R)</li> </ol>

Variable	Item
<b>Returns Management</b>	<ol style="list-style-type: none"> <li>1. Our firm has formally developed a RM process team.</li> <li>2. Our firm uses cross-functional input to frame the role of returns management within the corporate strategy.</li> <li>3. Our firm evaluates the best alternatives to recapture value from returns.</li> <li>4. Our firm regularly assesses our organization's level of preparedness to comply with potential environmental/legal requirements that may affect returns management.</li> <li>5. Our firm does not consider internal constraints/capabilities when determining goals/strategy for returns management. (R)</li> <li>6. Our firm has not identified types of returns. (R)</li> <li>7. Our firm has procedures for identifying avoidance opportunities.</li> <li>8. Our firm has not developed refund policies. (R)</li> <li>9. Our firm has not developed gatekeeping policies. (R)</li> <li>10. Our firm has developed disposition guidelines.</li> <li>11. Our firm has designed a reverse logistics network that minimizes the supply chain's reverse logistics costs.</li> <li>12. Our firm has not developed plans for dealing with product recalls. (R)</li> <li>13. Our firm has developed a method of valuing returned product.</li> <li>14. Our firm's supply chain partners understand our credit authorization procedures.</li> <li>15. Our firm's credit policies were developed with input from our supply chain partners.</li> <li>16. Our firm has developed rules about using secondary markets.</li> <li>17. Our firm has not developed remanufacturing/refurbishing strategies. (R)</li> <li>18. Our firm has returns management metrics that are related to financial performance.</li> <li>19. Our firm's people do not understand how their decisions/actions affect the RM process. (R)</li> <li>20. Our firm's supply chain partners understand how their decisions/actions affect the RM process.</li> </ol>

Variable & Source	Item
<b>Competitive Advantage</b>  (Li et al., 2006)	<ol style="list-style-type: none"> <li>1. We offer competitive prices.</li> <li>2. We are able to offer prices as low or lower than our competitors.</li> <li>3. We offer high quality products/services to our customer.</li> <li>4. We are not able to compete based on quality. (R)</li> <li>5. We offer products/services that are highly reliable.</li> <li>6. We offer products that are very durable.</li> <li>7. We rarely deliver customer orders on time. (R)</li> <li>8. We provide dependable delivery.</li> <li>9. We provide customized products/services.</li> <li>10. We alter our product/services offerings to meet client needs.</li> <li>11. We do not respond well to customer demand for 'new' features/services. (R)</li> <li>12. We are first in the market in introducing new products/services.</li> <li>13. We have time-to-market lower than industry average. (R)</li> <li>14. We have fast product development.</li> </ol>
<b>Organizational Performance</b>  (Li et al., 2006)	<ol style="list-style-type: none"> <li>1. Market share</li> <li>2. Return on investment</li> <li>3. The growth of market share</li> <li>4. The growth of sales</li> <li>5. Growth in return on investment</li> <li>6. Profit margin on sales</li> <li>7. Overall competitive position</li> </ol>

**Note.** (R) indicates that the questionnaire item was reversed scored before being analyzed in the statistical analysis.

The actual questionnaire used is attached as Appendix A and a consolidated list of reliabilities, means, standard deviations, and sample sizes for all measures from the response data can be found in Table 14 and this same information can be found for the generated data in Table 15.

**Table 14. Variable Descriptive Statistics (Response Data Sample)**

Variable Descriptive Statistics (Response Data)				
	Cronbach's $\alpha$	Mean	Std. Deviation	n
Customer Relationship Management	0.81	3.64	0.34	8
Order Fulfillment	0.33	3.82	0.20	8
Returns Management	0.71	3.54	0.31	8
Competitive Advantage	0.38	3.83	0.20	8
Organizational Performance	0.28	3.80	0.22	8

**Table 15. Variable Descriptive Statistics (Generated Data Sample)**

Variable Descriptive Statistics (Generated Data Set)				
	Cronbach's $\alpha$	Mean	Std. Deviation	n
Customer Relationship Management	0.98	4.05	.62	400
Order Fulfillment	0.99	4.22	.60	400
Returns Management	0.99	3.96	.69	400
Competitive Advantage	0.96	4.21	.47	400
Organizational Performance	0.96	4.27	.50	400

Validity is a critical component to ensuring the adequacy of a scale as a measure (DeVellis, 2003). Content validity reflects the extent to which a content domain (or construct) is captured by a defined set of items (DeVellis, 2003). Content validity was addressed and ensured through rigorous review by a group of academics to ensure the items reflected the intended variables. Construct validity is concerned with the theoretical relationship a variable appears to have with another variables as indicated by their respective measures (DeVellis, 2003). Construct validity was addressed by examining the relationships demonstrated between the variables with the assistance of confirmatory factor analysis (CFA).

To ensure items did appear to have an underlying latent variable (DeVellis, 2003), CFA using SPSS software was used to demonstrate an emergent variable was in fact captured by the items as suggested by the literature. Results were unable to be captured,

and therefore, could not be analyzed when CFA was conducted on the small response data set (n = 8). Useful factor analysis is relatively sensitive to sample size and when the sample size is insufficient the factor analysis process may be compromised (DeVellis, 2003). Tinsley and Tinsley (1987) endorsed and recommended the widely accepted guideline of obtaining five to ten subjects per item up to a total of about 300. In this thesis, 80 items were used and intended to measure five variables (CRM, OF, RM, competitive advantage, and organizational performance). A sample of eight useable responses failed to meet the recommended sample size to adequately utilize factor analysis. CFA was also conducted on the generated data (n = 400). The variables were expected to be somewhat correlated (DeVellis, 2003) with one another so an oblique rotation was utilized in the factor analysis. The results were also inconclusive in demonstrating sufficient evidence that the items captured the intended construct. The items primarily loaded on one factor when forced to extract three components as seen in Table 16. The instability of the CFA is likely due to the fact that the items are so highly correlated. Item correlations can be referenced in Appendix B.

**Table 16. CFA Component Matrix**

Component Matrix <sup>a</sup>						
	Raw			Rescaled		
	Component			Component		
	1	2	3	1	2	3
CRM1	.398	.073	.038	.827	.152	.079
CRM2	.696	.100	-.208	.915	.132	-.274
CRM3	.371	-.008	-.007	.802	-.017	-.015
CRM4	.269	-.018	-.096	.699	-.047	-.249
CRM5	.715	.020	.228	.931	.026	.297
CRM6	.668	.165	.157	.916	.226	.216
CRM7	.715	.020	.228	.931	.026	.297
CRM8	.613	.147	-.179	.904	.216	-.264

CRM9	.715	.020	.228	.931	.026	.297
CRM10	.510	-.088	.098	.854	-.147	.165
CRM11	.553	-.002	-.158	.886	-.003	-.253
CRM12	.752	-.145	-.133	.935	-.181	-.165
CRM13	.411	.118	-.112	.822	.235	-.224
CRM14	.994	-.003	-.074	.965	-.003	-.072
CRM15	.480	-.131	.086	.849	-.231	.152
CRM16	.732	.141	-.074	.918	.177	-.093
CRM17	.779	.197	.031	.937	.237	.038
CRM18	.668	.165	.157	.916	.226	.216
CRM19	.690	-.156	-.115	.906	-.204	-.151
OF1	.498	.174	.004	.878	.307	.007
OF2	.398	.073	.038	.827	.152	.079
OF3	.473	.107	.047	.857	.194	.085
OF4	.681	-.017	-.213	.915	-.023	-.286
OF5	.506	.195	-.055	.886	.342	-.096
OF6	.718	-.122	.149	.934	-.158	.193
OF7	.636	-.149	-.163	.914	-.214	-.234
OF8	.398	.073	.038	.827	.152	.079
OF9	.613	.147	-.179	.904	.216	-.264
OF10	.994	-.003	-.074	.965	-.003	-.072
OF11	.774	-.018	-.183	.926	-.022	-.219
OF12	.371	-.008	-.007	.802	-.017	-.015
OF13	.701	-.190	.057	.932	-.252	.076
OF14	.429	-.150	.051	.826	-.288	.099
OF15	.506	.195	-.055	.886	.342	-.096
OF16	.816	-.115	-.023	.948	-.134	-.026
OF17	.389	-.127	-.076	.795	-.259	-.155
OF18	.684	-.212	.004	.928	-.288	.005
OF19	.755	-.128	.183	.922	-.156	.223
OF20	.668	.165	.157	.916	.226	.216
RM1	.779	.197	.031	.937	.237	.038
RM2	.480	-.131	.086	.849	-.231	.152
RM3	.752	-.145	-.133	.935	-.181	-.165
RM4	.684	-.212	.004	.928	-.288	.005
RM5	.480	-.131	.086	.849	-.231	.152
RM6	.636	-.149	-.163	.914	-.214	-.234
RM7	.480	-.131	.086	.849	-.231	.152
RM8	.701	-.190	.057	.932	-.252	.076
RM9	1.020	.001	-.026	.970	.001	-.025
RM10	1.098	-.006	-.057	.973	-.005	-.051

RM11	.779	.197	.031	.937	.237	.038
RM12	.609	.206	-.122	.904	.306	-.181
RM13	.429	-.150	.051	.826	-.288	.099
RM14	.684	-.212	.004	.928	-.288	.005
RM15	.779	.197	.031	.937	.237	.038
RM16	.506	.195	-.055	.886	.342	-.096
RM17	.761	-.154	-.103	.939	-.190	-.127
RM18	.715	.020	.228	.931	.026	.297
RM19	.829	.112	.111	.948	.128	.127
RM20	.507	-.015	.115	.854	-.025	.195
Extraction Method: Principal Component Analysis.						
a. 3 components extracted.						

Reliability (internal consistency) of the items comprising each measure was examined using Cronbach's alpha (Cronbach, 1951). Following guidance established by Nunnally (1978), an alpha score of higher than 0.70 is generally considered to be acceptable, while an alpha score of higher than 0.80 is considered a good measure of reliability.

*Customer Relationship Management.* The CRM measure was used to determine the extent to which an organization developed a business process that provides the structure for how relationships with customers of that organization will be developed and managed. This measure was adopted from Lambert's (2008) assessment tool for the CRM process. This measure was assessed using 19 items. These 19 items were answered on a 5-point Likert-type response scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable) to assess the extent to which an organization strategically developed their CRM process. The reported Cronbach's alpha for this measure was .81. The scale response ranged from 3.05 to 4.05 with a mean of 3.64 ( $SD = .34$ ;  $n = 8$ ).

*Order Fulfillment.* The OF measure was used to determine the extent to which an organization developed a business process that includes the activities necessary to define customer requirements, design the logistics network, and fill customer orders. This measure was adopted from Lambert's (2008) assessment tool for the OF process. This measure was assessed using 20 items. These 20 items were answered on a 5-point Likert-type response scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable) to assess the extent to which an organization strategically developed their OF process. The reported Cronbach's alpha for this measure was .33. The scale response ranged from 3.55 to 4.10 with a mean of 3.82 ( $SD = .20$ ;  $n = 8$ ).

*Returns Management.* The RM measure was used to determine the extent to which an organization developed a business process that provides a formalized structure that includes all activities related to returns, reverse logistics, gatekeeping, and avoidance. This measure was adopted from Lambert's (2008) assessment tool for the RM process. This measure was assessed using 20 items. These 20 items were answered on a 5-point Likert-type response scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable) to assess the extent to which an organization strategically developed their RM process. The reported Cronbach's alpha for this measure was .71. The scale response ranged from 2.90 to 3.95 with a mean of 3.54 ( $SD = .31$ ;  $n = 8$ ).

*Competitive Advantage.* This measure was used to determine "the extent to which an organization is able to create a defensible position over its competitors" (Li et al., 2006: 111). The competitive advantage measure was adopted from Li et al. (2006). This

measure was assessed using 14 items. The 14 items assesses five sub-scales of competitive advantage. These five sub-scales were (a) price (items 1 and 2), (b) quality (items 3, 4, 5, and 6), (c) delivery dependability (items 7 and 8), (d) product innovation (items 9, 10, and 11), (e) time to market (items 12, 13, and 14). Questions within each of the five sub-scales included (a) we offer competitive prices, (b) we offer products/services that are highly reliable, (c) we provide dependable delivery, (d) we provide customized products/services, and (e) we have fast product development. The five sub-scales were combined to create an overall measure of competitive advantage. These 14 items were answered on a 5-point Likert-type response scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable) to assess the extent to which an organization was able create a defensible position over its competitors. The reported Cronbach's alpha for this measure was .38. The scale response ranged from 3.57 to 4.21 with a mean of 3.83 ( $SD = .20$ ;  $n = 8$ ).

*Organizational Performance.* This measure was used to determine "how well an organization achieves its market-oriented goals as well as its financial goals" (Li et al., 2006: 121). The organizational performance measure was adopted from Li et al. (2006). This measure was assessed using 7 items. These 7 items were answered on a 5-point Likert-type response scale (1 = significantly lower, 2 = lower, 3 = average, 4 = higher, 5 = significantly higher, 6 = not applicable) with respect to the industry average to assess the extent to which an organization achieved its market-oriented and financial goals. The reported Cronbach's alpha for this measure was .28. The scale response ranged from 3.43 to 4.00 with a mean of 3.80 ( $SD = .22$ ;  $n = 8$ ).

*Demographics.* The demographics information included two sections: individual profile and company profile. The individual profile section included four items. The items were: (1) what is your current job title; (2) how many years have you been in your current position; (3) how many years have you been in your current organization; and (4) in your current job, what function(s) best describe your responsibilities. The company profile section included three items. The items included: (1) how many full time employees are in your organization; (2) what is your organization's annual volume of sales measured in millions of dollars; (3) please select the industry classification code which best describes your firm.

### ***Summary***

This chapter described the study participants and also detailed the research design and methodology used to determine whether the key business processes (CRM, OF, and RM) were positively related to competitive advantage and organizational performance. The measures were discussed and their reliabilities were presented. The subsequent chapter discusses the procedures used to analyze the generated data (derived from the survey data) and the results of that analysis.

#### IV. Results and Analysis

The purpose of this thesis was to determine if the strategic development of key business processes (customer relationship management (CRM), order fulfillment (OF), and returns management (RM)) were positively related to competitive advantage and organizational performance. This chapter summarizes the findings of analysis conducted on data collected using the Leading Edge Supply Chain Study Survey. The six hypotheses were evaluated using bivariate correlation analysis.

##### *Data*

As previously discussed, parameters (mean and standard deviation) for each variable (CRM, OF, RM, competitive advantage, and organizational performance) were estimated using the response data sample ( $n = 8$ ), which was then used to generate a larger data sample ( $n = 400$ ) utilizing the random number generator and normal distribution inverse function in Microsoft Excel. All generated data were analyzed using the SPSS software. Once all the data refinement was completed, the number of cases used in the analysis of the six hypotheses was 400. Both the response sample data ( $n = 8$ ) and the generated data set ( $n = 400$ ) were analyzed in evaluating the hypotheses.

To measure the relationship, a Pearson correlation coefficient was calculated between CRM and competitive advantage using SPSS. The correlation coefficient, denoted  $r$ , is a measure of how strongly related two variables of the observed sample are (Devore, 2004). The correlation coefficient ( $r$ ), can range from  $r = -1$ , the largest possible degree of negative relationship, to  $r = 1$ , the largest possible degree of positive relationship (Devore, 2004). The greater the absolute value of the correlation coefficient ( $r$ ), the stronger the relationship.

### ***Hypothesis One***

The first hypothesis sought to determine whether or not the strategic development of the CRM process was positively related to competitive advantage. The CRM measure was comprised of 19 items and utilized a 5-point Likert type response scale and the CA measure was comprised of 14 items and utilized a 5-point Likert type response scale adopted from Li et al. (2006). The resulting Pearson correlation coefficient for the response data sample ( $n = 8$ ) was .71 ( $p < .05$ ), which supported hypothesis 1. The resulting Pearson correlation coefficient for the generated data set ( $n = 400$ ) was .99 ( $p < .01$ ), which also supported hypothesis 1. In sum, hypothesis 1 was supported when utilizing the response data sample ( $n = 8$ ) and the generated data set ( $n = 400$ ).

### ***Hypothesis Two***

The second hypothesis sought to determine if the strategic development of the CRM process was positively related to organizational performance. The organizational performance measure was comprised of 7 items and utilized a 5-point Likert type response scale adopted from Li et al. (2006). The resulting Pearson correlation coefficient for the response data sample ( $n = 8$ ) was  $-.60$  ( $p > .05$ ), which failed to support hypothesis 2. The resulting Pearson correlation coefficient for the generated data set ( $n = 400$ ) was .93 ( $p < .01$ ), which supported hypothesis 1. In sum, hypothesis 2 was not supported when utilizing the response data sample ( $n = 8$ ) but, was supported when utilizing the generated data set ( $n = 400$ ).

### ***Hypothesis Three***

The third hypothesis set out to determine whether or not the strategic development of the OF process was positively related to competitive advantage. The OF measure was comprised of 20 items and utilized a 5-point Likert type response scale. The resulting Pearson correlation coefficient for the response data sample ( $n = 8$ ) was  $-.11$  ( $p > .05$ ), which failed to support hypothesis 3. The resulting Pearson correlation coefficient for the generated data set ( $n = 400$ ) was  $.98$  ( $p < .01$ ), which supported hypothesis 3. Hypothesis 3 was not supported when utilizing the response data sample ( $n = 8$ ). Hypothesis 3 was supported when utilizing the generated data set ( $n = 400$ ).

### ***Hypothesis Four***

The fourth hypothesis sought to determine if the strategic development of the OF process was positively related to organizational performance. The resulting Pearson correlation coefficient for the response data sample ( $n = 8$ ) was  $-.29$  ( $p > .05$ ), which failed to support hypothesis 4. The resulting Pearson correlation coefficient for the generated data set ( $n = 400$ ) was  $.93$  ( $p < .01$ ), which supported hypothesis 4. To summarize, hypothesis 4 was not supported when utilizing the response data sample ( $n = 8$ ) but, was supported when utilizing the generated data set ( $n = 400$ ).

### ***Hypothesis Five***

The fifth hypothesis sought to determine whether or not the strategic development of the RM process was positively related to competitive advantage. The RM measure was comprised of 20 items and utilized a 5-point Likert type response scale. The resulting Pearson correlation coefficient for the response data sample ( $n = 8$ ) was  $-.12$  ( $p > .05$ ), which failed to support hypothesis 5. The resulting Pearson correlation coefficient

for the generated data set ( $n = 400$ ) was  $.99$  ( $p < .01$ ), which supported hypothesis 5.

Hypothesis 5 was not supported when utilizing the response data sample ( $n = 8$ ).

Hypothesis 5 was supported when utilizing the generated data set ( $n = 400$ ).

### ***Hypothesis Six***

The sixth hypothesis sought to determine if the strategic development of the RM process was positively related to organizational performance. The resulting Pearson correlation coefficient for the response data sample ( $n = 8$ ) was  $.18$  ( $p > .05$ ), which failed to support hypothesis 6. The resulting Pearson correlation coefficient for the generated data set ( $n = 400$ ) was  $.95$  ( $p < .01$ ), which supported hypothesis 6. To summarize, hypothesis 6 was not supported when utilizing the original data sample ( $n = 8$ ) but, was supported when utilizing the generated data set ( $n = 400$ ).

### ***Summary***

This chapter summarized the results from the Leading Edge Supply Chain Study Survey and the relationships established between the variables, as measured by the Pearson correlation coefficient, used to evaluate the six hypotheses this thesis sought to assess. In summary, hypothesis 1 was the only hypothesis that was supported when utilizing the response data sample ( $n = 8$ ). The remaining Pearson correlation coefficients calculated to evaluate hypothesis 2 through 6 were not statistically significant ( $p > .05$ ) and failed to support the hypotheses when utilizing the response data sample. All hypotheses were supported when utilizing the generated data ( $n = 400$ ) to calculate the correlation coefficient specific to the evaluation of each relationship. The resulting correlation coefficient appeared to suggest highly positive relationships that were statistically significant ( $p < .01$ ). A summary of the correlation coefficients calculated

using the original data (n =8) can be seen in Table 17 and a summary of the correlation coefficients using the generated data (n = 400) can be referenced in Table 18.

**Table 17. Pearson Correlation Coefficient Summary (Original Data, n = 8)**

Correlations (Original Data, n = 8)						
		CRM_Variable	OF_Variable	RM_Variable	CA_Variable	OP_Variable
CRM_Variable	Pearson Correlation	1.00	.026	-.17	.71*	-.60
	Sig. (2-tailed)		.95	.67	.05	.12
	N	8	8	8	8	8
OF_Variable	Pearson Correlation	.03	1.00	.16	-.11	-.29
	Sig. (2-tailed)	.95		.71	.79	.49
	N	8	8.00	8	8	8
RM_Variable	Pearson Correlation	-.17	.16	1.00	-.12	.18
	Sig. (2-tailed)	.68	.71		.78	.66
	N	8	8	8.00	8	8
CA_Variable	Pearson Correlation	.71*	-.11	-.12	1.00	-.00
	Sig. (2-tailed)	.05	.79	.78		.99
	N	8	8	8	8.00	8
OP_Variable	Pearson Correlation	-.59	-.29	.18	-.00	1.00
	Sig. (2-tailed)	.12	.49	.66	.99	
	N	8	8	8	8	8

\*. Correlation is significant at the 0.05 level (2-tailed).

**Table 18. Pearson Correlation Coefficient Summary (Generated Data, n = 400)**

Correlations (Generated Data, n = 400)						
		CRM_Variable	OF_Variable	RM_Variable	CA_Variable	OP_Variable
CRM_Variable	Pearson Correlation	1.00	.99**	.99**	.99**	.93**
	Sig. (2-tailed)		.00	.00	.00	.00
	N	400	400	400	400	400
OF_Variable	Pearson Correlation	.99**	1.00	.98**	.98**	.93**
	Sig. (2-tailed)	.00		.00	.00	.00
	N	400	400	400	400	400
RM_Variable	Pearson Correlation	.99**	.98**	1.00	.99**	.95**
	Sig. (2-tailed)	.00	.00		.00	.00
	N	400	400	400	400	400
CA_Variable	Pearson Correlation	.99**	.98**	.99**	1.00	.92**
	Sig. (2-tailed)	.00	.00	.00		.00
	N	400	400	400	400	400
OP_Variable	Pearson Correlation	.93**	.93**	.95**	.92**	1.00
	Sig. (2-tailed)	.00	.00	.00	.00	
	N	400	400	400	400	400
**. Correlation is significant at the 0.01 level (2-tailed).						

## V. Discussion

This closing chapter presents conclusions made from this thesis. Limitations to the findings of this study and influences on the research are presented and discussed. Future research opportunities are proposed based on the implications and limitations of this research effort. Consistent throughout supply chain management (SCM) literature is the notion that SCM is the means to creating and sustaining a competitive advantage and enhancing organizational performance for the firm and for the entire supply chain (Cooper, Lambert, & Pagh, 1997; Lambert, Knemeyer, & Gardner, 2004; Li et al., 2005; Mentzer et al., 2001; Tan, Kannan, & Handfield, 1998; Tan et al., 1999). With growing emphasis and almost universal recognition of the importance of SCM amongst academicians and practitioners, this research took a deeper look into SCM processes as defined by the Global Supply Chain Forum (GSCF) (Croxtton et al., 2001) and their individual relationships to competitive advantage and organizational performance. This research specifically focused on the strategic development of three of the eight key business processes which included customer relationship management (CRM), order fulfillment (OF), and returns management (RM) and each their relationships with competitive advantage and organizational performance. An instrument was also developed in order to measure the level of development of each of the key business processes. The results of this study supported the literature in that CRM, OF, and RM appeared to have a positive relationship with competitive advantage and organizational performance.

This research led to a number of findings. First, the generated data (based on the actual data received from the survey respondents) analysis suggested that CRM, OP, and

RM had a strong positive relationship with competitive advantage and organizational performance which supported each of the six hypotheses this research sought to evaluate. Second, in order to evaluate the strategic development of the three processes an instrument was developed which provides a foundation for future research that involves the measurement of the CRM, OF, and RM processes. Thus, the results of this research effort suggested that an organization's strategic development of the CRM, OF, and RM process are associated with increased competitive advantage and organizational performance. In today's competitive business environment that continues to expand beyond more fixed boundaries, it continues to be clear that the supply chain exist (Mentzer et al., 2001), and it is up to the organization to take an active role and manage it. This research further indicates that it may be in the best interest of organizations to actively acknowledge the benefits associated with SCM. More specifically, providing the structure for the development and maintenance of relationships with customers, defining customer requirements and designing a network that enables an organization to meet those requirements in a cost effective manner, and actively managing all activities associated with returns, reverse logistics, gatekeeping, and avoidance with cross-functional input through the strategic development of the CRM, OF, and RM processes appears to be valuable to an organization's pursuit towards increases in competitive advantage and organizational performance.

### ***Limitations***

There are inherent limitations to the results that were found in this research effort. The data was collected using an instrument that required self-report responses. Social desirability and response acquiescence are two tendencies that influence self-report

responses (Schwab, 2005). Presenting oneself in a manner that appears to be favorable to one's peers and/or competitors and the tendency to agree with statements regardless of the content of the item may have skewed the results of self-response survey. In an attempt to minimize limitations associated with these tendencies, a motivating cover letter was developed conveying the importance of the research and the doubly importance of the respondent's participation in completing the survey to better enable valuable research was provided to participants. Participants were also encouraged to be forthcoming and truthful because of the guaranteed anonymity of the survey and responses.

Misinterpretation and a lack of understanding of the questions is a potential limitation. To ensure the interpretability and understanding of the questions a pilot test was conducted to thoroughly evaluate the adequacy of each item. Items were reworded and deleted as required.

Common method variance is the impact of two or more measures being taken from the same respondent (Podsakoff & Organ, 1986). Correlation interpretation can be skewed by the respondent's contamination of each measure, presumably in the same manner (Podsakoff & Organ, 1986). The one-time survey was the only means of collecting data, so outside influences could have had an impact on respondents' responses. Items were reverse-coded and each measure was in a separate section in order to minimize common method variance in an attempt to ensure respondents carefully read items and provided accurate responses.

In an attempt to overcome the low response rate which resulted in a useable sample of eight surveys, a sample data set of 400 was generated. Inherent to analyzing

generated data is the possibility that the sample from which it was produced and the generated data sample are not representative of the population it was intended to represent. This did impair the generalizability, reliability, and validity of the results, scales, and instrument. Generalizability refers to the extent the results of a particular study are applicable beyond that specific study (Schwab, 2005). Generalizability was impaired by the limited sample of respondents. Reliability refers to the consistent variance of a measure and requires a measure to perform similarly to other measures intended to measure a comparable construct, perform consistently between groups as well as consistently over time (Schwab, 2005). Cronbach's alpha was calculated and reported as a measure of internal consistency reliability. There was substantial improvement in the reported Cronbach's alpha for each scale when comparing the response data sample ( $n = 8$ ) to the generated data set ( $n = 400$ ). Construct validity is present when it is reasonable to suggest a measure assesses the construct it is intended to measure (Schwab, 2005). Confirmatory factor analysis was used to establish convergent and discriminant validity but the results from both data sets were inconclusive. To minimize this potential, parameters were estimated based on the response data sample and the normal distribution was assumed to be the underlying distribution of the data. Data was analyzed and results were captured on the assumption that the generated data was representative of the population this research intended to investigate.

The under representation of industry classifications reduced the generalizability of the results. Respondents were only represented from five different industries so generalizability is at most limited to the five industries represented in this research.

Results may or may not be applicable to organizations that fall outside of industries represented in this research.

What ultimately contributed to the low survey response rate is unknown. Some of the contributing factors may have included the length of the survey, in terms of both the number of items that comprised the survey as well as the time required for completion. The members of the distribution list may not have recognized the source of the survey, which may have increased the likelihood of the survey being mistaken for junkmail. Finally, the numerous subscriptions to the Council of Supply Chain Management Professionals distribution list and frequency of participation requests, for the purpose of research and collecting data, may have also had a negative effect on the response rate.

### ***Future Research***

This research did appear to support the literature in providing further evidence that the strategic development of the CRM, OF, and RM process are positively associated with an organization's competitive advantage and organizational performance. This research was limited to a small sample; future research should attempt to sample from a larger population of firms in an attempt to increase sample size and diversity. A larger and more diverse sample will enable future research to integrate a greater number of statistical analysis techniques, improve the reliability and validity of the instrument, and generate more significant findings.

This research focuses on the three of the eight processes defined by the GSCF. Future research should attempt to collect data on each of the key SCM processes in an attempt to determine the relationship each of the processes has with competitive advantage and organizational performance. Collecting data on each of the processes will

also allow for adequate multiple linear regression analysis which takes a comprehensive SCM perspective and seeks to identify the extent to which each of the processes appears to be associated with competitive advantage and organizational performance while controlling for appropriate variables. This will provide vital insight into which processes appear to be most significant to creating and improving organizational value and whether this appears to vary between industries. This would be of great value to academics and practitioners.

SCM is widely recognized for its importance in the private sector and has been growing recognition within the U.S. Department of Defense. Future research should seek to measure the level that SCM practices and activities that comprise SCM processes are currently being utilized in the U.S. Department of Defense. The process names may differ but the practices and activities embrace the foundation of SCM. Identifying and measuring the effectiveness of the SCM process within the U.S. Department of Defense will increase the number of opportunities for adopting, implementing, and benchmarking suitable processes from civilian counterparts.

### ***Conclusion***

Further understanding and development of SCM will require additional research and participation from academicians from various fields and practitioners with diverse backgrounds representing a wide variety of industries. The results presented in this study contribute to the expanding pool of SCM knowledge. It appears that the development of a CRM, OF, and RM process have positive implications on a firm's competitive position and performance. This implies that it may be in the best interest of business organizations to take a proactive role in the management of their supply chain. The

strategic development of key business processes should be of interest to business leaders in organizations in pursuit of establishing a defensible position over its competitors and achieving its market and financial goals.

## Appendix A. Survey



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### Survey meets criteria for exclusion for a SCN under 32 CFR 219, DoDD 3216.2, and AFI 40-40

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#### Privacy Notice

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The following information is provided as required by the Privacy Act of 1974:

**Purpose:**

Dear **Anthonelli White**

The Global Supply Chain Forum (GSCF) defines supply chain management (SCM) as "the integration of key business processes from end-user through original suppliers that provides products, services, and information that add value for customers and other stakeholders". The purpose of this survey is to measure the perceived benefits of implementing the eight SCM processes identified by the GSCF framework as they pertain to competitive advantage and organizational performance. Results from this survey will be reported to all interested participants and used to shed light on the leading edge supply chain management practices currently being implemented throughout industry.

This survey will take approximately 25-30 minutes based on your answers.

**Participation:** We would greatly appreciate your participation in our data collection effort. Your participation is **COMPLETELY VOLUNTARY**. Your decision not to participate or to withdraw from participation will not jeopardize your relationship with the Air Force Institute of Technology, the U.S. Air Force, or the Department of Defense.

**Confidentiality:** We ask for some demographic information at the end of this survey in order to interpret results more accurately. No one other than the research team will see your completed questionnaire. Findings will be reported at the group level only.

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#### Instructions

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This survey consists of various statements which will measure the degree to which your firm has implemented certain supply chain management processes. For each section, please indicate the degree to which you agree or disagree with the associated statements. If you are uncertain how to answer a particular question, or if the process does not apply to your firm, please choose the "**not applicable**" response. Also, please answer all questions in the context of your firm which is defined as the business unit at which you are currently employed.

- Base your answers on your own thoughts & experiences
  - Please make your answers clear and concise when asked to answer in a response or when providing comments
  - Be sure to select the correct option button when asked
-



## Section I: Customer Relationship Management (CRM)

The CRM process provides the structure for how the relationships with customers will be developed and maintained by segmenting customers based on their value over time.

Product and service agreement (PSA): Formal or informal contract or agreement (that may be referred to by different names from company to company) between two organizations with the purpose of specifying the level of performance that will be provided to meet the needs of both parties.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	<u>NOT APPLICABLE</u>
		1	2	3	4	5	6
1	Our firm has developed a CRM process team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Our firm utilizes cross-functional input within the CRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Our firm ensures our CRM process is aligned with our corporate strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Our firm identifies target segments that are critical to our organization's success.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Our firm develops guidelines for the degree of differentiation in PSAs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Our firm documents our business relationships with customers through formal PSAs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Our firm develops PSAs that do not enhance the profitability of the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Our firm provides customized PSAs for key customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Our firm provides standard PSAs for customer segments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Our firm develops PSAs that do not enhance the profitability of our customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	Our firm develops metrics that are related to the customer's impact on our firm's profitability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	Our firm develops metrics that are related to our firm's impact on the customer's profitability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	Our firm's CRM metrics are tied back to our firm's financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	Our firm does not measure customer profitability over time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	Our firm's CRM metrics are aligned with other metrics used throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	Our firm's people understand how their decisions/actions affect the CRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	Our firm's key suppliers do not understand how their decisions/actions affect the CRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	Our firm's customers understand how their decisions/actions affect the CRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	Our firm uses guidelines for sharing process improvement benefits with customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section II: Order Fulfillment (OF)

The OF process includes all activities necessary to design a network and enable a firm to meet customer requests while minimizing the total delivered cost.

The scale below utilizes a five-point Likert type scale with responses ranging from:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	<u>NOT APPLICABLE</u>
		1	2	3	4	5	6
1	Our firm has developed an OF process team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Our firm utilizes cross-functional input within the OF process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Our firm understands how our OF process is tied to our customer service strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Our firm does not understand how our OF process is tied to our marketing strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Our firm's OF process is designed around the customer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Our firm has not identified our core competencies within order fulfillment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Our firm does not adhere to our order fulfillment budget.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Our firm works with customers to understand their order fulfillment requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Our firm regularly improves the structure of our logistics network.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Our firm differentiates order fulfillment terms/policies for each customer segment based on profitability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	Our firm establishes rules for how product is allocated between customers/customer segments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	Our firm utilizes technology to support our order fulfillment activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	Our firm has not established ordering rules that minimize demand variability (e.g. payment terms, minimum order sizes, etc).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	Our firm has order fulfillment metrics that are tied back to financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	Our firm does not have performance goals that are related to order fulfillment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	Our firm has order fulfillment goals that are understood throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	Our firm's order fulfillment metrics are not aligned with other metrics used throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	Our firm's people understand how their decisions/actions affect the order fulfillment process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	Key suppliers do not understand how their decisions/actions affect the OF process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	Our firm's customers do not understand how their decisions/actions affect the OF process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



### Section III: Returns Management (RM)

The RM process includes all activities associated with returns, reverse logistics, gatekeeping, and avoidance that are managed within the firm and across key members of the supply chain.

**Reverse Logistics:** the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.

**Avoidance:** finding ways to minimize the number of return requests.

**Gatekeeping:** making decisions to limit the number of items that are allowed into the reverse flow.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = **NOT APPLICABLE**.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	NOT APPLICABLE
		1	2	3	4	5	6
1	Our firm has formally developed a RM process team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Our firm uses cross-functional input to frame the role of returns management within the corporate strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Our firm evaluates the best alternatives to recapture value from returns.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Our firm regularly assesses our organization's level of preparedness to comply with potential environmental/legal requirements that may affect returns management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Our firm does not consider internal constraints/capabilities when determining goals/strategy for returns management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Our firm has not identified types of returns.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Our firm has procedures for identifying avoidance opportunities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Our firm has not developed refund policies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Our firm has not developed gatekeeping policies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Our firm has developed disposition guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	Our firm has designed a reverse logistics network that minimizes the supply chain's reverse logistics costs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	Our firm has not developed plans for dealing with product recalls.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	Our firm has developed a method of valuing returned product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	Our firm's supply chain partners understand our credit authorization procedures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	Our firm's credit policies were developed with input from our supply chain partners.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	Our firm has developed rules about using secondary markets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	Our firm has not developed remanufacturing/refurbishing strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	Our firm has returns management metrics that are related to financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	Our firm's people do not understand how their decisions/actions affect the RM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	Our firm's supply chain partners understand how their decisions/actions affect the RM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section IV: Customer Service Management (CSM)

The **CSM process** deals with the administration of product and service agreements (PSAs) developed by customer teams as part of the customer relationship management process. Customer service managers monitor the PSAs and proactively intervene on the customer's behalf if there is going to be a problem delivering on promises that have been made.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	<u>NOT APPLICABLE</u>
		1	2	3	4	5	6
1	Our customer service strategy is executed well throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Our firm uses cross-functional input within the CSM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Our customer service representatives respond to customer service issues with formally-developed response procedures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Our firm does not understand the internal coordination required to respond to customer service events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Our firm has mechanisms in place for responding to customer service issues prior to the customer being impacted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Our firm understands the external coordination required to respond to various customer service events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Our firm responds to customer service issues before the customer is impacted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Our firm uses information systems to aid with the information flow related to CSM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Our firm has developed formal CSM metrics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Our firm understands how CSM metrics impact financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	Our firm does not have formal performance goals relating to CSM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	Our firm's key suppliers understand how their decisions/actions affect the CSM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	Our firm's key customers understand how their decisions/actions affect the CSM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section V: Demand Management Process (DM)

The DM process balances the customers' requirements with the capabilities of the supply chain. The process includes forecasting and other efforts to increase flexibility through synchronizing supply and demand and reducing variability. The process also includes efforts to coordinate marketing requirements and production plans on an enterprise-wide basis or efforts made towards synchronizing production rates to manage inventories globally.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	NOT APPLICABLE
		1	2	3	4	5	6
1	Our firm's demand management strategy is executed well throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Our firm uses cross-functional input within the DM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Our firm has not identified the bottlenecks in our supply chain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Our firm's forecasts are coordinated with key suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Our firm's forecasts are coordinated within the firm such that everyone's planning is based on the same numbers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Our firm's forecasts are coordinated with key customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Our firm does not have formal synchronization procedures in place to match supply with demand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Our firm understands the production/inventory capacity available at key points in the supply chain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Our firm has mechanisms to help synchronize supply and demand during contingencies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Our firm has developed formal DM metrics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	Our firm understands how DM metrics impact financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	Our firm's key suppliers understand how their decisions/actions affect the DM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	Our firm's key customers understand how their decisions/actions affect the DM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section VI: Supplier Relationship Management (SRM)

**SRM** is the supply chain management process that provides the structure for how relationships with suppliers are developed and maintained. With regard to your organization's supplier relationship management process, please choose the appropriate number to indicate the extent to which you agree or disagree with each statement.

**Product and service agreement (PSA):** Formal or informal contract or agreement (that may be referred to by different names from company to company) between the two organizations with the purpose of specifying the level of performance that will be provided to meet the needs of both parties.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = **NOT APPLICABLE**.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	NOT APPLICABLE
	1	2	3	4	5	6
1 Our firm has examined how corporate strategy influences the SRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 SRM process requirements are determined by a cross-functional team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 Our firm has not identified key criteria for segmenting suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Our firm documents our relationships with suppliers through formal PSAs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Our firm provides supplier teams with formal boundaries for the degree of customization desired in PSAs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Our firm has SRM metrics that are related to our firm's financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Our firm does not have formal performance goals for supplier relationship management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 Our firm regularly measures our supplier's contributions to our profitability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Our firm regularly measures the impact our business has on a supplier's profitability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 Conflicting functional objectives often hinder the performance of the supplier relationship process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 People throughout our firm understand how their decisions/actions affect the SRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Our key suppliers understand how their decisions/actions affect the SRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 Our customers understand how their decisions/actions affect the SRM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14 Our firm does not share benefits from process improvements with suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section VII: Manufacturing Flow Management (MFM)

MFM is the supply chain management process that includes all activities necessary to obtain, implement, and manage manufacturing flexibility in the supply chain and to move products through the plants.

**Postponement:** Retaining the product in a neutral and non committed status as long as possible in the manufacturing process.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	NOT APPLICABLE
		1	2	3	4	5	6
1	Our firm has examined how our corporate strategy influences the MFM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Our firm has a formal process for evaluating the expertise that will be needed to use future technologies or fulfill future market needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Our firm has a formal process for assessing future changes in laws and regulations that might affect our manufacturing practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Our firm cannot offer different degrees of manufacturing flexibility to different customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Manufacturing flexibility requirements are determined by a cross-functional team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Our firm does not plan for capacity growth for the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Make/buy decisions are based on multiple criteria, with a long term focus.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Postponement opportunities are evaluated jointly with key customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Postponement opportunities are evaluated jointly with key suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Manufacturing capabilities are formally communicated internally.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	Manufacturing capabilities are formally communicated with key customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	Manufacturing capabilities are formally communicated with key suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	Our firm has formal metrics focused on the MFM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	Our firm understands how MFM metrics impact financial performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	Our firm has formal performance goals relating to the MFM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	Our firm has communicated performance goals relating to MFM throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	Conflicting functional objectives hinder the performance of the MFM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	People in our firm have a limited understanding of how their decisions/actions affect the MFM process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section VIII: Product Development and Commercialization (PD&C)

PD&C is the supply chain management process that provides structure for developing and bringing to market new products jointly with customers and suppliers. With regard to your organization's product development and commercialization process, please choose the appropriate number to indicate the extent to which you agree or disagree with each statement.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	<u>NOT APPLICABLE</u>
	1	2	3	4	5	6
1 Our firm has examined how our corporate strategy influences the PD&C process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 Our firm has an extensive (cross-functional) understanding of our supply chain's constraints/capabilities as they relate to product development activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 Our firm does not consider customer feedback with respect to product development activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Our firm provides incentives for new product ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Our firm has evaluated the value of all potential sources of new product ideas and uses them appropriately.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Our firm does not have an explicit methodology for developing new product ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Our firm has formal guidelines concerning supplier and/or customer involvement in our PD&C process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 Our firm does not have formal procedures in place to identify product rollout issues/constraints.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Our firm has formal guidelines for establishing time-to-market expectations for our PD&C process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 Our firm has formal guidelines for establishing product profitability targets for our PD&C process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 Our firm has formal procedures for assessing the strategic fit of new products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Our firm has formal metrics focused on product development and commercialization.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 Our firm understands how our PD&C metrics impact financial performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14 Our firm has formal performance goals relating to the PD&C process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15 Our firm's formal performance goals are communicated throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16 Our firm's formal performance goals are communicated to our suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17 Our firm's formal performance goals are communicated to our customers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18 Our firm's PD&C metrics are aligned with other metrics used throughout the firm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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## Section IX: Competitive Advantage

Competitive advantage is the extent to which an organization is able to create a defensible position over its competitors.

Please indicate the extent to which you agree or disagree with each statement with regard to the competitive advantage of your firm.

The scale below utilizes a five-point Likert type scale with responses ranging from:  
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, 6 = NOT APPLICABLE

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	<u>NOT APPLICABLE</u>
	1	2	3	4	5	6
1 We offer competitive prices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 We are able to offer prices as low or lower than our competitors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 We offer high quality products/services to our customer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 We are not able to compete based on quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 We offer products/services that are highly reliable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 We offer products that are very durable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 We rarely deliver customer orders on time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 We provide dependable delivery.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 We provide customized products/services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 We alter our product/services offerings to meet client needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 We do not respond well to customer demand for 'new' features/services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 We are first in the market in introducing new products/services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 We have time-to-market lower than industry average.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14 We have fast product development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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## Section X: Organizational Performance

Organizational performance is the extent to which a firm achieves its market-oriented goals as well as its financial goals. .

Please select the number which best indicates your firm's overall performance for the following areas as compared to the industry average:

The organizational performance scale utilizes a five-point Likert type scale with responses ranging from 1 = Significantly Lower, 2 = Lower, 3 = Average, 4 = Higher, 5 = Significantly Higher, 6 = **NOT APPLICABLE (DO NOT KNOW)**

	Significantly Lower	Lower	Average	Higher	Significantly Higher	<u>NOT APPLICABLE</u>
	1	2	3	4	5	6
1 Market share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 Return on investment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 The growth of market share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 The growth of sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Growth in return on investment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Profit margin on sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Overall competitive position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Section XI: Demographics

### Individual Profile

		CEO/President/Vice President	Director	Manager	Other
		1	2	3	4
1	What is your current job title?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If other, please explain

		Under 2 years	2 – 5 years	6 – 10 years	Over 10 years
		1	2	3	4
2	How many years have you been in your current position?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

		Under 2 years	2 – 5 years	6 – 10 years	Over 10 years
		1	2	3	4
3	How many years have you been in your current organization?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4	In your current job, what function(s) best describe your responsibilities? Check all that apply.
<input type="checkbox"/>	Finance
<input type="checkbox"/>	Production/Operations Management
<input type="checkbox"/>	Logistics/Transportation/Distribution
<input type="checkbox"/>	Supply/Purchasing/Procurement
<input type="checkbox"/>	Information Technology
<input type="checkbox"/>	Sales/Marketing
<input type="checkbox"/>	Engineering/Product Development
<input type="checkbox"/>	Other

If other, please explain



## Section XI: Demographics (continued)

### Company Profile

		Less than 100	100 – 250	251 – 500	501 – 1000	Over 1000
		1	2	3	4	5
1	How many full time employees are in your organization?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

		Under 10	10 – < 25	25 – < 50	50 – < 100	100 – < 500	Over 500
		1	2	3	4	5	6
2	What is your organization's annual volume of sales measured in millions of dollars?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3	Please select the industry classification code which best describes your firm. Please indicate not applicable ("N/A") if appropriate.	
<input type="radio"/>	11	Agriculture, Forestry, Fishing and Hunting
<input type="radio"/>	21	Mining, Quarrying, and Oil/Gas Extraction
<input type="radio"/>	22	Utilities
<input type="radio"/>	23	Construction
<input type="radio"/>	31 - 33	Manufacturing
<input type="radio"/>	42	Wholesale Trade
<input type="radio"/>	44 - 45	Retail Trade
<input type="radio"/>	48 - 49	Transportation and Warehousing
<input type="radio"/>	51	Information
<input type="radio"/>	52	Finance and Insurance
<input type="radio"/>	53	Real Estate/Rental and Leasing
<input type="radio"/>	54	Professional, Scientific, and Technical Services
<input type="radio"/>	55	Management of Companies and Enterprises
<input type="radio"/>	56	Administrative and Support and Waste Management and Remediation Services
<input type="radio"/>	61	Educational Services
<input type="radio"/>	62	Health Care and Social Assistance
<input type="radio"/>	71	Arts, Entertainment, and Recreation
<input type="radio"/>	72	Accommodation and Food Services
<input type="radio"/>	81	Other Services (except Public Administration)
<input type="radio"/>	92	Public Administration
<input type="radio"/>	999	N/A

**FINISH**


## Appendix B. Item Correlations

		Item Correlations (CRM and OF)																				
		CRM																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
OF	1	<i>r</i>	0.84	0.84	0.76	0.62	0.84	0.90	0.84	0.83	0.84	0.65	0.74	0.79	0.76	0.88	0.61	0.79	0.82	0.90	0.70	
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2	<i>r</i>	1.00	0.77	0.87	0.63	0.83	0.77	0.83	0.75	0.83	0.66	0.66	0.76	0.68	0.81	0.56	0.71	0.74	0.77	0.66	
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		3	<i>r</i>	0.93	0.81	0.84	0.67	0.88	0.82	0.88	0.78	0.88	0.66	0.70	0.79	0.67	0.84	0.60	0.74	0.77	0.82	0.68
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		4	<i>r</i>	0.74	0.94	0.74	0.77	0.78	0.77	0.78	0.89	0.78	0.77	0.91	0.90	0.80	0.89	0.75	0.86	0.83	0.77	0.88
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		5	<i>r</i>	0.78	0.87	0.71	0.58	0.81	0.86	0.81	0.87	0.81	0.64	0.78	0.80	0.84	0.86	0.62	0.83	0.88	0.86	0.72
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		6	<i>r</i>	0.81	0.79	0.80	0.60	0.92	0.84	0.92	0.77	0.92	0.82	0.77	0.87	0.71	0.88	0.84	0.80	0.83	0.84	0.82
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		7	<i>r</i>	0.69	0.87	0.70	0.76	0.78	0.75	0.78	0.83	0.78	0.80	0.87	0.92	0.72	0.90	0.81	0.82	0.81	0.75	0.97
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		8	<i>r</i>	1.00	0.77	0.87	0.63	0.83	0.77	0.83	0.75	0.83	0.66	0.66	0.76	0.68	0.81	0.56	0.71	0.74	0.77	0.66
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		9	<i>r</i>	0.75	0.95	0.72	0.69	0.77	0.79	0.77	1.00	0.77	0.70	0.88	0.83	0.89	0.89	0.73	0.94	0.89	0.79	0.80
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		10	<i>r</i>	0.81	0.89	0.76	0.67	0.88	0.87	0.88	0.89	0.88	0.77	0.87	0.90	0.79	1.00	0.81	0.87	0.88	0.87	0.88
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		11	<i>r</i>	0.78	0.91	0.80	0.71	0.81	0.80	0.81	0.88	0.81	0.79	0.88	0.94	0.80	0.88	0.72	0.85	0.83	0.80	0.84
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		12	<i>r</i>	0.87	0.77	1.00	0.73	0.74	0.69	0.74	0.72	0.74	0.70	0.63	0.79	0.59	0.76	0.57	0.67	0.69	0.60	0.67
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		13	<i>r</i>	0.77	0.80	0.82	0.62	0.87	0.81	0.87	0.77	0.87	0.82	0.78	0.90	0.71	0.89	0.81	0.79	0.81	0.81	0.85
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		14	<i>r</i>	0.51	0.66	0.49	0.45	0.77	0.73	0.77	0.68	0.77	0.70	0.76	0.77	0.62	0.80	0.82	0.73	0.74	0.73	0.80
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		15	<i>r</i>	0.78	0.87	0.71	0.58	0.81	0.86	0.81	0.87	0.81	0.64	0.78	0.80	0.84	0.86	0.62	0.83	0.88	0.86	0.72
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		16	<i>r</i>	0.82	0.84	0.82	0.64	0.88	0.83	0.88	0.82	0.88	0.78	0.84	0.93	0.75	0.93	0.77	0.82	0.83	0.83	0.87
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		17	<i>r</i>	0.53	0.67	0.47	0.36	0.70	0.68	0.70	0.69	0.70	0.62	0.80	0.82	0.73	0.80	0.69	0.72	0.71	0.68	0.86
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		18	<i>r</i>	0.74	0.81	0.78	0.65	0.85	0.79	0.85	0.77	0.85	0.83	0.79	0.92	0.70	0.89	0.81	0.79	0.80	0.79	0.86
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		19	<i>r</i>	0.78	0.77	0.77	0.58	0.91	0.85	0.91	0.75	0.91	0.82	0.76	0.85	0.70	0.86	0.84	0.81	0.83	0.85	0.84
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		20	<i>r</i>	0.77	0.79	0.69	0.55	0.91	1.00	0.91	0.79	0.91	0.79	0.76	0.80	0.76	0.87	0.74	0.86	0.92	1.00	0.78
		Sig (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

		Item Correlations (CRM and RM)																			
		CRM																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
RM	1	<i>r</i>	0.74	0.86	0.69	0.63	0.86	0.92	0.86	0.89	0.86	0.81	0.84	0.81	0.80	0.88	0.79	0.94	1.00	0.92	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	<i>r</i>	0.56	0.72	0.57	0.63	0.81	0.74	0.81	0.73	0.81	0.83	0.76	0.76	0.59	0.81	1.00	0.78	0.79	0.74	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	<i>r</i>	0.76	0.86	0.79	0.67	0.83	0.80	0.83	0.83	0.83	0.80	0.87	1.00	0.76	0.90	0.76	0.82	0.81	0.80	0.90
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	<i>r</i>	0.74	0.81	0.78	0.65	0.85	0.79	0.85	0.77	0.85	0.83	0.79	0.92	0.70	0.89	0.81	0.79	0.80	0.79	0.86
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	<i>r</i>	0.56	0.72	0.57	0.63	0.81	0.74	0.81	0.73	0.81	0.83	0.76	0.76	0.59	0.81	1.00	0.78	0.79	0.74	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6	<i>r</i>	0.69	0.87	0.70	0.76	0.78	0.75	0.78	0.83	0.78	0.80	0.87	0.92	0.72	0.90	0.81	0.82	0.81	0.75	0.97
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7	<i>r</i>	0.56	0.72	0.57	0.63	0.81	0.74	0.81	0.73	0.81	0.83	0.76	0.76	0.59	0.81	1.00	0.78	0.79	0.74	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8	<i>r</i>	0.77	0.80	0.82	0.62	0.87	0.81	0.87	0.77	0.87	0.82	0.78	0.90	0.71	0.89	0.81	0.79	0.81	0.81	0.85
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	9	<i>r</i>	0.77	0.90	0.74	0.70	0.88	0.88	0.88	0.88	0.88	0.81	0.85	0.89	0.80	0.94	0.85	0.88	0.90	0.88	0.88
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	10	<i>r</i>	0.78	0.90	0.76	0.69	0.88	0.88	0.88	0.88	0.88	0.83	0.85	0.91	0.82	0.94	0.82	0.87	0.90	0.88	0.88
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11	<i>r</i>	0.74	0.86	0.69	0.63	0.86	0.92	0.86	0.89	0.86	0.81	0.84	0.81	0.80	0.88	0.79	0.94	1.00	0.92	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	12	<i>r</i>	0.79	0.91	0.75	0.70	0.79	0.82	0.79	0.94	0.79	0.69	0.84	0.81	0.81	0.89	0.70	0.88	0.93	0.82	0.76
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	13	<i>r</i>	0.51	0.66	0.49	0.45	0.77	0.73	0.77	0.68	0.77	0.70	0.76	0.77	0.62	0.80	0.82	0.73	0.74	0.73	0.80
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	14	<i>r</i>	0.74	0.81	0.78	0.65	0.85	0.79	0.85	0.77	0.85	0.83	0.79	0.92	0.70	0.89	0.81	0.79	0.80	0.79	0.86
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	<i>r</i>	0.74	0.86	0.69	0.63	0.86	0.92	0.86	0.89	0.86	0.81	0.84	0.81	0.80	0.88	0.79	0.94	1.00	0.92	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	16	<i>r</i>	0.78	0.87	0.71	0.58	0.81	0.86	0.81	0.87	0.81	0.64	0.78	0.80	0.84	0.86	0.62	0.83	0.88	0.86	0.72
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	17	<i>r</i>	0.78	0.85	0.81	0.65	0.84	0.80	0.84	0.82	0.84	0.79	0.85	0.98	0.76	0.91	0.76	0.81	0.81	0.80	0.90
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	18	<i>r</i>	0.83	0.79	0.74	0.58	1.00	0.91	1.00	0.77	1.00	0.83	0.76	0.83	0.72	0.88	0.81	0.82	0.86	0.91	0.79
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19	<i>r</i>	0.76	0.84	0.71	0.62	0.92	0.91	0.92	0.86	0.92	0.83	0.83	0.83	0.78	0.91	0.83	0.89	0.94	0.91	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20	<i>r</i>	0.79	0.74	0.87	0.63	0.83	0.83	0.83	0.70	0.83	0.82	0.66	0.79	0.62	0.77	0.70	0.80	0.82	0.83	0.76
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

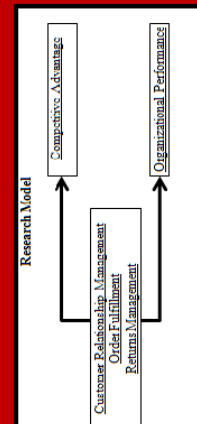
Item Correlations (OF and RM)																						
		OF																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
RM	1	<i>r</i>	0.82	0.74	0.77	0.83	0.88	0.83	0.81	0.74	0.89	0.88	0.83	0.69	0.81	0.74	0.88	0.83	0.71	0.80	0.83	0.92
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	<i>r</i>	0.61	0.56	0.60	0.75	0.62	0.84	0.81	0.56	0.73	0.81	0.72	0.57	0.81	0.82	0.62	0.77	0.69	0.81	0.84	0.74
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	<i>r</i>	0.79	0.76	0.79	0.90	0.80	0.87	0.92	0.76	0.83	0.90	0.94	0.79	0.90	0.77	0.80	0.93	0.82	0.92	0.85	0.80
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	<i>r</i>	0.74	0.74	0.74	0.84	0.73	0.91	0.88	0.74	0.77	0.89	0.87	0.78	0.96	0.85	0.73	0.91	0.78	1.00	0.89	0.79
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	<i>r</i>	0.61	0.56	0.60	0.75	0.62	0.84	0.81	0.56	0.73	0.81	0.72	0.57	0.81	0.82	0.62	0.77	0.69	0.81	0.84	0.74
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6	<i>r</i>	0.72	0.69	0.70	0.92	0.74	0.82	1.00	0.69	0.83	0.90	0.87	0.70	0.85	0.79	0.74	0.90	0.87	0.88	0.81	0.75
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7	<i>r</i>	0.61	0.56	0.60	0.75	0.62	0.84	0.81	0.56	0.73	0.81	0.72	0.57	0.81	0.82	0.62	0.77	0.69	0.81	0.84	0.74
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8	<i>r</i>	0.75	0.77	0.77	0.82	0.75	0.94	0.85	0.77	0.77	0.89	0.85	0.82	1.00	0.84	0.75	0.92	0.77	0.96	0.92	0.81
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	9	<i>r</i>	0.86	0.77	0.81	0.89	0.88	0.91	0.89	0.77	0.88	0.94	0.88	0.74	0.90	0.82	0.88	0.90	0.76	0.90	0.89	0.88
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	10	<i>r</i>	0.87	0.78	0.82	0.90	0.90	0.90	0.89	0.78	0.88	0.94	0.91	0.76	0.91	0.83	0.90	0.91	0.76	0.92	0.88	0.88
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11	<i>r</i>	0.82	0.74	0.77	0.83	0.88	0.83	0.81	0.74	0.89	0.88	0.83	0.69	0.81	0.74	0.88	0.83	0.71	0.80	0.83	0.92
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	12	<i>r</i>	0.88	0.79	0.83	0.85	0.93	0.77	0.79	0.79	0.94	0.89	0.85	0.75	0.76	0.65	0.93	0.82	0.63	0.76	0.75	0.82
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	13	<i>r</i>	0.62	0.51	0.58	0.71	0.65	0.81	0.79	0.51	0.68	0.80	0.71	0.49	0.84	1.00	0.65	0.81	0.80	0.85	0.81	0.73
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	14	<i>r</i>	0.74	0.74	0.74	0.84	0.73	0.91	0.88	0.74	0.77	0.89	0.87	0.78	0.96	0.85	0.73	0.91	0.78	1.00	0.89	0.79
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	<i>r</i>	0.82	0.74	0.77	0.83	0.88	0.83	0.81	0.74	0.89	0.88	0.83	0.69	0.81	0.74	0.88	0.83	0.71	0.80	0.83	0.92
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	16	<i>r</i>	0.93	0.78	0.85	0.81	1.00	0.77	0.74	0.78	0.87	0.86	0.84	0.71	0.75	0.65	1.00	0.82	0.64	0.73	0.75	0.86
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	17	<i>r</i>	0.79	0.78	0.80	0.88	0.80	0.89	0.92	0.78	0.82	0.91	0.92	0.81	0.92	0.78	0.80	0.95	0.84	0.93	0.87	0.80
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	18	<i>r</i>	0.84	0.83	0.88	0.78	0.81	0.92	0.78	0.83	0.77	0.88	0.81	0.74	0.87	0.77	0.81	0.88	0.70	0.85	0.91	0.91
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19	<i>r</i>	0.86	0.76	0.79	0.83	0.86	0.87	0.82	0.76	0.86	0.91	0.83	0.71	0.85	0.78	0.86	0.85	0.73	0.84	0.87	0.91
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20	<i>r</i>	0.72	0.79	0.76	0.74	0.69	0.85	0.73	0.79	0.70	0.77	0.78	0.87	0.85	0.62	0.69	0.83	0.59	0.82	0.86	0.83
		Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Appendix C. Storyboard



## The Impact of Supply Chain Management Business Processes on Competitive Advantage and Organizational Performance

**Capt John F. Perry II**  
**Advisor: William Cunningham III, PhD**  
**Reader: Lt Col Sharon Heilmann, PhD**  
**Reader: Maj Daniel Mattioda, PhD**  
 Department of Operational Sciences (ENS)  
 Air Force Institute of Technology



### Procedures

The Air Force Institute of Technology (AFIT) is a leading research and development organization. This study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department.

### Measures

The Air Force Institute of Technology (AFIT) is a leading research and development organization. This study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department.

### Survey Participants

The Air Force Institute of Technology (AFIT) is a leading research and development organization. This study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department.

### Results and Analysis

The Air Force Institute of Technology (AFIT) is a leading research and development organization. This study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department.

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### Conclusions

The Air Force Institute of Technology (AFIT) is a leading research and development organization. This study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department.

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### Introduction

Successful firms exist in the leading edge of management techniques, theories, and practices in order to stay competitive in a new global economy. This shifted the notion of competition from that of between individual organizations to between supply chain management in the forefront of supply chain management techniques, theories, and practices. Supply chains vary from firm to firm and do not exist in a vacuum. Firms have limited resources and a desire to know if the development and implementation of SCM within their firm is, in fact, going to square to enhanced organizational performance and competitive advantage.

This thesis conceptualized and measured three of the eight key business processes (customer relationship management (CRM), order fulfillment (OF), and returns management (RM)) across the supply chain in order to determine the impact of these processes on competitive advantage. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department. The study was conducted in accordance with the AFIT Research and Development (RD) process. The study was approved by the AFIT Institutional Review Board (IRB) and the AFIT Human Resources and Training (HRT) department.

### Hypotheses

H1: The development of the customer relationship management process will be positively related to competitive advantage.  
 H2: The development of the order fulfillment process will be positively related to competitive advantage.  
 H3: The development of the returns management process will be positively related to competitive advantage.  
 H4: The development of the customer relationship management process will be positively related to organizational performance.  
 H5: The development of the order fulfillment process will be positively related to organizational performance.  
 H6: The development of the returns management process will be positively related to organizational performance.

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<b>14. ABSTRACT</b> Organizational performance has routinely been viewed through a limited scope primarily focused on functions, practices, and resources directly controlled by the focal organization, but supply chain management (SCM) has broadened this scope to incorporate all organizations along the supply chain. This shifted the notion of competition from that of between individual organizations to between supply chains. Supply chain management is an ever growing field; multiple SCM frameworks exist today and are being further developed and defined. Successful firms must reside on the leading edge of management techniques, theories, and practices in order to stay competitive in an ever growing, more constrained, increasingly diverse, and rapidly changing global economy. Supply chain management is at the forefront of such management techniques, theories, and practices. Supply chains vary from firm to firm and from industry to industry. Firms have limited resources and a desire to know if the development and implementation of SCM within their firm is, in fact, going to equate to enhanced organizational performance and competitive advantage. This thesis conceptualized and measured three of the eight key business processes (customer relationship management (CRM), order fulfillment (OF), and returns management (RM)) across the supply chain according to The Global Supply Chain Forum framework. Do these key business processes lead to increased firm performance and a competitive advantage? This thesis developed a survey and collected data from private organizations and, through statistical analysis, measured the strategic development of the CRM, OF, and RM processes of organizations and their relationship to competitive advantage and organizational performance. The results of this thesis found each of the processes were positively related to competitive advantage and organizational performance. The results will serve as value to both academics and practitioners by expanding existing SCM literature and provide firms with a deeper understanding of how SCM business processes truly measure up.					
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