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# The Role of Logistics in the Market Orientation Process

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To the Graduate Council:

I am submitting herewith a dissertation written by Brian Scott Fugate entitled "The Role of Logistics in the Market Orientation Process." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Business Administration.

John T. Mentzer, Major Professor

We have read this dissertation and recommend its acceptance:

Theodore P. Stank, Daniel J. Flint, Robert T. Ladd

Accepted for the Council:

Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Daniel J. Flint

Robert T. Ladd

Accepted for the Council:

Anne Mayhew  
Vice Chancellor and Dean of  
Graduate Studies

(Original signatures are on file with official student records.)

**THE ROLE OF LOGISTICS  
IN THE MARKET ORIENTATION PROCESS**

**A Dissertation  
Presented for  
Doctor of Philosophy Degree  
The University of Tennessee, Knoxville**

**Brian Scott Fugate**

**August 2006**

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## **DEDICATION**

This dissertation is dedicated to my wife,  
Jenny Michelle Fugate

For her unwavering love, encouragement, and support.

## ***ACKNOWLEDGEMENTS***

Philosopher and Theologian Harold Thurman Whitman once said, *“Don't ask yourself what the world needs. Ask yourself what makes you come alive, and do that. Because what the world needs is people who have come alive.”*

I would like to express my gratitude to the faculty and staff in the Department of Marketing and Logistics. I have learned valuable aspects of scholarship from each faculty member that I will carry throughout my career. To my cohorts, I wish to say thank you for making this experience exciting and fun. I am indebted to my dissertation committee members: Dr. John T. Mentzer, Dr. Daniel J. Flint, Dr. Robert T. Ladd, and Dr. Theodore P. Stank. I owe a special thanks to Dr. Theodore P. Stank for his encouragement, motivation, and friendship. I am particularly grateful to Dr. John T. Mentzer – my Dissertation Committee Chairperson, mentor, and friend – in guiding me to recognize and pursue what makes me come alive.

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## ABSTRACT

The ability of an organization to provide customer value and generate profit depends on how well it understands and meets the true needs of its markets. The theory of market orientation captures the essence of discovering and responding to market needs. This dissertation reconceptualizes market orientation as a process, includes a more comprehensive set of behaviors of market orientation, and examines market orientation within the logistics function. Logisticians are particularly relevant to market orientation because of their increasing role in the organization as managers of supply chain relationships and as internal and external boundary spanners. The model was developed based on the literature in marketing, logistics, strategic management, organizational behavior, information processing, and knowledge management and data from in-depth interviews with logistics professionals. The nomological network consisted of five constructs: logistics market intelligence generation, logistics market intelligence dissemination, logistics market intelligence shared interpretation, logistics market intelligence responsiveness. Logistics performance was tested as a second-order construct in the model.

The qualitative and empirical survey results reveal that shared interpretation is a mediator between market intelligence dissemination and responsiveness, the impact on performance is a result of market intelligence responsiveness, and the participation of logistics in MO positively impacts performance of the function and the organization as a whole. The absolute fit of the logistics market orientation model was good (RMSEA of .05, CFI of .95,  $\chi^2 = 1635.64$ , degrees of freedom of 931), and all five hypotheses tested were supported.

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## CHAPTER 1 - INTRODUCTION

As the business environment becomes increasingly turbulent and competitive, organizations are realizing the resources that have historically sustained competitive advantage in business are no longer viable. Survival depends on acquiring intelligence from outside the organization (Drucker 1997). Poor understanding of how to respond to intelligence about the external environment is why most organizations do not achieve their potential performance outcomes (Gummesson 1998). The ability and strength to execute based on intelligence has been argued as the most crucial element of success (Piercy 1998). Acquiring and responding to market intelligence is the essence of the theory of market orientation, which suggests that capturing, managing, and responding to intelligence on the external market is essential to organizational success. Although the predictive power of market orientation is still open to question, most research on market orientation suggests that generation, dissemination, and responsiveness to market intelligence leads to higher performance (Langerak 2003). However, previous studies have also pointed out that we have a long way to go in understanding what it means to be market oriented (Day 1994; Dobni and Luffman 2000).

Although acquiring and disseminating market intelligence are essential to market orientation, without action based on the collected and shared market intelligence, organizational performance will not be impacted. There must be a response to improve performance. The current conceptualization of market orientation unnecessarily lumps these three behaviors (e.g., generating, disseminating, and responding to market intelligence) together and does not specifically address the relationship between responsiveness and performance. Therefore, market orientation should be conceptualized

as a process of generating, disseminating, and responding to market intelligence, with responsiveness directly impacting performance. Additionally, the market orientation literature suggests that individuals who respond to market intelligence must do so with a unified front. Thus, an effective response must be based on a shared interpretation of the market intelligence. Existing research on market orientation, however, does not reflect the concept of shared interpretation.

Furthermore, one of the key contributions of market orientation theory is that all the functions are involved in generating, disseminating, and responding to market intelligence. Marketing has traditionally assumed the role of coordinator in creating a market-oriented organization. While marketing is, no doubt, critical to the success of market orientation, other functions may also play key roles in generating, disseminating, facilitating shared interpretation, and responding to market intelligence. Due to their internal and external boundary spanning roles, logistics is in the distinct position to carry out these market orientation behaviors.

The purpose of this dissertation is to examine the direct link of market intelligence responsiveness on performance, investigate the concept of shared interpretation as a behavior of market orientation, and explore market orientation in a logistics context. The main objective is to help organizations recognize and measure the value of the logistics function's participation in the market orientation behaviors.

The remainder of this chapter examines the justification for this research and its specific goals. Existing literature on the theories related to logistics and market orientation are reviewed in the following section to determine the gaps that this research attempts to fill. Subsequently, the conceptual framework surrounding the logistics

market orientation process is presented. Research objectives are then discussed, followed by contributions expected from the dissertation. The chapter concludes with a description of the organization of the entire dissertation.

## **THEORETICAL JUSTIFICATION**

### **Resource-Based View**

The strategic management, marketing, and logistics literatures increasingly draw upon the Resource-Based View (RBV) of the firm as the underlying theoretical bases for research (Barney 1991; Capron and Hulland 1999; Hunt and Morgan 1995; Srivastava, Shirvani, and Fahey 1998). Viewed less as a theory and more as a paradigm of organizational structure and behavior, RBV attempts to explain and predict why some organizations establish sustainable competitive advantage (Grant 1996). According to RBV, achieving and sustaining a competitive advantage results from an organization's internal resources (Day and Wensley 1988, Hunt and Morgan 1995; Wernerfelt 1984). Resources can be tangible or intangible (e.g., brand names, employment of skilled personnel, trade contacts, efficient procedures, knowledge).

Resources alone, however, do not provide competitive advantage. In order for a competitive advantage to be sustainable, resources must be continuously created and adapted to the changing environment by aggregating numerous specific capabilities into organizational competencies (Snow and Hreniniak 1980; Teece, Pisano, and Shuen 1997). Bundles of capabilities are only considered a competence when they are inimitable, immobile, and undiminishable (Day 1994; Li and Calantone 1998; Prahalad and Hamel

1990). Inimitability refers to combining capabilities in a manner that is matchless or hard to copy and is usually realized through unique historical conditions and/or causally ambiguous and socially complex phenomenon (Barney 1991). Immobility refers to processes that are created within the firm and cannot be purchased by the market (Day 1994; Spender 1996). Processes that are durable (Barney 1991) and do not decrease in value with usage, i.e., they do not depreciate over time (Li and Calantone 1998; Prahalad and Hamel 1990) are undiminshable.

### **Knowledge-Based View**

While neo-classical economic theory suggests that tangible resources such as labor, land, and capital are the source of competitive advantage (Morgan and Hunt 1995), RBV expands this view to include higher order resources, such as culture, management skills, and knowledge. Knowledge, in particular, has gained prominence in theory and practice as a critical resource for sustained competitive advantage. Over a century ago, the economist Marshall (1890) described knowledge as the most powerful engine of production (Schlegelmilch and Penz 2002). Similarly, knowledge is now considered an organization's most valuable resource (Grayson and O'Dell 1998; Zack 1999). There is agreement among a wide array of literature that new knowledge enables organizations to create and maintain sustainable competitive advantages (Davenport and Prusak 1998; Inkpen 1998; Prahalad and Hamel 1990).

The realization of knowledge as the most valuable resource has resulted in a newly emerged knowledge-based view of the firm (KBV). While not yet a theory of the firm, KBV was foreseen by Druker (1988) and is considered an outgrowth of RBV

because it focuses upon knowledge as the most strategically important of the organization's resources (Grant 1996). KBV has been suggested to yield insights beyond RBV by viewing the organization "as a dynamic, evolving, quasi-autonomous system of knowledge production and application" (Spender 1996, p. 59).

This knowledge-based view is reflected in several distinct research traditions, notably organizational learning, information processing, knowledge management, and market orientation. Organizational learning is the development of new knowledge or insights that have the potential to influence behavior (e.g., Fiol and Lyles 1985; Huber 1991; Sinkula 1994; Slater and Narver 1995). While theories of organizational learning do not include action based on new knowledge (as Huber 1991, p. 89 states, learning does not always increase the learner's effectiveness) information processing, knowledge management, and market orientation specifically incorporate action or responsiveness to new knowledge. Stemming from organization learning literature, information processing research focuses on the utilization of organizational information and the various factors that influence it (Moorman 1995). Information processing research views processes for acquiring, disseminating, and utilizing information as "knowledge assets" (Beyer and Trice 1982; Winter 1987) that can be leveraged to achieve competitive advantage (Cohen and Levinthal 1990; Leonard-Barton 1991; Levitt and March 1988; Moorman 1995). Likewise, knowledge management is the discipline of creating a learning environment that fosters the continuous creation, aggregation, use, and re-use of both organizational and personal knowledge in the pursuit of business value (e.g., Davenport, Long, and Beers 1998; Nonaka and Takeuchi 1995; Shin, Holden, and Schmidt 2001).

Corresponding in many aspects with organizational learning, information processing, and knowledge management, research on market orientation focuses on generating, disseminating, and responding to market intelligence. While organizational learning, information processing, and knowledge management are concerned with knowledge in general, market orientation focuses on knowledge of the market. Not only is knowledge as a whole considered the most powerful source of competitive advantage, market knowledge, in particular, has been proposed as an organization's only enduring source of advantage (Birkinshaw et al. 2000). Knowledge of markets (e.g., customers, suppliers, competitors, government, economic and social trends) is especially important because of today's increasingly complex, turbulent, and competitive environment (Achrol 1997). Therefore, because it focuses specifically on market knowledge as the source of competitive advantage and knowledge of markets is considered the most important of all organizational knowledge, understanding the nature of market orientation is the focus of this dissertation.

### **Market Orientation**

Some scholars contend that market orientation, representing the realization of the marketing concept (Barksdale and Darden 1971; Felton 1959; McNamara 1972), is at the "heart of marketing theory" (Levitt 1960; Sin and Tse 2000, p. 911) and, thus, has long been an important element of marketing research and practice. One of the foundational frameworks of market orientation is the research conducted by Narver and Slater (1990), who view market orientation as an organizational culture consisting of three components (customer orientation, competitor orientation, and inter-functional coordination) and two

decision-making criteria (a long-term focus and a profit focus). Kohli and Jaworski (1990) propose a more process-driven model that considers the sub-processes of generating, disseminating, and responding to market intelligence as the essence of market orientation. Matsuno, Mentzer, and Rentz (2005) offer a reconciliation of these two conceptualizations, proposing a holistic framework that suggests a market oriented culture is an antecedent to market oriented behaviors, i.e., generation, dissemination, and responsiveness to market intelligence. This dissertation adopts this holistic framework, where ‘market orientation’ (hereafter referred to as MO) represents a set of behaviors (Kohli and Jaworski 1990) with market-oriented cultural antecedents (Narver and Slater 1990).

While the market orientation literature labels “intelligence” as one of its central constructs, the definition of market intelligence and conceptual use of the term reflects the same definition of the term “knowledge” used in other literature bases (e.g., knowledge management). The organizational learning, knowledge management, and marketing literatures use the terms “knowledge” and “intelligence” interchangeably. For the purposes of this dissertation, knowledge and intelligence are used interchangeably. However, this dissertation uses the term “intelligence” to label the market orientation related constructs, following the established use of the term in the market orientation literature.

According to KBV, and thus RBV, competitive advantage is a result of organizational competence (i.e., a process consisting of a series of sub-processes) composed of bundles of capabilities (individual sub-processes), each of which utilize the intangible resource, knowledge. In terms of market orientation, new market intelligence

is considered an intangible resource, the individual sub-processes or behaviors that create and deploy market knowledge are considered capabilities (generating, disseminating, and responding to market intelligence), and market orientation is the process consisting of a series of those individual sub-processes and, thus, is considered an organizational competence.

Market orientation exhibits characteristics required of an organizational competence (Morgan 2004). It is considered inimitable because the sub-processes of generating, disseminating, and responding to market knowledge are embedded in organizational cognitive activities and are not observed readily from the outside (Day 1994; Li and Calantone 1998; Spender and Grant 1996). MO is regarded as immobile because it is created in the organization and cannot be purchased in the market (Day 1994; Li and Calantone 1998). It is also deemed as undiminishable because the utility of the MO sub-processes does not diminish with usage (Li and Calantone 1998; Prahalad and Hamel 1990). Therefore, market-oriented firm can enjoy a sustainable comparative advantage that can lead to a position of sustainable competitive advantage and superior long-run financial performance (Morgan and Hunt 1995).

In attempts to substantiate the grounds that MO leads to increased organizational competitive advantage and performance, most studies in this stream of research have focused on the relationship between MO and performance (e.g., Jaworski and Kohli 1993; Matsuno and Mentzer 2000; Noble, Sinha, and Kumar 2002; Pelham and Wilson 1996). Research has typically predicted that a market orientation provides an organization with a better understanding of its environment and customers, which leads to a competitive advantage and ultimately better organization performance (Voss and

Voss 2000). As noted by many authors (Baker and Sinkula 2005; Langerak 2003; Noble, Sinha, and Kumar 2002), however, the extensive list of empirical studies testing market orientation's effect on firm performance has shown mixed results. Several studies have found support for the market orientation-performance relationship (e.g., Jaworski and Kohli 1993; Matsuno and Mentzer 2000; Pelham 2000), while others have found no direct relationship (Atuahene-Gima 1996; Bhuian 1998; Han, Kim, and Srivastava 1998; Narver and Slater 1990; Pelham and Wilson 1996). The mixed results of the MO-performance relationship suggests that there are many gaps in the literature and that we have a long way to go in understanding the nature of market orientation (Day 1994; Dobni and Luffman 2000).

### **Research Gaps**

The research described above provides a foundation for the study of market orientation. However, existing research is not clear enough to fully understand and explain the nature of market orientation. The equivocal research results therefore present opportunities for further study.

In an attempt to further understand the mixed results of the MO-performance relationship, much research explores MO in new contexts. Although earlier research on marketing orientation tended to focus on cross-sectional studies in order to examine the universal importance of the concept, recent empirical efforts have tended to be industry specific (Liu 1995; Morgan and Morgan 1991). Much emphasis has also been placed on the antecedents and consequences of maintaining a market orientation (Noble, Sinha, and Kumar 2002). Clearly, findings from studies on the consequences (i.e., the effect on

performance) of MO are important to determine whether or not managers should focus on developing MO behaviors. Contextual differences, perceptual issues, and measurement concerns have hindered the advancement of knowledge surrounding MO (Noble, Sinha, and Kumar 2002). Although the MO-performance relationship has been studied extensively, previous studies have pointed out the elusiveness of what it means to be market oriented (Day 1994; Dobni and Luffman 2000). Thus, although research on factors external to MO (e.g., antecedents, consequences, and moderators) have provided insights into the mixed results of the MO-performance relationship, this dissertation focuses on an investigation of elements internal to MO.

### *Market Orientation Behaviors*

The parallel between market orientation and organizational learning, information processing, and knowledge management described earlier provides insight into the elements internal to MO. All four of the theories involve some form of generating and disseminating intelligence. MO, information processing, and knowledge management also consist of acting on the intelligence generated and disseminated. However, existing conceptualizations of MO do not include one behavior that the other three streams of research incorporates – reaching a shared interpretation of the knowledge. This gap in MO research is important because a central premise of market orientation is responding to market knowledge in a unified manner. Shared interpretation is central to the theory of market orientation because simply disseminating market knowledge throughout the organization does not necessarily mean that all relevant parties have a shared understanding of the intelligence, which would result in a disjointed response. Achieving

a shared interpretation of market intelligence limits “tribal mentality” and “silo-thinking” within groups and encourages a coherent focus for responsiveness (Day 1994; Morgan 2004; Slater and Narver 1995). Therefore, this dissertation portrays shared interpretation of market knowledge as an important behavior that is missing in the current conceptualization of market orientation.

### *Market Orientation as a Process*

Beyond the acknowledgement of the antecedents and consequences of MO (Singh and Ranchhod 2004) and moderators to the MO-performance relationship (Matsuno, Mentzer, and Özsoyler 2002), there is little research on the relationships among the market orientation behaviors. In order for market orientation to improve performance, there must be action (i.e., response to market knowledge) that leads to performance. However, the current second-order construct conceptualization of MO does not reflect this direct link from responsiveness to performance. Although not accounted for in subsequent MO literature, Kohli and Jaworski (1990) argue that market intelligence must be generated before it can be disseminated. In turn, the generated intelligence must be effectively shared throughout the organization before a unified response can be developed and implemented (Kohli and Jaworski 1990). The capacity to develop the organizational competence of the market orientation process may be more important in creating sustainable competitive advantage than the specific market knowledge gained (Schendel 1996). To understand how MO improves organizational performance, this dissertation examines it as a process of causally related behaviors rather than a single construct with multiple dimensions (Martin and Grbac 2003).

### *Market Orientation at the Functional Level*

Another gap in the market orientation literature is how each function uniquely contributes to the development of a market oriented organization. One of the key contributions of market orientation is that all functions should carry out the MO behaviors. This does not imply, however, that every function participates in and adds the same value to an organization-wide MO. Previous MO research either assumes that all functions contributes to MO in the same manner or that marketing should take the lead in the generating, disseminating, and responding to market intelligence (Moorman and Rust 1999). On the other hand, individuals within some functions, potentially non-marketing functions, are inherently better positioned to capture, share, and respond to intelligence derived from certain markets. Previous research has largely ignored MO at the functional level, especially regarding non-marketing functions.

While there are many cultural and structural factors that impact participation in the market orientation process, the number and type of boundary spanning roles is one key determinant that has largely been neglected in the previous research. Boundary spanners are important to market orientation because they link an organization to its environment by nature of their interactions with non-organizational members (Thompson 1967). Market orientation requires the generation of market knowledge from all marketplace participants (customers, suppliers, competitors, third parties, etc.) and, thus, encourages the spanning of each of their boundaries (Matsuno, Mentzer, and Rentz 2000).

### *Logistics Market Orientation*

Boundary spanning theory is particularly important at the functional level, as different functions maintain different numbers and types of boundary spanning roles (Adams 1980; Aldrich 1979; Leifer and Delbecq 1978; Lysonski 1985). Considered a boundary spanning function, logistics is one function that may be uniquely important to developing a market-oriented organization. Whereas individuals within the marketing function span customer boundaries, the logistics function spans both customer and supplier boundaries. Because it spans both the customer and the supplier markets, logistics is suggested to be critically important to the generation of market intelligence. Labeled an integrator of functions (Morash, Dröge, and Vickery 1996; Novack, Rinehart, and Wells 1992; Poist 1986), logistics is also suggested to play a vital role in disseminating, facilitating a shared interpretation, and responding to market intelligence throughout the organization.

The identification and transfer of best practices and the implementation of time-based competitive supply chain processes requires the development of collaborative relationships with customers, suppliers, and third parties. Logisticians are increasingly tasked with the development and maintenance of these collaborative relationships and, thus, are in the distinct position to discover new market intelligence from their supply chain partners and bring that back into their organization. The following quote from Ellinger, Ellinger, and Keller (2002, p. 19) reflects logistics' distinct responsibilities within the organization that facilitates the central role of in generating market intelligence from both the customer and supplier side of the organization, in disseminating market intelligence throughout the organization, and in being responsive to the market:

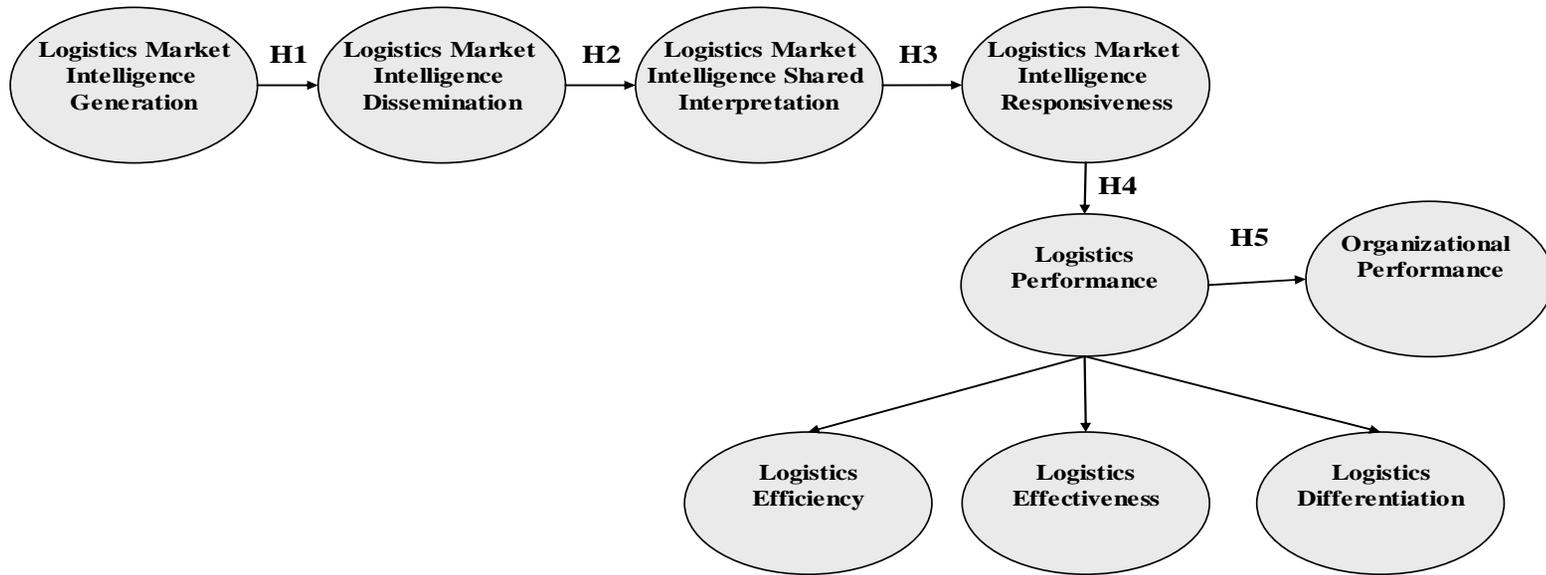
*As the "quarterbacks" for supply chain initiatives, logistics managers are expected to get closer to the customer (Quinn 1997), break down traditional intra-organizational barriers (Copacino 1997), collaborate with suppliers (Corbett, Blackburn, and Van Wassenhove 1999), and provide enhanced levels of service while simultaneously reducing costs (Christopher 1998).*

While clearly a key participator in the MO process, previous literature has yet to address the logistics function's distinct involvement in market orientation behaviors.

## **CONCEPTUAL FRAMEWORK**

This dissertation addresses critical research gaps by reconceptualizing MO to include a more comprehensive set of behaviors, investigating the interrelationships among the MO behaviors, and examining MO at the functional level, specifically within the logistics function. By exploring both MO as a process of causally related behaviors, with the inclusion of shared interpretation, and logistics' participation in each of those behaviors, a conceptual model is developed to explain the role of logistics in the market orientation process.

Figure 1.1 presents the conceptual model this dissertation justifies and tests. As depicted in the figure, this dissertation suggests that the result of a logistics market orientation process leads to improved performance of the logistics function and the organization as a whole. Logistics market orientation (LMO) refers to the role of carrying out the market-oriented behaviors by the logistics function. Thus, LMO process refers to the logistics function's participation in the sequential and causally related



**Figure 1.1**  
**MODEL OF LOGISTICS MARKET ORIENTATION**

behaviors of generating, disseminating, reaching a shared interpretation, and responding to market intelligence.

Chapter 2 develops and justifies definitions of, and the interrelationships among, the constructs: logistics market intelligence generation, logistics market intelligence dissemination, logistics market intelligence shared interpretation, and logistics market intelligence responsiveness. Additionally in Chapter 2, logistics market intelligence responsiveness is hypothesized to increase organizational performance and logistics performance, which is proposed to consist of three dimensions - efficiency, effectiveness, and differentiation. As shown in Figure 1.1, there are cultural and structural aspects of the function, organization, and supply chain that antecede the LMO process. Testing these cultural and structural antecedents is beyond the scope of this dissertation and is left for future research. The following section summarizes the objectives of this dissertation and the specific research questions explored.

## **RESEARCH OBJECTIVES AND QUESTIONS**

The objective of this research is to contribute to market orientation theory by addressing the gaps in prior research. This research examines market orientation as a process of sequential, causal behaviors. Understanding that all functions do not participate in the market orientation process in the same manner, this research evaluates market orientation within the logistics function. In particular, the impact of logistics market orientation on performance is investigated.

This research seeks to answer the fundamental research question, “What is the role of logistics in the MO process?” To answer this question, the following issues are addressed:

1. What are the behaviors that comprise market orientation?
2. What are the relationships between each of the market orientation behaviors?
3. How does the logistics function participate in the market orientation behaviors at the functional level?
4. What is the impact of logistics’ participation in the market orientation process on logistics and organizational performance?

By accomplishing these objectives and answering these questions, this dissertation contributes to both theory and practice, as discussed in the following section.

## **CONTRIBUTION OF THIS RESEARCH**

This dissertation is designed to extend the body of knowledge on market orientation by examining the role of logistics in the market orientation process. One way it accomplishes this is through the examination of the necessary behaviors of market orientation. By integrating the organizational learning, information processing, and knowledge management literature with the theory of MO, this dissertation suggests that shared interpretation of market intelligence is required to achieve a unified response based on market intelligence. Furthermore, MO is conceptualized as a process of sequential, causally related behaviors instead of a second-order construct with three dimensions. This new conceptualization is important because managers must respond to new market intelligence in order to directly impact performance, i.e., if there is no action

based on the market intelligence, then the market intelligence generated and disseminated cannot directly impact performance. Each of these extensions, the inclusion of shared interpretation and MO conceptualized as a process, may explain much of the mixed results of the MO-performance link in previous studies. Additionally, the focus of most research on organizational knowledge is on content, on what should be known rather than on the manner of knowing it and applying it (Spender and Grant 1996). Therefore, this dissertation contributes to theory and practice by investigating the process of knowing and applying intelligence through the MO process.

Each function has unique cultural and structural (e.g., boundary spanning responsibilities) aspects and may be impacted by organizational and external environment factors differently. Therefore, each function should exhibit distinct manifestations of the market orientation behaviors. This dissertation takes the first step in understanding the various manifestations by examining market orientation within the logistics function.

Existing MO scales attempt to measure MO as an organization-wide phenomenon by asking managers in a wide array of functions broad generalized questions. While a comprehensive analysis of samples is infeasible because many of the studies do not indicate the functions sampled, the samples used for data collection are typically skewed with marketing managers (e.g., Dobni and Luffman 2003; Kohli, Jaworski, and Kumar 1993; for exceptions, see for example Hult and Ketchen 2001; Hurley and Hult 1998). In some studies, the sample only includes marketing managers (e.g., Han, Kim, and Srivastava 1998; Matsuno, Mentzer, and Özsoymer 2002). In addition, previous studies have attempted to structure survey questions in a generalized approach to apply to any function within the organization. Recognizing that the context in which each function

generates, disseminates, reaches a shared interpretation, and responds to market intelligence varies, distinct constructs and measurement scales should be developed for each function to capture such differences. This dissertation initiates this notion by adapting existing MO constructs and measures to develop and test constructs and measures for market orientation in a logistics context.

It is typically assumed that marketers develop and hold most the knowledge of the customer through activities such as demand forecasting, market research, marketing surveys, etc. This research should help marketers become aware of the potential insights that can be gained from other functional personnel, such as their logisticians. In particular, depth interviews with logistics managers should provide practitioners with specific examples and insights of how logisticians participate in MO behaviors.

With the increased emphasis on building long-term, mutually beneficial business-to-business collaborative relationships, the logistics boundary spanner becomes more important. Logistics personnel that span boundaries with trading partners have the opportunity to gather necessary intelligence, such as information on order patterns, planned production promotions, and valuable service feedback (Flint et al. 2005; Sigauw, Simpson, and Baker 1998; Stank, Keller, and Daugherty 2001). They also provide the contact that facilitates effective integration of operations across business enterprises. Logistics boundary spanners who are informed, educated, and politically empowered to carryout these responsibilities will motivate their counterparts in other functions and organizations to act on the information disseminated. This study's examination of the relationship between LMO and performance provides support for determining whether executives should allocate resources to develop a market-oriented logistics function.

The logistics function is increasingly recognized as strategically important to organization success (Cooper, Innis, and Dickson 1992; Fuller et al. 1993; Lalonde 1990; Mentzer and Williams 2001; Sharma, Grewal, and Levy 1995). Logistics may play a key role in creating a competitive advantage if it contributes to the organization's core competencies (Stank, Davis, and Fugate 2005). Since market orientation can be considered an organizational competence (Morgan and Hunt 1995), this dissertation contributes to the understanding of logistics role in the organization as a key contributor to the development of an organization's market orientation, and thus, to creating competitive advantage. Additionally, logistics is important to corporate strategy as a boundary spanner (Novack, Rinehart, and Wells 1992; Poist 1986). Beyond the recognition of logistics as a boundary spanner, however, existing logistics research has largely ignored the development of sound boundary spanning theory. Chapter 2 of this dissertation utilizes such theories (Adams 1980; Aldrich 1979; Leifer and Delbecq 1978; Lysonski 1985) from other disciplines to further our understanding of the role of logistics as a boundary spanning function. Following Flint and Mentzer's (2000) call for the need to understand more about the roles logisticians play as key boundary-spanners in organizations, this dissertation contributes to our understanding of logistics role as a boundary spanner in carrying out the MO behaviors.

## **DISSERTATION ORGANIZATION**

This dissertation is divided into three chapters. Chapter 1 is the introduction. It serves to introduce the impetus for studying the phenomenon, the role of logistics in the market orientation process. The chapter also provides an overview of the theoretical

basis for the research, the research objectives, the potential contributions expected from this research, and an outline of the organization of this dissertation. Chapter 2 provides the literature review. It presents the information used to build the theory for this dissertation based on observation of the phenomenon in practice through qualitative analysis of interview data, coupled with a literature review. The chapter also presents the research hypotheses tested as part of this dissertation. Chapter 3 provides the research methodology. It discusses the methodology used to test the model and associated hypotheses. Included are discussions of the research design, measurement development and purification, data collection and data analysis procedures. Chapter 4 presents the qualitative and conceptual article (Article 1) developed based on this dissertation. Chapter 5 presents the empirical article (Article 2) developed based on the results of the analysis of the survey results for this dissertation.

## **CHAPTER 2 – BUILDING THE THEORY**

The logistics market orientation process theoretical model presented in Chapter 1 is grounded in theoretical literature and practical observations of the phenomenon in practice. This chapter provides a review of the literature from which the theoretical foundation for the logistics market orientation model was developed. This is coupled with qualitative research to obtain detailed information on the constructs of interest in practice and their interrelationships. The literature review is an integrative investigation of the logistics, marketing, strategic management, organizational learning, information processing, knowledge management, and organizational behavior literature from which the nomological network for the model was developed. In addition, the chapter explains the logistics market orientation model and the research hypotheses that was tested as part of this dissertation.

This chapter is structured into eight major sections: 1) the organizing framework; 2) the observation methodology; 3) market orientation; 4) market orientation as a process of disaggregate behaviors 5) market orientation at the functional level; 6) market orientation in the logistics function; 7) the construct definition and hypotheses development; and 8) the summary.

### **ORGANIZING FRAMEWORK FOR BUILDING THE THEORY**

The justification for the logistics market orientation conceptual model was developed from the integration of logistics, supply chain management, marketing,

strategic management, organizational learning, information processing, knowledge management, and organizational behavior literature. Each of these literature domains was included in order to provide a comprehensive review of the existing research that supports the research questions described in Chapter 1. The primary research question was: What is the role of logistics in the MO process? Secondary questions included: What are the behaviors that comprise market orientation, what are the relationships between each of the market orientation behaviors, how does the logistics function participate in the market orientation behaviors at the functional level, what is the impact of logistics' participation in the market orientation process on logistics and organizational performance?

The concepts of market orientation as a process of behaviors and logistics' participation the market orientation behaviors drove the literature review. The marketing literature provided the basis for research on market orientation. The marketing, strategic management, organizational learning, information processing, and knowledge management literature provided the foundation for determining and understanding the behaviors of market orientation and for conceptualizing market orientation as a process as reflected in its impact on organizational performance. The logistics, supply chain, and organizational behavior literature was relied upon to understand the role of logistics in the market orientation behaviors and its effect on performance.

Following a description of the observation methodology, this chapter provides a literature review of market orientation. Next, two distinct lines of thought are independently discussed: (1) justification for investigating market orientation as a process and (2) market orientation within the logistics function. These independent concepts are

subsequently integrated for development of logistics market orientation as a process and this dissertation's constructs and hypotheses. The chapter concludes with a summary of the constructs and hypotheses in the logistics market orientation model.

## **OBSERVATION METHODOLOGY**

While there is an abundance of literature on market orientation and its behaviors, literature on logistics' involvement in the market orientation behaviors is sparse. Thus, qualitative research was conducted in order to supplement existing research in constructing the theory for this dissertation. Subsequent to the initial literature review on logistics and market orientation, qualitative research was performed to ensure that existing literature and theory were aligned with the phenomenon of interest. While the literature was reviewed prior to the qualitative phase, the principal researcher of this dissertation was sensitive to the possibility of changing the theory. The qualitative results were continually compared to the existing literature in order to discover differences and similarities between existing research and the phenomenon. The results of the qualitative research were that the interview participants' unprompted descriptions of the role of logistics in the market orientation process corresponded with existing theory that provided further support for this dissertation. In addition to gaining confidence in the existing theory, the qualitative research resulted in the development of a deeper, richer understanding of the phenomenon and thus a stronger, more sound theory. Specifically, the qualitative research helped clarify this dissertation's constructs and support the relationships among them. In addition, a secondary objective of the qualitative research was to facilitate scale development (described in Chapter 3).

## **Research Design**

The qualitative research was conducted in the tradition of grounded theory (Strauss and Corbin 1998). Qualitative approaches based on the grounded theory paradigm are performed when the research problem requires exploring concepts and establishing relationships in raw data and organizing these concepts and relationships into a theoretical explanatory scheme (Stern 1980; Strauss and Corbin 1998, p. 11). The tradition of grounded theory is particularly relevant because the phenomenon under study involves situations in which individuals interact (e.g., traffic managers and truck drivers), take action, and engage in a process (e.g., generating, disseminating, reaching a shared interpretation, and responding to market intelligence) in response to a phenomenon (Creswell 1998). Although more accepted in the marketing literature (e.g., Belk and Coon 1993; Drumwright 1994; Flint, Woodruff, and Gardial 2002; Gilly and Wolfinbarger 1998), grounded theory approaches are beginning to appear in the logistics discipline (Flint and Mentzer 2000). In particular, Strauss and Corbin (1998) provided an overall direction for the qualitative phase of this dissertation.

## **Data Collection and Analyses**

The data were collected and systematically analyzed throughout the research. Consistent with this tradition (according to Strauss and Corbin 1998, as opposed to Glaser and Strauss 1967), the relevant literature was reviewed up-front in order to provide an initial starting point for choosing the data collection samples in addition to sensitivity to the data throughout the research process. Literature was also used as a secondary data source after the data collection started. This approach is also consistent

with Maxwell's (1996) advice regarding the appropriate use of literature in qualitative research strategies. Since participant observation was not an option in most of the situations during this research due to the constraints of the researcher, the data came mainly from interviews with logistics managers. The grand touring technique, where the participants were asked to recall memories of personal experiences related to their involvement in MO behaviors and would be prompted to explain further when necessary, (for explanation of grand touring technique, see Strauss and Corbin 1998) was used during the interviews with the managers. Except for four interviews that were conducted by telephone, interviews took place in team rooms near the participants' offices or within the managers' offices or cubicles.

During each interview, the participants were asked to recall memories of personal experiences related to their involvement in MO activities. In order to minimize researcher bias and provide data quality/reliability in the analysis, all seventeen interviews were audio recorded and transcribed. Between each interview, some analysis was performed to inform and guide future interview questions. Furthermore, some notes were hand-written during interviews and additional notes were hand-written after each interview to capture emotions, interview setting, and other interesting observations. Data analysis was conducted using open, axial, and selective coding procedures (for review and to learn more about these procedures, see Strauss and Corbin 1998). Themes and concepts that emerged during the analysis were analyzed in detail, combined into categories, and compared with existing research to supplement and form constructs and the theoretical framework. ATLAS.TI (Scientific Software Development 1997) facilitated coding of the transcripts.

## **Sampling**

The initial interview respondent was chosen based on logistics' responsibilities and involvement in the MO dimensions. Interview participants were chosen based on theoretical sampling guidelines (see Belk, Sherry, and Wallendorf 1988; Glaser 1978; Strauss and Corbin 1998) that suggest choosing participants that reflect diversity along several dimensions. Initially, because MO involves a high level of interaction between multiple individuals, it was deemed appropriate to explore certain aspects of logistics and MO within the same organization to gain perspectives of the interaction between multiple logistics personnel. Based on the analysis of these initial interviews, it was determined that it was necessary to interview individuals from other organizations to look for confirming and disconfirming examples of the insights gained from previous interviews and the emergent theory. Thus, after multiple interviews within an organization were conducted and analyzed, subsequent interviews were conducted with respondents from other organizations in order to capture diversity of organizational contexts (e.g., industry characteristics and position within the supply chain).

Data redundancy was reached after fourteen interviews. The primary researcher continued with three more interviews to make sure theoretical saturation was reached and the complexity of the phenomenon was captured. Thus, seventeen interviews from seven organizations were recorded and transcribed for coding analysis. The sample reflected diversity along several dimensions, such as job

position (e.g., customer logistics manager, logistics manager, logistics analyst, director of global logistics, director of logistics, traffic manager), tenure on the job, organization size, products manufactured, the organization's position within the supply chain (e.g., original equipment manufacturer, first-tier supplier, second-tier supplier), and industry (e.g., building products, automotive, aluminum, aerospace, specialty materials, food, high-tech).

For theory testing, seventeen interviews would be considered too small of a sample, but in theory building one seeks comprehensive concepts, and it is common to rely on the deep understanding of a few key informants (McCracken 1988). Seventeen interviews is in line with the qualitative research guidelines, which indicate that it is common to interview eight or fewer informants until saturation is reached (McCracken 1988; Strauss and Corbin 1998). The goal is to deeply explore managers' knowledge. Generalizability is not sought in theory building, but rather is reserved for future theory-testing research (Flint and Mentzer 1997).

Each in-depth interview lasted approximately forty-five to ninety minutes. Interview questions were open-ended (see Figure 2.1 for the Interview Protocol) and varied in sequence.

The principal researcher took field notes from observations obtained from touring production and distribution facilities, business meetings, sales calls, and reviewing corporate documents (e.g., intra-company magazines, vendor performance reports, contractual document), when available. For example, during a visit to one of the sample companies, the principal researcher participated in a logistics and supply chain training program. In addition to the seventeen audio recorded interviews, the principal researcher

***Opening***

- Introductions of interviewer and interview participant
- Overview of purpose of the study
- Confidentiality assurance
- Permission to audiotape

***Demographic Data***

- Title/responsibilities of interview participant

***Initial Questions***

- Could you describe the ideal world of logistics/supply chain involvement in learning and responding to the external environment?
- How well does [company] bring in and react to external market intelligence?

***Prompts***

- How are you involved in generating knowledge of the market?
- How are you involved in sharing knowledge of the market?
- How are you involved in responding to knowledge of the market?

***Floating Prompts***

- Who else is involved?
- Does everyone within your department typically come to a shared agreement on the meaning of the information?
- Can you give me examples or tell a story of an experience about that?

**Figure 2.1**  
**Interview Protocol**

met and discussed the research phenomenon with nine other individuals that held various responsibilities and levels throughout the organization (e.g., vice-president of operations, corporate communications, service sales support, sales director, quality engineer, materials handler, truck driver, forklift operator). Thus, insights from total of twenty-six practitioners were used in constructing the theory for this dissertation. The literature was also used as a secondary source during the data collection and analysis phases such that the study involved a continual referral between interview transcripts, field notes, and literature findings.

### **Trustworthiness**

In theory-testing studies that attempt to generalize the findings, the predominant criteria for evaluating research include assessment of internal validity, external validity, and reliability (Calder, Phillips, and Tybout 1983; Lynch 1983). In qualitative exploratory studies, on the other hand, these criteria are inappropriate (Hirschman 1986). As noted by previous researchers (Belk 1989; Flint and Mentzer 2000; Flint, Woodruff, and Gardial 2002; Hirschman 1986; Lincoln and Guba 1985; Wallendorf and Belk 1989), the set of criteria appropriate for qualitative studies in the discovery phase of research are credibility, transferability, dependability, confirmability, integrity, fit, understanding, generality, and control. Such criteria have an evaluative role in interpretive research and are analogous to that of the criteria of internal validity, external validity, and reliability (Hirschman 1986; Lincoln and Guba 1985). Therefore, the trustworthiness of this research process was assured by meticulously following the interpretive research guidelines, as described in Table 2.1 (the table was adapted from Flint, Woodruff, and

**TABLE 2.1**  
**TRUSTWORTHINESS OF THE STUDY AND FINDINGS: INTERPRETIVE**  
**CRITERIA<sup>A</sup>**

| <b>Trustworthiness Criteria</b>   | <b>Method of Addressing in this Study</b>   |
|---|---|
| <p><b>Credibility</b><br/>           Extent to which the results appear to be acceptable representations of the data</p>  | <ul style="list-style-type: none"> <li>• Independent coder analyzed codes and text and reviewed interpretation.</li> <li>• 1-page summary of initial interpretations was provided to the participants for feedback.</li> <li>• Result: Emergent models were altered participants bought into interpretations.</li> </ul>                                |
| <p><b>Transferability</b><br/>           Extent to which the findings from one study in one context will apply to other contexts</p>                              | <ul style="list-style-type: none"> <li>• Theoretical sampling.</li> <li>• Result: Theoretical concepts were represented by data from participants.</li> </ul>   |
| <p><b>Dependability</b><br/>           Extent to which the findings are unique to time and place; the stability or consistency of explanations</p>                | <ul style="list-style-type: none"> <li>• Participants reflected on many experiences covering recent events as well as long past events.</li> <li>• Result: Found consistency across participants' stories regardless of position in firm and when the story took place.</li> </ul>  |
| <p><b>Confirmability</b><br/>           Extent to which interpretations are the result of the participants and the phenomenon as opposed to researcher biases</p> | <ul style="list-style-type: none"> <li>• More than 500 pages of interpretations and documents independently reviewed by 1 other academic and practitioner.</li> <li>• Result: Interpretations were expanded and refined.</li> </ul>   |
| <p><b>Integrity</b><br/>           Extent to which interpretations are influenced by misinformation or evasions by participants</p>                               | <ul style="list-style-type: none"> <li>• Interviews were professional, of a nonthreatening nature, and anonymous.</li> <li>• Result: Never believed that participants were trying to evade the issues being discussed.</li> </ul>   |
| <p><b>Fit</b><br/>           Extent to which findings fit with the substantive area under investigation.</p>  | <ul style="list-style-type: none"> <li>• Addressed through the methods used to address credibility, dependability, and confirmability.</li> <li>• Result: Concepts were more deeply described, and the theoretical integration was made more fluid and less linear, capturing the complexities of social interaction discovered in the data.</li> </ul> |
| <p><b>Understanding</b><br/>           Extent to which participants buy into results as possible representations of their worlds.</p>                             | <ul style="list-style-type: none"> <li>• Executive summary of findings to participants; asked if it reflected their stories.</li> <li>• Presented a summary to colleagues and practitioners.</li> <li>• Result: Colleagues and practitioners bought into findings.</li> </ul>   |

**TABLE 2.1 CONTINUED\***

| <b>Trustworthiness of the Study and Findings: Interpretive Criteria</b>                            |   |
|--|---|
| <b>Trustworthiness Criteria</b>  | <b>Method of Addressing in this Study</b>   |
| <p><b>Generality</b><br/>Extent to which findings discover multiple aspects of the phenomenon.</p> | <ul style="list-style-type: none"> <li>• Interviews were of sufficient length and openness to elicit many complex facets of the phenomenon and related concepts.</li> <li>• Result: Captured multiple aspects of the phenomenon.</li> </ul> |
| <p><b>Control</b><br/>Extent to which organizations can influence aspects of the theory.</p>       | <ul style="list-style-type: none"> <li>• Organizations can control almost all theory variables</li> <li>• Result: Participants can influence logistics involvement in MO</li> </ul>   |

\*Table adapted from Flint, Woodruff, and Gardial (2002, p.106)

Gardial 2002, p. 106 and Flint and Mentzer 2000, p. 23). The findings from the qualitative research analysis are integrated with existing literature to develop the theoretical framework.

**MARKET ORIENTATION**

The marketing concept has been described as a corporate state of mind (Felton 1959), a philosophy (King 1965; McCarthy and Perreault 1984; McNamara 1972), and/or a culture (Deshpande and Webster 1989) that “insists on the integration and coordination of all the marketing functions which, in turn, are melded with all other corporate functions, for the basic objective of producing maximum long-range corporate profits” (Felton 1959, p. 55). The marketing concept advocates that, from the customer’s point of view, marketing should be adopted by the whole business and not simply the responsibility of the marketing function (Drucker 1959; Felton 1959). An integration of previous literature reveals that the marketing concept entails the following three pillars (Kohli and Jaworski 1990):

- (1) Customer focus (Deshpande and Webster 1989; King 1965; McNamara 1972; McCarthy and Perreault 1984)
- (2) Coordinated marketing (Deshpande and Webster 1989; Drucker 1954; Felton 1959; Kotler and Zaltman 1971)
- (3) Profitability (King 1965; McNamara 1972; McCarthy and Perreault 1984)

The marketing concept, however, has traditionally been more an article of faith than a practical basis for managing a organization (Day 1994). Consequently, managers struggled with how to apply the marketing concept, which has resulted in much research over the last 15-20 years that more clearly describes how to implement the marketing concept (Day 1994; Dickson 1992; Webster 1988). Research on implementing the marketing concept evolved into the study of market orientation.

Market orientation has been conceptualized as either an organizational culture and/or a set of organizational behaviors. One of the foundational frameworks of market orientation is the research conducted by Narver and Slater (1990), who view market orientation as an organizational culture consisting of three components (customer orientation, competitor orientation, and inter-functional coordination) and two decision-making criteria (a long-term focus and a profit focus). Many have adopted this conceptualization, suggesting that research strongly support the idea that a market orientation is nothing less than an organization's culture (Deshpande' and Farley 1998, p. 233). Others have argued that the conceptualization of market orientation as an organizational culture is founded on circular logic (Matsuno and Mentzer 2000). If market orientation is conceptualized as an organizational culture, based on the

implementation of the marketing concept, which is also considered a culture, the marketing concept would be conceptualized “as synonymous to market orientation” (Min and Mentzer 2000, p. 678).

Kohli and Jaworski (1990) offer another foundational framework of market orientation. They propose a behavioral conceptualization that considers the acts of generating, disseminating, and responding to market intelligence as the essence of market orientation. Desphande, Farley, and Webster (1993) argue that Kohli and Jaworski’s (1990) simple focus on information about the needs of actual and potential customers is inadequate without consideration of more deeply rooted beliefs that are more likely to consistently reinforce such a customer focus and pervade the organization. Following this line of thought, Day (1994) suggests that a market oriented culture supports the value of thorough market intelligence and the necessity of functionally coordinated actions directed at gaining a competitive advantage. An absence of shared beliefs and values would compromise the activity patterns advocated by the behavioral perspective. Day (1994) further stresses the vital importance of the market sensing activities of collecting and acting on customer needs and the influence of technological, competitor, and environmental forces. Thus, according to Day (1994), there are both cultural and behavioral aspects to creating a market orientation.

### **Reconciliation of Market Orientation Conceptualization**

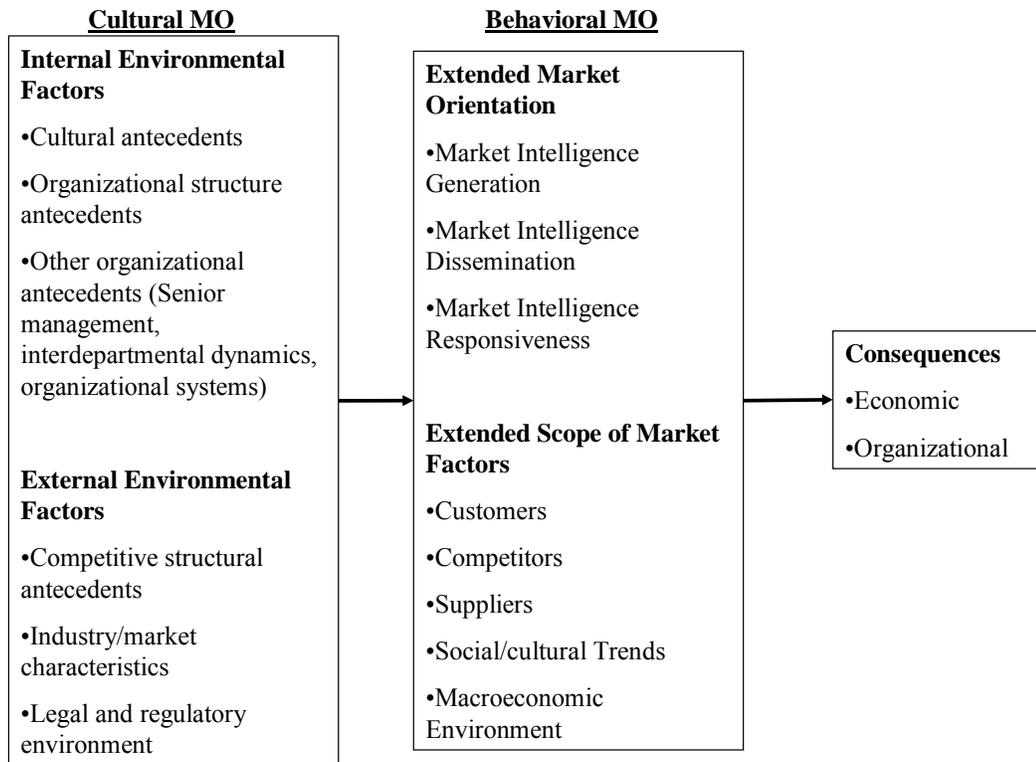
In an attempt to reconcile the heated debate between the cultural and behavioral conceptualization, Matsuno, Mentzer, and Rentz (2005) propose a holistic framework that suggests a market oriented culture is an antecedent to market oriented behaviors (see

Figure 2.2 for an adaptation of this model). The model positions organizational culture as one of several antecedents to the organization's conduct (i.e., market orientation as a set of behaviors). The other antecedents to the market orientation behaviors include additional organizational antecedents, such as organizational structure, interdepartmental dynamics, and senior management, and external environmental factors, such as the structure of the competitive environment and industry and market characteristics.

### **Extended Scope of Market Orientation**

Matsuno and Mentzer (2000) and Matsuno, Mentzer, and Rentz (2000) extended and broadened the MO construct by developing an extended market orientation scale. Their scale extended intelligence generation, dissemination, and responsiveness to include relevant industry market factors (i.e., social, cultural, regulatory, and macroeconomic factors), as opposed to Kohli and Jaworski's scale, which measures only customers and competitors as providing market intelligence. The improved scale extends the MO item domains to explicitly include supplier relationships, regulatory aspects, social and cultural trends, and the macro-economic environment (see "Extended Scope of Market Factors" in Figure 2.2). Thus, MO involves the generation, dissemination, and response to all the marketplace participants and market factors.

It should be noted, however, that the purpose of including each of these marketplace participants and market factors is for the continuous creation of superior value for customers (Slater and Narver 1998). As Drucker (1954, p. 23) states in regards to the marketing concept, and thus, market orientation, "There is only one valid definition of business purpose: to create a customer... It is the customer who determines what the business is..."



\*Adapted from Matsuno, Mentzer, and Rentz (2005)

**Figure 2.2**  
**Reconciliation of Market Orientation Conceptualizations**

Thus, for the purposes of market orientation, intelligence derived from marketplace participants and market factors is only valuable if it serves the purpose of ultimately improving customer value and firm performance.

While the market orientation cultural antecedents (shown in Figure 2.2) are important to creating a market oriented organization, this dissertation is interested in the role logisticians play in carrying out MO behaviors. Therefore, for the purposes of this research and the remainder of this paper, “MO” refers to the behavioral conceptualization of market orientation based on Kohli and Jaworski (1990). Understanding the cultural and structural antecedents of MO in a logistics context is reserved for future research.

### **Market Orientation Behaviors**

From the literature and results of field interviews, Kohli and Jaworski (1990) conceptualized MO as a second-order construct entailing (1) one or more departments engaging in activities geared toward developing an understanding of customers’ current and future needs and the factors affecting them, (2) sharing of this understanding across departments, and (3) the various departments engaging in activities designed to meet select customer needs. More specifically, the first dimension of Kohli and Jaworski’s (1990) MO framework is intelligence generation, which represents the process of knowing the market. The second dimension, intelligence dissemination, corresponds to the diffusion of the generated market intelligence throughout the organization. The third dimension is intelligence responsiveness, i.e., acting on the intelligence generated and disseminated.

Beyond the market orientation research, there are several streams of literature that offer insight into the behaviors involved in a market oriented organization. In particular, the organizational behaviors involved in organizational learning, information processing, and knowledge management parallel MO behaviors and, thus, are reviewed below.

In many respects, the concepts of market orientation and learning are intertwined (Baker and Sinkula 1999; Noble, Sinha, and Kumar 2002). Daft and Huber (1987) classified existing literature on organizational learning under two basic perspectives, which they called the systems-structural perspective and the interpretive perspective. The systems-structural perspective emphasizes information embodied in the generation and dissemination of information resources across the organization. The focus of the systems-structural perspective is on reducing ignorance by providing information. Primary concerns of this perspective are the design of systems to generate and efficiently transfer information to the point of use. The interpretive perspective focuses on the underlying purpose and common meaning of information. Specific issues of concern are the cognitive interpretations of information and the means through which shared interpretation is reached. Slater and Narver (1995) synthesized previous research on organizational learning (e.g., Daft and Huber 1987; Huber 1991; Sinkula 1994) and suggested that organizational learning involved the following three behaviors: (1) information acquisition; (2) information dissemination; and (3) shared interpretation. Information acquisition refers to bringing information about the external environment into the boundary of the organization (Kiesler and Sproull 1982; Weick 1969). Information dissemination refers to the degree to which information is diffused among relevant users within an organization (Beyer and Trice 1982; Glaser, Abelson, and

Garrison 1983). Shared interpretation refers to the degree of consensus on the meaning and implications of the information that was disseminated (Slater and Narver 1995).

While organizational learning is concerned with the development of insights that have the *potential* to influence behavior (Slater and Narver 1995), the information processing literature addresses more than just the potential of new information, but also how the insights are used to create actions that actually increase organizational performance. As such, Moorman (1995) integrated previous literature to conceptualize four organizational information behaviors: information acquisition, information transmission, conceptual utilization, and instrumental utilization. Two of the behaviors, information acquisition and information transmission, are identical to the first two organizational learning behaviors and, thus, a description of each is not repeated. Information conceptual utilization refers to the extent to which an organization recognizes the value of information agents and products (Beyer and Trice 1982; Menon and Varadarajan 1992) and the processes through which information is given meaning to a collection of individuals (Daft and Weick 1984). This is similar to the concept of “shared interpretation” discussed in the organizational learning literature. Lastly, instrumental utilization is the extent to which an organization directly applies information from the external environment to influence actions (Moorman 1995).

In yet another stream of literature that parallels MO, research on knowledge management reflects several aspects similar to organizational learning and information processing literature, such as creating a learning environment and providing knowledge to make decisions (Schlegelmilch and Penz 2002). For example, Cross (1998) defines knowledge management as the discipline of building a learning environment that fosters

the continuous creation, aggregation, use, and re-use of organizational knowledge in pursuit of business value. While previous literature reveals many behaviors involved in managing knowledge (Argote, Mcevily, and Reagans 2003; Gold, Malhotra, and Segars 2001; Quintas 1997), most researchers agree that the most important and central behaviors of knowledge management are knowledge creation, knowledge distribution, and knowledge application (Schlegelmilch and Penz 2002).

Each of these streams of literature offers unique insights in terms of the market oriented behaviors. For example, the MO literature provides the distinct perspective of focusing on intelligence about the “market.” While the organizational learning literature includes intelligence generation, dissemination, and shared interpretation, it is void of the act of responding to the intelligence. More importantly for this paper’s research, however, the current behavioral conceptualization of MO (Kohli and Jaworski 1990) is missing an important behavior, i.e., the process of reaching a shared interpretation.

The inclusion of shared interpretation of market intelligence to MO is critical because the transfer of intelligence is difficult. While subsequent tests of MO are void of the concept of shared interpretation, Day (1994) suggests that market-driven firms must achieve mutually informed interpretations (i.e., shared interpretation). If a response is to be unified, there must be a shared interpretation of the market intelligence. Grant (1996) views the organization as an institution for intelligence integration. The ability of a firm to integrate the specialized intelligence of its employees is critical to planning and implementing an effective response (Spender and Grant 1996). The organizational learning literature points to the role of common cognitive schema and frameworks (Weick 1979; Spender 1989), metaphor and analogy (Nonaka and Takeuchi 1995, p. 64),

and stories (Brown and Duguid 1991) as vehicles for molding, integrating, and reconciling different individuals' understandings (Grant 1996).

Therefore, it is concluded that Kohli and Jaworski's (1990) second order construct of market orientation is incomplete and that market orientation is better conceptualized as consisting of the following four behaviors: intelligence generation, intelligence dissemination, shared interpretation, and responsiveness.

### **MARKET ORIENTATION AS A PROCESS OF DISAGGREGATE BEHAVIORS**

In part, the mixed support for the MO-performance relationship has resulted from challenges in effectively measuring the MO construct (Noble, Sinha, and Kumar 2002). Several researchers have suggested that one reason for the mixed results is that MO has been inappropriately measured on a holistic basis and should instead be measured using a disaggregated approach (Bhuiyan 1998; Kohli and Jaworski 1990; Noble, Sinha, and Kumar 2002). There are both methodological and theoretical justifications for disaggregating the market orientation second-order construct into a process (Noble, Sinha, and Kumar 2002). Studying the interrelationships among market orientation behaviors allows for better control of the error or "noise" that may influence more holistic measurement attempts (Noble, Sinha, and Kumar 2002). Also, while there are arguments for considering the complex market orientation construct as a second-order construct, we use the disaggregated approach that enables us to consider the differential influence of, and the causal ordering among, the four behaviors of market orientation.

Although Noble, Sinha, and Kumar (2002) evaluate the cultural MO framework (Narver and Slater 1990) as five separate constructs, the behavioral MO framework

(Kohli and Jaworski 1990), has yet to be effectively studied in a disaggregated manner. We evaluate the behavioral MO framework as four separate interrelated constructs. Using the strategy, organizational learning, information processing, and knowledge management literature as support, we further propose a causal ordering among the four constructs. The following discussion parallels MO with the strategy literature to discern the causal order between market intelligence generation, dissemination, achieving a shared interpretation, and responsiveness. Subsequently, the organizational learning, information processing, and knowledge management literature is used to further justify MO as a process.

It has been suggested that a market orientation is the foundation for certain strategies (McDaniel and Kolari 1987; McKee, Varadarajan, and Pride 1989). Strategy determines the fit between an organization and its environment (Varadarajan and Clark 1994). The strategy literature has documented the role of market intelligence as an important intangible resource for the firm (Grant 1996; Spender 1996; Tippins and Sohi 2003). During strategy formulation, managers gain understandings of all relevant and appropriate market developments that will affect the future in order create core competencies and capabilities to address those changes (Jarratt and Fayed 2001). This external analysis that occurs throughout the formulation of strategy is essentially the generation of intelligence about the market. Porter's (1980) "5-forces" model, for example, encourages managers to look at major external market forces in order to generate useful intelligence for the formulation of appropriate strategies (Roos, Bainbridge, and Jacobsen 2001).

Additionally, response to intelligence has been defined as acting on intelligence that is generated and disseminated (Kohli and Jaworski 1990). Correspondingly, strategy implementation has been described as the execution of, or the acting upon, programs and processes developed in the strategy formulation stage (Cespedes 1991). Thus, it can be concluded that: (1) the intelligence generation dimension of market orientation resembles many of the activities involved in the formulation of strategy and (2) the intelligence responsiveness dimension is closely related to the implementation of strategy. To better understand the association between the dimensions of market orientation, we investigate the relationships between strategy formulation and implementation.

Recent marketing literature suggests that strategy formulation and implementation are indistinguishable (Bonoma 1992; Moorman and Miner 1998; Piercy 1998). While it is important to understand the interdependencies among strategy formulation and implementation, much of the strategic management literature suggests formulation and implementation are separate, distinguishable concepts (Colgate and Danaher 2000; Dobni and Luffman 2000; Hrebiniak and Joyce 2001; Meyers and Sivakumar 1999; Sashittal and Tankersley 1997). Simply because two concepts are interdependent does not necessarily mean they should be combined and studied as one concept. "Logically, implementation follows formulation; one cannot implement, carry out, or ensure fulfillment of something until that something exists" (Hrebiniak and Joyce 2001, p. 603). Varadarajan and Jayachandran (1999:121) suggest that the strategy formulation process refers to the activities that a business engages in for determining the strategy content (e.g., market opportunity analysis, competitor analysis, and decision-making styles) and the strategy implementation process refers to the actions initiated within the organization and

in its relationships with external constituencies to realize the strategy (e.g., organization structure, coordination mechanisms, and control systems). Hrebiniak and Joyce (2001, p. 603) argue that formulation and implementation are not the same thing, and provide three separate arguments to support this belief:

*“First, strategy formulation and implementation are complementary and logically distinguishable areas of strategic management research. Second, because of this, calling everything the same thing is logically confusing and theoretically dysfunctional. Third, when we admit that strategy is more than just strategy formulation, empirical research reveals that many implementation-related variables are vitally important in explaining firm performance. In fact, these variables may explain substantially more variance in firm performance than those related to formulation.”*

Many strategy scholars conceptualize strategy formulation, planning, and implementation as distinct processes. The strategy is first formulated, which involves the selection of a general strategy (Kerin and Peterson 1995). Strategy formulation is followed by the development of a detailed plan to carry out the strategy, for example, considering source allocation and timing questions, which is something that is done in advance of taking action (Ackoff 1970). Then, the plan is actually implemented (i.e., taking action).

Summing strategy variables such as “formulation,” “planning,” and “implementation” unnecessarily lumps together variables that may hinder theory building (Dubin 1969). In order to determine where the break-down in strategy occurs, one needs to determine whether the strategy formulation and/or the execution are faulty (Cravens

1998; Sashittal and Tankersley 1997). “Combining all these variables together and simply calling them formulation encourages researchers from within strategic management to ignore... the specific meaning of their theoretical terms” (Hrebiniak and Joyce 2001, p. 604).

Furthermore, many marketing researchers have developed a linear process of strategy formulation, planning, and implementation, which lays out a sequence of activities (usually involving 4-8 steps) (e.g., Boyd, Walker, and Larreche 1998, p. 16; Cravens and Lamb 1993, p. 688; Dalrymple and Parsons 1990; Kotler 1994, p. 63). In many of these cases, formulation, planning, and implementation are each included in a distinct well-defined step. For example, Peter and Donnelly (1998, p. 10) suggest the processes for marketing strategy are: (1) the organization gathers information about the changing elements in its environment, (2) this information is communicated throughout the organization to adapt better to these changes through the process of strategic planning, and (3) the strategic plan(s) and supporting plan(s) are implemented in the environment. Their conceptualization suggests that strategy is first formulated, followed by planning, and lastly implemented. Peter and Donnelly’s sequence of activities provides implications for MO: Step 1 involves the generation of intelligence, Step 2 involves dissemination and reaching a shared interpretation of intelligence, and Step 3 involves response to the intelligence generated and disseminated. This sequence of activities suggests intelligence generation, intelligence dissemination, and intelligence responsiveness are four distinct concepts and occur in sequential steps.

Given the comparable association between strategy formulation and implementation and market orientation, intelligence generation, dissemination, shared

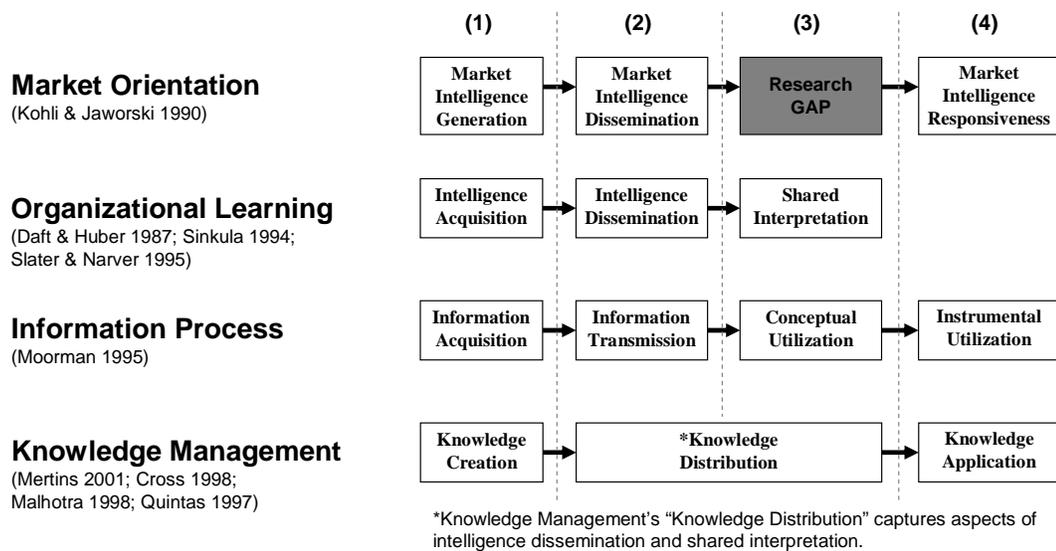
interpretation, and response to that intelligence may be more appropriately conceptualized as separate, distinguishable concepts. A closer examination of the second-order construct of MO may reveal that summing the first-order constructs is inappropriate, i.e., they are unnecessarily lumped together. In fact, Kohli and Jaworski's (1990, p. 12) original conceptualization of MO theoretically suggests that intelligence generation, dissemination, and responsiveness are interrelated. Subsequent testing of MO (Jaworski and Kohli 1993), however, does not account for such interrelationships. Furthermore, Kohli, Jaworski, and Kumar (1993) suggest that one methodological issue of the market orientation measure (MARKOR) is a potential causal ordering among the various components of market orientation. They argue that market intelligence must be generated before it can be disseminated. In turn, the generated intelligence must be disseminated before a response can be developed and implemented (Kohli and Jaworski 1990). This conceptualization implies that the Gutman scaling procedure used to develop the original market orientation scales is inappropriate (Kohli, Jaworski, and Kumar 1993, p. 437).

Furthermore, previous literature has consistently conceptualized information activities as comprised of a series of processes (Deshpande' and Zaltman 1982, 1984; Menon and Varadarajan 1992; Moorman 1995). For example, Slater and Narver (1995, 64) describe organizational learning as "a three stage process" and Moorman (1995) conceives information processing as a set of interrelated activities beginning with information acquisition and ending with instrumental utilization. Based on understanding an organization as a knowledge system (Grant 1996), it is generally agreed that knowledge management is a process. While authors differ in the terminology used in

describing the knowledge management process, the aggregate of their works can be described as a process of several activities starting with knowledge creation and ending with knowledge application (Davenport, Long, and Beers 1998; Nonaka and Takeuchi 1995; Shin, Holden, and Schmidt 2001). Thus, Figure 2.3 depicts market orientation, organizational learning, information processing, and knowledge management as processes of interrelated activities. Therefore, we study MO as a process of four disaggregated behaviors, instead of a second order construct composed of four first-order constructs.

## **MARKET ORIENTATION AT THE FUNCTIONAL LEVEL**

Previous research has examined market orientation as an organizational phenomenon and, hence, the unit of analysis of MO research has been at the organizational level. One of the key contributions of MO is the idea that every function in the organization is responsible for marketing and for the market intelligence processes that are central to a successful market orientation (Day 1994; Elg 2002). One area in need of investigation is how each function uniquely contributes to the development of a market oriented organization. Although a central aspect of the theory of market orientation is that all functions are responsible for generating, disseminating, and responding to intelligence about the external market (Kohli and Jaworski 1990), it should not be assumed that each function contributes to MO in the same manner. Some have suggested that a market orientation is analogous to a symphony orchestra in which a conductor tailors and integrates the contribution of each function and that marketing should play the role of conductor (Narver and Slater 1990).



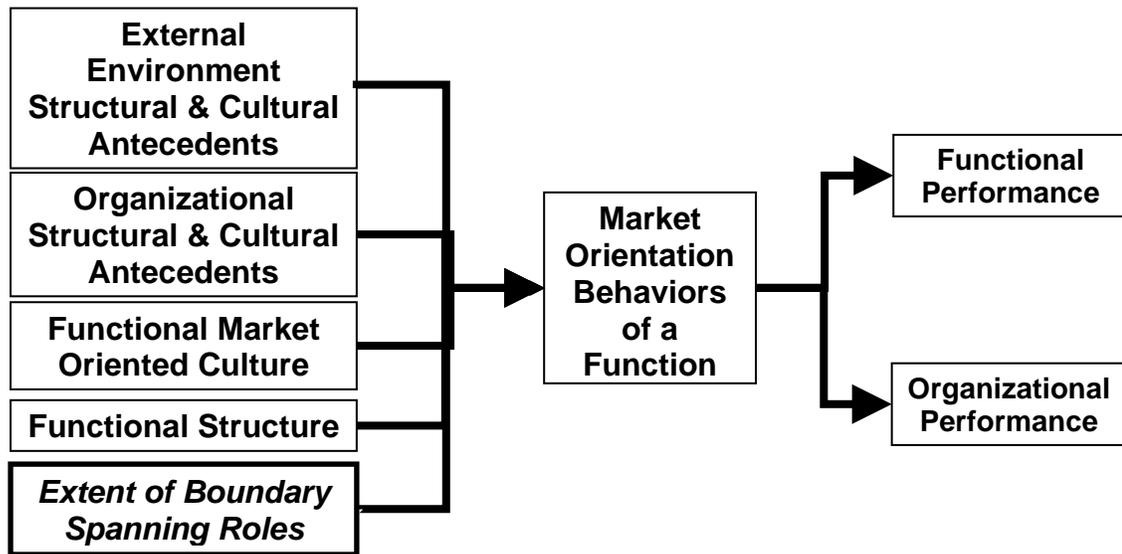
**Figure 2.3**  
**Market Orientation As A Process**

It is further suggested that marketing should guide and coordinate the generation, dissemination, and response to market intelligence (Elg 2002).

In the same manner, Elg (2002) proposes that a market orientation is instrumental in coordinating the activities of all departments, with the marketing function playing a pivotal role in the success of the firm because everyone is involved in marketing activities.

Although the suggestions and propositions regarding marketing's role in MO are normative, lacking empirical support, they imply that each function within an organization plays a unique role in creating a market orientation. It may be, as Day (1994) suggests, marketing adopts a very different and possibly subordinate role in some organizations. Thus, the following section explores MO at the functional level and explores its antecedents and outcomes. A conceptual model of the antecedents and outcomes of MO at the functional level is presented in Figure 2.4. After a general model of MO at the functional level is developed, the subsequent sections specifically explore the role of the logistics function in market-oriented organizations.

In a market-oriented organization, each organizational function generates market intelligence that is uniquely useful for that particular function and market intelligence that is useful for other functions and the organization as a whole. A function may collect and analyze information that is valuable to carrying out its own responsibilities and/or that is helpful in providing insight to other functions within the organization. Also, each function disseminates market intelligence internally to individuals within that function



**Figure 2.4**  
**Market Orientation of a Function**

and externally to other functions and organizations. Lastly, although a market-oriented organization responds to market intelligence as a unified front, each function also develops and implements a unique response to the market intelligence that contributes to the overall organization-wide response.

The literature suggests that carrying out the MO behaviors impacts several aspects of firm performance, such as growth in market share, profit margins, return on assets, new product success, etc. (e.g., Harris and Ogbonna 200; Kohli, Jaworski, and Kumar 1993; Langerak 2003; Matsuno, Mentzer, and Özsomer 2002; Ruekert 1992; Slater and Narver 1994). Additionally, given that organizations consist of the amalgamation of multiple functions, as functions better fulfill their responsibilities to the organization (i.e., performance of the function), the performance of the organization should increase as well. Thus, it is suggested that as the performance of a function increases, as a result from carrying out the MO behaviors, the performance of the organization increases as well.

The general framework of “Extended Market Orientation” developed by Matsuno, Mentzer, and Rentz (2005) positions internal organizational factors, such as organizational culture (e.g. market oriented culture) and structure (e.g., formalization, centralization, and departmentalization), and external environmental factors, such as competitive structure, industry/market characteristics, and legal and regulatory environment, as antecedents to market orientation behaviors (See Figure 2.4). Following their conceptualization, it is posited that the antecedents to a function’s MO include competitive structural, industry and market, and legal and regulatory aspects of an organization’s external environment. In addition, it is suggested that cultural and structural aspects of an organization directly impact the MO of a function.

Further building on the Extended Market Orientation conceptual framework, *each function* has unique cultural and structural aspects that impact the market orientation of that function. Cultural aspects, such as norms of conflict and connectedness within the function (Deshpande and Zaltman 1982; Jaworski and Kohli 1993) and the level of learning orientation within the function, affect market oriented behaviors at the functional level (Narver and Slater 1990). Structural aspects, such as the level of formalization and centralization within a function (Jaworski and Kohli 1993; Kohli and Jaworski 1990; Zaltman, Duncan, and Holbek 1973), also impact the generation, dissemination, shared interpretation, and responsiveness to market intelligence of a function. Thus, there is wide range of cultural and structural aspects of a function that influence the MO of a function.

One structural antecedent that has yet to be integrated with MO research is the number and type of boundary spanning roles a function maintains. Furthermore,

boundary spanning theory is particularly important at the functional level, as different functions maintain different numbers and types of boundary spanning roles. Therefore, this research explores the extent to which organizational functions employ boundary spanning roles and, thus, their unique impact on the generation and dissemination of market intelligence. In addition to the marketing function, based on its multiple boundary spanning roles, the logistics function is suggested to have a significant role in creating a market-oriented organization.

### **MARKET ORIENTATION IN THE LOGISTICS FUNCTION**

Most market orientation research has largely been conducted from the perspective of the marketing discipline. It has been suggested that, “Marketing is everything and everything is marketing” (Mckenna 1991, p. 68) and “Marketing’s future is not a function of business, but is *the* function of business” (Haeckel 1997, p. ix). On the other hand, most marketing scholars conclude that, because it facilitates the link between the customer and various key processes within the firm (Day 1994; Moorman and Rust 1999), “The marketing function... should take the lead in defining marketing opportunities and rallying the whole organization to support them” (Leemon 1995, p. 8). In fact, Moorman and Rust (1999) point to a study by The Marketing Science Society that concludes: “The challenge is for marketing to impose and coordinate quality control over the growing number of customer interfaces” (Curtis 1997, p. 20). However, there appears to be little evidence that scholars have taken this challenge seriously (Day 1994).

To address this challenge, both marketing and management fields other than marketing need to explore the role of non-marketing functions in a market-oriented

organization. In particular, due to the growing importance of supply chain management and building interorganizational relationships, its increasing functional salience within the organization, and its role as a key boundary spanning function, logistics is one such non-marketing function that may be important in creating a market oriented organization. Thus, the following section explores what role the logistics function plays in an organization that has a strong market orientation.

### **The Role of Logistics in the Organization**

While organizations have long considered logistics as an organizational stepchild (Kiessling, Harvey, and Garrison 2004), the logistics function is increasingly playing a strategic role in organizations (Fawcett and Closs 1993; Mentzer, Flint, and Hult 2001; Mentzer and Williams 2001; Novack, Rinehart, and Langley 1994, 1996; Zacharia and Mentzer 2004). In searching for sustainable competitive advantages, today's organizations increasingly focus on developing and improving their logistics capabilities (Bowersox, Closs, and Stank 1999; Lynch, Keller, and Ozment 2000; Zhao, Dröge, and Stank 2001). Leveraging logistics allows organizations to achieve customer satisfaction through inventory availability, timely delivery, and less product failure (Bowersox and Closs 1996; Day 1994; Morash, Dröge, and Vickery 1996; Mentzer and Williams 2001; Olavarrieta and Ellinger 1997). Integrating logistics into corporate strategy has a greater effect on customer value than any other process (Andraski and Novack 1996). Based on an extensive review of previous customer service research, Flint and Mentzer (2000) suggest that logistics service capabilities can be leveraged to: increase market share, enable mass customization, create effective customer response-based systems that may

out perform anticipatory systems, create value through service performance, complement marketing's design of customer services, positively affect customer satisfaction and, in turn, corporate performance, provide a differentiating competitive advantage, and segment customers. Logistics plays a strategic role in many companies (Mentzer, Flint, and Hult 2001; Mentzer and Williams 2001).

While there are a number of reasons for the growing influence of logistics in business strategy (Heskett 1977), one of the main reasons for its increased recognition in organizations is because of its role in providing the flow of valued information into and throughout the organization (Flint et al. 2005; Zacharia and Mentzer 2004). Because of its expanding responsibilities of managing business-to-business relationships and as a boundary spanner, logistics is increasingly in the position to collect and provide valued information.

### **The Role of Logistics as a Relationship Manager**

Environmental complexity and global competitive pressures have driven organizations to move away from traditional arms-length exchanges toward closer and long-term interorganizational relationships (Aijo 1996; Day 2000; Golicic, Foggin, and Mentzer 2003; Kalwani and Narayandas 1995; Mentzer, Min, and Zacharia 2000; Tuominen 2004). Organizations are nurturing these collaborative relationships in order to leverage the resources of other supply chain members (Barney 1991; Geoffrion and Powers 1995; Johanson and Mattsson 1987; Pfeffer and Salancik 1978). For example, recent research suggests that market oriented firms may form collaborative arrangements to gain access to market intelligence (Elg 2002; Hamel et al. 1989; Inkpen and Beamish

1997; Kotabe, Martin, and Domoto 2003; Martin and Grbac 2003; Mohr and Sengupta 2002). In terms of forming relationships with downstream supply chain members, relationship marketing has emerged as a top priority, such that loyal customers are seen as assets that must be cultivated and leveraged (Kiessling, Harvey, and Garrison 2004; Morgan and Hunt 1995). This requires a market-oriented focus on anticipating and responding to changes in customer's desired value (Flint and Mentzer 2000; Woodruff 1997; Flint, Woodruff, and Gardial 2002). It has been argued that customer-contact employees other than the marketing employees (e.g., logistics employees) are at the heart of relationship marketing (Gummesson 1987; Min and Mentzer 2000). Logistics, for example, becomes particularly important to relationship marketing when customers need continuous and periodic delivery of services that are important, variable in quality, and/or complex (Berry 1995; Bitner 1995).

In addition, the formation and maintenance of close, long-term interorganizational relationships with upstream and downstream supply chain members are important in developing and implementing time-based competitive strategies, such as just-in-time (JIT), quick-response (QR), vendor-managed inventory (VMI), continuous replenishment programs (CRP), and collaborative planning forecasting and replenishment (CPFR) (Bowersox, Mentzer, and Speh 1995; Stock, Gries, and Kasarda 1998; Zacharia and Mentzer 2004). Inherent in these interorganizational collaborative supply chain initiatives is the "inter-penetration" of organizational boundaries (Heide and John 1990; Kiessling, Harvey, and Garrison 2004). In coordinating these complex processes, several organizational boundaries must be crossed and horizontal connections must be made (Day 1994). The involvement of logistics employees is critical to these supply chain

initiatives, because it requires organizations to coordinate the manufacturing and logistics processes with those of their supply chain partners to drive cost reduction and increase understanding of customers in order to enhance effectiveness.

Although relationship marketing and time-based competitive strategies add value, the added value arises from and relies on the organization's intermingling with entities in its external environment (Drucker 1988; Kiessling, Harvey, and Garrison 2004; Srivastava, Shervani, and Fahey 1998). They rely on individual boundary spanners from each organization to regularly interact with one another in determining market, industry, and organization specific fluctuations and requirements, maintaining relationships, and gathering market intelligence (Flint et al. 2005; Kiessling, Harvey, and Garrison 2004).

In particular, business-to-business relationships require a tremendous amount of participation of boundary spanning logistics personnel. Relationships with and knowledge of specific entities often are developed by the same set of individuals. Logistics customer service personnel, because of the relationships they develop with multiple distinct sets of customers, often generate unique insight into customers' backgrounds, behaviors, and propensities.

### **The Role of Logistics as a Boundary Spanning Function**

One of the essential dilemma's faced by managers is the maintenance of effective internal operations while maintaining a flow of new ideas for continued improvements (Schwab, Ungson, and Brown 1985). To accomplish this, managers must wade into the ocean of events that surround them, actively try to make sense of those events, and react accordingly (Daft and Weick 1984). Individuals within functions attempt to capture and

make sense of events that surround them by interacting with other functions within the organization and events that surround them beyond the walls of the organization.

Similarly, the market orientation behavior of generating market intelligence requires individuals within a function to span the boundaries of both their function and their organization. Although some scholars have conceptualized boundary spanning as the interaction between an organization and its external environment (Kiessling, Harvey, and Garrison 2004), boundary spanning plays a key role in intraorganizational and interorganizational contexts (Nygaard and Dahlstrom 2002; Rangarajan et al. 2004). Thus, this dissertation conceptualizes boundary spanning as the effective interaction between any group (e.g., function or organization) and those outside the group (Adams 1976). These individuals serve the role of boundary spanners (Russ, Galang, and Ferris 1998; Thompson 1967), defined as individuals who act as agents of a group that serve to relate the group to its environment (Adams 1980, p. 328; Leifer and Delbecq 1978; Lysonski 1985; Rangarajan et al. 2004).

Boundary spanners have long been shown to be essential to organizational success (Aldrich and Herker 1977; Rangarajan et al. 2004; Thompson 1967). Open systems theory implies that boundary spanners need to correctly scan and monitor the activities of the task environment and failure to do so can lead to a crisis and breakdown (Schwab, Ungson, and Brown 1985; Starbuck, Greven, and Hedberg 1978; Varadarajan, Bharadwaj, and Thirunarayana 1994). When boundary spanning roles are created, those within the group may be better able to manage their environment effectively (Kiessling, Harvey, and Garrison 2004).

The basic argument for the critical nature of boundary spanning is that information learned about environmental contingencies must be provided to decision-makers to make appropriate decisions (Leifer and Delbecq 1978; Rangarajan et al. 2004). This transferring of information across boundaries makes boundary spanning activities essential to becoming more market oriented. In fact, boundary spanning involves five classes of activities that are strongly related to generating and disseminating market intelligence: (1) transacting input acquisition and output disposal, (2) filtering inputs and outputs, (3) searching for and collecting information, (4) representing the organization, and (5) protecting and buffering the organization from external threats and pressures (Adams 1980). Aldrich (1979) offers a more parsimonious categorization of the boundary spanner's role as consisting of information processing and external representation. This paper focuses only on the information processing function of the boundary spanning role, which was viewed by Aldrich (1979) as scanning the environment for information relevant to strategic planning, managerial decisions, and technical developments (Rangarajan et al. 2004).

The boundary spanner's role as information processor also helps avoid information overload as boundary spanners filter, interpret, and channel important market intelligence to the appropriate functional areas of the organization. Thus, the boundary spanner's role involves more than just gathering and transmitting information, but also the interpretation of information (Russ, Galang, and Ferris 1988). In fact, the expertise of boundary role occupants in summarizing and interpreting information may be as important to organizational success as determining who gets what information, depending upon the uncertainty in the information processed (Aldrich and Herker 1977).

Functions differ on many dimensions and also exist in different types of environments (Russ, Galang, and Ferris 1998). One differentiation is the number and type of boundary spanning roles that exist, and the degree to which these roles are purposefully created and formalized. While it is generally hypothesized that environmental uncertainty increases the need for boundary spanners (Hrebiniak and Snow 1980; Thompson 1967), theoretical support exists for the argument that the responsibilities and position of a function within the organization partially determines the number and type of boundary spanning roles that a particular function maintains (Hickson et al. 1971; Schwab, Ungson, and Brown 1985). A function's responsibilities determine its need for environmental exchanges and transactions, which directly affects the development of boundary spanning roles by the function (Thompson 1967). Dearborn and Simon (1958) found that environmental scanning is related to function position. That is, certain functions inherently require dealing with the external environment more than others, and thus require more boundary spanning roles (e.g., salesman, purchasing agent) (Schwab, Ungson, and Brown 1985). Thus, the extent of boundary spanning roles a function maintains directly impacts the market orientation of a function.

Marketing has long been acknowledged as a function with many boundary spanners (Belasco 1966; Dubinsky and Hartley 1986; Kahn, Reizenstein, and Rentz 2004; Rangarajan et al. 2004) performing the role of gathering critical environmental information and linking the organization to its target market segments, i.e., its customer market (Hutt, Mokwa, and Shapiro 1986; Moorman and Rust 1999; Varadarajan, Bharadwaj, and Thirunarayana 1994). It has been suggested that the marketing function

may be the chief environmental sense maker for the organization (e.g., Day 1994; Lysonski 1985). Marketing boundary spanners “query the environment with samples, market surveys, and test markets” (Daft and Weick 1984, p. 284). They often establish specialized scanning roles that use trend analysis, media content analysis, and econometric modeling to gather intelligence about the external environment. Thus, due to direct contact with customers, marketing is a key boundary spanner with the customer market.

Recall that market orientation includes generating intelligence derived from all the marketplace participants (e.g., customers, competitors, suppliers) and the factors influencing them (e.g., regulatory environment, social/cultural trends, and macro-economic developments), not just the customer market. Although marketing may be tasked with the responsibility of competitor analysis, it rarely has direct physical interaction with competitors or suppliers. Thus, in terms of boundary spanning activity, the marketing function primarily spans boundaries with only one marketplace participant, the customer. While it is true that boundary spanners within the marketing function have a degree of interaction with customers, and thus, is instrumental in generating and disseminating market intelligence derived from the customer market, other functions, such as logistics, may be just as central to MO.

Due to its boundary spanning nature, the logistics function may be uniquely important to creating a market oriented organization. Day (1994) suggests that boundary spanning processes facilitate the development of a market-oriented organization by connecting “outside-in” processes (e.g., market sensing and customer linking) with “inside-out” processes (e.g., cost control and manufacturing). Customer order fulfillment,

purchasing, and customer service delivery, each responsibilities of the logistics function, are such boundary spanning processes. The order fulfillment process, for example, requires a great deal of logistics participation in carrying out activities such as order planning, order generation, order entry and prioritization, order scheduling, order fulfillment, billing and payment, and post sales service (Day 1994). This example highlights logistics as a key boundary spanner with both customers and suppliers, thus positioned to generate market intelligence by interacting with customers and suppliers (Flint and Mentzer 2000). Additionally, because of its internal boundary spanning role and its role as the driver of cross-functional supply chain initiatives (Bowersox, Closs, and Stank 2000), the logistics function is in the distinct position to disseminate intelligence throughout the organization (Deeter-Schmelz 1997; Narasimhan and Kim 2001; Powell and Dent-Micallef 1997; Sanders and Premus 2002; Stank, Daugherty, and Ellinger 1999; Whipple, Frankel, and Daugherty 2002; Zhao, Dröge, and Stank 2001; Kahn and Mentzer 1996; Leenders and Wierenga 2002; Mentzer, Min, and Bobbitt 2004).

With “over ninety percent of all logistical work taking place outside the vision of any supervisor” (Bowersox, Closs, and Stank 2000, p. 7), frontline logistics employees and the logistics managers they report to act as boundary spanners. Each has the opportunity to facilitate the exchange of intelligence derived from the various markets (customer, supplier, competitor, etc.) and, based on such intelligence, assess customer needs (Kiessling, Harvey, and Garrison 2004). Moorman and Rust (1999, p. 184) suggest that the focus of the customer-service delivery connection, the design and delivery actions involved in providing a firm’s goods and services to the customer, “is generally the frontline employee who is involved in moving products from one firm to another,”

i.e., the logisticians. Frontline logistics employees have access to important market knowledge through the customer-service delivery connection. In fact, frontline logisticians, such as the motor carrier operator, may spend more time face-to-face with key customer representatives than any other company employee (Bowersox, Closs, and Stank 2000). A motor carrier operator may learn customer and/or competitor information, for example, as he or she is allowed to freely mingle in typically restricted areas while his or her truck is being unloaded (Kiessling, Harvey, and Garrison 2004). One interview participant described how he would ask truck drivers, who were on a dedicated route with one of their customers, about the customer's inventory levels and other supply chain and product issues because, as he stated, the "best source of information is the truck driver rather than the marketing folks!"

In the past, contacts between organizations were limited to lower-level sales representatives calling on buyers who emphasized prices, quantities, and deals (Day 1994). With the blitz of relationship management and time-based competitive strategies, however, logistics analysts, managers, and executives have gained the responsibilities of harmonizing interorganizational systems, sharing logistics and product movement information with suppliers and customers, and joint interorganizational planning for promotional activity and product changes (Day 1994). Also, while carrying out the purchasing and procurement activities, logistics professionals may learn about a competitor's supply issues during visits to major suppliers' facilities and share that intelligence throughout his or her organization to develop a campaign that takes advantage of the competitor's supply issue.

The logistics boundary spanner's role has extended beyond the traditional transaction type mentality (i.e., truck driver, material handler, purchaser) to relationship development, understanding customer value, and market intelligence collector (Bowersox, Closs, and Stank 2000; Flint and Mentzer 2000). As organizations increasingly extend their boundaries globally and, thus, physically distance themselves with customers and suppliers, the logistics boundary spanner becomes even more central to identifying and responding to market intelligence. Furthermore, the alleviation of many of the traditional front-line logistics employee responsibilities as a result of automated technology innovations and the removal of many routine managerial activities from advances in information technology has pressed the logistician to evolve "into an innovative, knowledge gatherer" (Flint et al. 2005; Kiessling, Harvey, and Garrison 2004, p. 99). Logistics was particularly important to boundary spanning with suppliers and customers, as one interview participant stated, "*We are a critical part of it. We know what questions to ask. We represent the suppliers and we represent the customers once the sell has been made, we know the suppliers' and customers' information immediately.*"

#### *Boundary Spanning with Customers*

In terms of the customer interface, the role of the logistics boundary spanner has evolved into that of a relationship manager. Logistics managers are now encouraged to call on customers and solicit feedback (Sharma, Grewal and Levy 1995). Because of this customer-driven focus, logistics personnel are now more visibly and constantly in touch with the firm's customers, thus allowing the opportunity to continuously generate new market knowledge. As a relationship manager, the logistics professional has the potential

to greatly enhance customer value by proactively understanding the underlying goals and objectives of customers (Flint et al. 2005; Flint and Mentzer 2000).

Logisticians that harness the traditional marketing concepts and skills are better positioned to manage these customer relationships and understand the needs of customers that marketing and sales professionals may not recognize. With constant interaction with the customer during the order fulfillment process, the logistician can act as a “marketer” to “uncover needs, translate those needs into their own organization, create solutions to those needs, deliver valued solutions, and communicate the value delivered” (Flint and Mentzer 2000). Although the lot-sizes, quality specifications, and timing of delivery may be self-evident, what customers “really” want may be hidden and the logistic boundary-spanner, through their interactions, will be able to discern the customer’s true requirements (Flint et al. 2005; Kiessling, Harvey, and Garrison 2004).

Uncovering what the customer “really” wants, however, requires the logistician to identify the latent needs by going beyond written or verbalized feedback from customary surveys or even asking what customers currently value (Flint, Woodruff, and Gardial 2002). It demands creating processes and systems to assess individualized meanings associated with experiences related to changes in what the customer wants from their supplier (Flint, Woodruff, and Gardial 2002). Thus, the market intelligence must be captured through informal means as well. Specifically, as Flint and Mentzer (2000) suggest, it entails the logistician developing multiple customer contacts and getting involved at the beginning of the relationship and in all stages of the relationship maintenance process.

With a deep understanding of what the customers currently want and with a keen eye to detecting changes in customers desired value, logisticians are able to develop and implement more effective, customized, and targeted responses. A response based only on a verbalized or written request from the customer, on the other hand, may not adequately address the broader customer objectives (Flint and Mentzer 2000). In such cases, valuable resources are allocated to developing and implementing ineffective responses. Thus, it is vital that logistics boundary spanners use formal (e.g., surveys) and informal (e.g., hall talk) means to capture market intelligence about the deeply embedded needs of customers.

#### *Boundary Spanning with Suppliers*

In the product and service delivery process, the logistics function is one of the few functions that actually “touches” the customer and is often the last “touch” the customer has with the organization (Ellinger, Ellinger, and Keller 2002). In addition, logistics interacts with the supply side by carrying out the responsibilities of procurement, supplier development/training, requirements planning, inbound transportation, reverse logistics, etc. (Coyle, Bardi, and Langley 2000; Hallenbeck, Hautaluoma, and Bates 1999; Stock, Gries, and Kasarda 1998; Ganesan 1994; Williamson, Spitzer, and Bloomberg 1990). Their interaction with suppliers has increased as organizations adopt time-based competitive strategies that encourage the boundary spanners of each organization to build collaborative relationship norms such as trust, commitment, and mutuality (Heide and John 1990). Forming collaborative relationships that are oriented toward the creation of customer responsiveness requires organizations to maintain and use information about

suppliers (Martin and Grbac 2003). For example, the joint or collaborative planning with suppliers has recently begun to receive more attention, especially because organizations are realizing that trading partner collaboration extending beyond the firm's boundaries has the potential for significant cost savings (Daugherty, Myers, and Autry 1999). Collaborative supply chain initiatives, such as vendor-managed inventory, efficient consumer response, and quick response (Bowersox, Closs, and Stank 1999; McCarthy and Golicic 2001; Waller, Johnson, and Davis 1999), directly influence order scheduling and replenishment, thus bringing the supplier closer to logistics operations (Karmarkar 1996).

Although market orientation involves capturing market intelligence derived from all marketplace participants, market orientation research has generally neglected the supply side (for exceptions see Ottesen and Gronhaug 2002). One reason for this lack of attention may be that the supply side issues are not the responsibility of marketers, who are preoccupied with downstream customer-focused activities. However, previous research suggests supply side intelligence can be key to understanding customer current and changing desired value (Flint and Mentzer 2000). Open-systems theory suggests that an organization relies on inputs from its surrounding environment to create a competitive and customer responsive output (Katz and Kahn 1996; Pfeffer and Salancik 1978). The effectiveness of an organization to compete on a global basis is increasingly dependent on its ability to differentiate itself in its input market, i.e., the supply side (White and Hanmer-Lloyd 1999). For example, a competence in dealing with uncertain supply (e.g., securing supply or predicting supply shortages in advance) better than competitors may provide opportunities for lower costs while also increasing customer responsiveness.

Some environments may cultivate an organization's focus on capturing market intelligence from suppliers. For example, Ottesen and Gronhaug (2002) conducted a quasi-experiment on organizations in the seafood industry and found that twelve out of the twenty managers that participated in the study associated "supply" with market orientation. One manager in the study told stories of various supply-side issues (e.g., growth rate of salmon) that determined responses to customer demands. Another manager described market orientation in the following manner, "We have to start at both ends, we have to start with raw material, and we have to start with the [customer]... You have to undertake a mutual adjustment of these two factors, and that is market orientation" (Ottesen and Gronhaug 2002, p. 214).

Logisticians faced with uncertain supply are motivated to capture market intelligence derived from suppliers, such as understanding fluctuations in supply in order to aid in decision making activities for continued customer value creation (Bauer 1960; Taylor 1974). Due to their boundary spanning role, logisticians are increasingly tasked with the development and maintenance of supplier information databases and the use of supplier information to manage both supplier and customer relationships (Ballou, Gilbert, and Mukjerjee 2000; Tan, Kannan, and Handfield 1998). Thus, because boundary spanners within the logistics function have a high degree of direct interaction with suppliers, the logistics function is instrumental in generating and disseminating market intelligence derived from the supplier market.

### *Boundary Spanning with Other Functions*

Because of the cross-functional and boundary spanning role they undertake, logistics personnel also are in the distinct position to disseminate and facilitate shared interpretation and responsiveness with other functions internal to the organization in creating customer value (Mentzer, Min, and Bobbitt 2003). Logisticians have been called on to adopt the role of “marketer” not only to external customers, but customers internal to the organization as well (Flint and Mentzer 2000). Empirical research provides support for integration of logistics as a means to increase firm performance (Boyer, Hult, and Frohlich 2003; Ellinger, Daugherty, and Keller 2000; Kahn and Mentzer 1996; Stank, Daugherty, and Ellinger 1999). As a result of the benefits realized, organizations’ focus on integration of logistics and other functions has steadily increased over the past thirty years and is projected to increase in the next century (Bowersox, Closs, and Stank 2000; Kent and Flint 1997). One could say that the dominant theme in logistics for the last three decades in corporate America has been one of increasing integration (Geoffrion and Powers 1995)

Most of the research on logistics integration and its internal boundary spanning role has primarily been in the context of logistics, marketing, and production. Customer service is a unifying factor where marketing interfaces with logistics (Murphy and Poist 1996; Rinehart, Cooper, and Wagenheim 1989) and, thus, much empirical research has found support for the integration of logistics and marketing as a means to increase organizational performance (Ellinger, Daugherty, and Keller 2000; Kahn and Mentzer 1996; Stank, Daugherty, and Ellinger 1999). The shift from cost-driving logistics activities to logistics drivers of differentiation requires the integration of marketing and

logistics activities and strategic plans (Bowersox, Mentzer, and Speh 1995).

Segmentation, corporate image, demand management, and cross-functional sales teams are just a few of the areas where logistics and marketing boundaries overlap (Keller 1993; Mentzer, Flint, and Hult 2001).

On the production side, facility design, inventory control, network design, supplier management, finished goods storage, cycle time management, and postponement are examples of the logistics and production interface. The increase in just-in-time manufacturing requires that logistics be flexible and responsive in providing materials, components, and services to the internal customer of production (Morash, Dröge, and Vickery 1997).

Because it is a boundary spanner with other functions, logistics is in the unique position to disseminate generated knowledge. In terms of intelligence dissemination, there is much logistics literature that offers insight into information exchange as a means to disseminate intelligence. Many authors have long recognized the importance of information exchange in the field of logistics (Daugherty, Myers, and Richey 2002; Daugherty and Pittman 1995; Deeter-Schmelz 1997; Earl 1989; Mollenkopf, Gibson, and Ozanne 2000; Narasimhan and Kim 2001; Powell and Dent-Micallef 1997; Sanders and Premus 2002; Stank, Daugherty, and Ellinger 1999; Whipple, Frankel, and Daugherty 2002; Zhao, Dröge, and Stank 2001).

The interview responses reflected the centrality of logistics in dissemination intelligence throughout the organization. For example, one logistics manager commented on how logistics acts as an internal boundary spanner to disseminate intelligence internally, *“I handle little problems everyday, but the biggest problem is, how do you*

*keep the thread alive?” Keeping the thread alive refers to keeping the knowledge ‘alive’ or continuously disseminated throughout the organization. Both logistics managers described their responsibilities as a “go-between” for other functions within the organization (i.e., boundary spanning function). A logistics manager from another organization stated, “We’re a portal that marketing and sales and the factory and our suppliers send and get information through.”*

The changes in the marketplace (e.g., automation, information technology, globalization, collaborative relationship building between supply chain members) have driven the logistics boundary spanner to evolve beyond his or her traditional responsibilities. Logisticians are now charged with understanding customer value and forging collaborative relationships with customers, suppliers, and third parties. This evolution has forced logistics professionals to increase their boundary spanning activities with their external environment (i.e., other functions and organizations), thus suggesting that the creation of a market orientated organization cannot be left only to marketers. As the logistics boundary spanner interacts more with other functions and other organizations, its role in generating, disseminating, achieving shared interpretation, and responding to marketing intelligence becomes more pivotal to logistics and organizational success.

## **CONSTRUCT DEFINITION AND HYPOTHESES DEVELOPMENT**

The following section develops and defines the LMO process constructs: Logistics Market Intelligence Generation, Logistics Market Intelligence Dissemination, Logistics Market Intelligence Shared Interpretation, and Logistics Market Intelligence

Responsiveness. Logistics performance, along with its three dimensions, and organizational performance are also developed. Based on their conceptualization and definition, the interrelationships between the constructs are developed and hypothesized by using the logistics and market orientation literature and interview responses.

### **Logistics Market Intelligence Generation**

Rindfleisch and Moorman (2001) limit market intelligence to information related to new product development acquired from other new product alliance participants. Troy, Szymanski, and Varadarajan (2001) focus on information about customers, competitors, and product technologies. Moorman (1995, p. 319) defines market information as data concerned with a firm's current and potential external stakeholders. Glazer (1991, p. 2) does not distinguish between information and intelligence and defined market information as "data that has been organized or given structure – that is, placed in context- and endowed with meaning."

Although used interchangeably in much of the literature, it is important to distinguish market intelligence from market information. Borrowing from Nonaka and Takeuchi's differentiation of data, information, and knowledge, market information is organized data (e.g., tables of values, graphs, list of facts) (Davenport and Prusak 1998). Market intelligence (or knowledge), on the other hand, is more than market information in that it involves abstraction, the suppression of detail about the market until it is needed. Effective market intelligence helps a manager eliminate or avoid what he or she does not want and make judgments in a variety of situations, i.e., to generalize. It is based on an understanding of what the market intelligence-seeker needs or wants to know (Abramson,

Currim, and Sarin 2005). Therefore, for market intelligence to be generated, market information must be collected and then analyzed by the collector (Day 1994b; Kohli and Jaworski 1990). Examples of generating market intelligence provided by the interview participants include polling customers, visiting customers' sites to better understand their needs, accompanying truck drivers to observe operations at customers and suppliers, and talking with trade partners.

Furthermore, it is important to differentiate market orientation (MO) from logistics market orientation (LMO). MO refers to an organization-wide participation in the market oriented behaviors, whereas LMO focuses on the role of logistics in carrying out the market oriented behaviors. Thus, logistics market intelligence generation (here after referred to as LMIG) refers to logisticians capturing market intelligence, such as identifying changes in transportation capacity, supply shortages, customers' logistics service preferences, and competitors' logistics service offerings. In addition to discovering market intelligence that is applicable to the logistics function, LMIG refers to logisticians discovering market intelligence relevant to other functions in the organization as well. For example, interview respondents described situations in which they were the only ones in the unique position to discover market intelligence, information that marketing and operations would have not found out.

Drawing from the multiple-constituency model of organizations (Cameron 1978; Connolly, Conlon, and Deutsch 1980; Jobson and Schneider 1987; Kotler 1972; Miles and Cameron 1982; Pfeffer 1978; Pfeffer and Salancik 1978; Sturdivant 1977; Whetten 1978; Zeithaml and Zeithaml 1984), the market consists of other elements besides customers, including suppliers, other marketplace participants (i.e., third parties),

regulatory aspects, social and cultural trends, and the macro-economic environment (Kimery and Rinehart 1998; Kohli and Jaworski 1990; Matsuno, Mentzer, and Rentz 2000). According to the interview participants, logistics personnel may generate intelligence about each of these markets formally, for example, by collecting and evaluating customer surveys or logistics service quality measures (Mentzer, Flint, and Hult 2001) and/or reading logistics industry periodicals and reports from governmental and regulatory bodies (e.g., the Department of Transportation, Federal Transport Administration, Federal Trade Commission). On the other hand, the interview respondents also described how logisticians may generate intelligence about these markets informally by having lunch or coffee with industry friends, being involved in sales calls, visits, and customer problem-solving activities, and spending time with suppliers to learn more about their operational processes.

More specifically, the depth interviews conducted for this dissertation revealed that executives discussed LMIG as interacting with external market participants and asking questions. In terms of interacting with external market participants, the discussions mainly revolved around interactions with customers and suppliers, which involved various forms of media (e.g., phone, in-person, email) and differing levels of interaction frequency. Asking questions of market participants was another commonly mentioned activity that occurred in order to sense changes in the market. Logistics was particularly important in asking questions of suppliers, as one logistics manager stated, *“We are a critical part of it. We know what questions to ask. We represent the suppliers and we represent the customers once the sell has been made, we know the suppliers’ and customers’ information immediately.”* The interview participants not only discussed

activities of collecting market information, but also analyzing the information to create market intelligence. For example, one logistics manager described how as he received answers to questions, he would modify subsequent questions to gain more detailed or appropriate answers. The following manager discussed collecting information and analyzing the information to determine its importance:

*“We talk to people in logistics industries, and this would include not only carriers, but also our warehousing providers. Quietly speaking to suppliers in addition to our 3PLs. We also stay abreast of what is in the literature. I mean there are a couple more specific air transport magazines, warehousing magazines. And when we hit upon an idea which we think has merit, primarily cost reduction type benefit we become very interested, because that’s what really drives this organization. How can we reduce cost and maintain the same level or better than, service that we currently have? So we get information from a variety of sources. Then we scrutinize it.*

Thus, we build on Kohli and Jaworski (1990) to define logistics market intelligence generation (LMIG) as the **collection and evaluation of market information relative to its usefulness to logistics and other functions’ business decisions**. It is described as the extent to which logisticians personnel formally and informally recognize new intelligence about the market.

Many times, the generation of intelligence followed the logistics manager asking questions, but other times it was initiated by the market participant. These processes resulted in market intelligence that could be formal or informal, short or long-term, and specialized to a particular context or generalized. The following passage from one

logistics manager illustrates generating (both collecting and analyzing) market intelligence derived from customers and also suppliers by interacting with external market participants and asking questions:

*“I was on these calls from the actual customers saying, can your [product] do this? Well, in order to do this you have to include the [component] on the back of it, which is an extra cost option. And the customer comes back and says, well so and so’s [product] from [competitor] has that with the [component] included. I said really, okay. So that allowed me to go back through... and ask: Is this causing damage? Are people calling back and saying where is the missing [component] that I need? Should we include it in all these? Should we change the way we market? I went back to our vendors and asked: Who is buying it with the [component] and who is buying it without the [component]? Is it coming in one package? Is it coming in two packages? How are they validating it? If we included it, would it change the cost structure, of how we buy this? Because then we would have to differentiate. So I went through this entire process from front to back after hearing what the customers go through, enquiring of a lot of people facing the same questions and asking, is it causing an after-purchase customer interference here?”*

### **Logistics Market Intelligence Dissemination**

Once new market intelligence has been generated, it must be disseminated. Drawing from literature addressing organizational communication, information dissemination has been identified as an important determinant of interfunctional

relationships (Ruekert and Walker 1987). Research into organizational learning and management of technology has explored the transfer and diffusion of intelligence within organizations (e.g., Boisot 1995; Levitt and March 1988), but has made only limited progress beyond the fact that the transfer of intelligence between organizational members is exceptionally difficult. Intelligence dissemination involves what Moorman (1995) calls information transmission processes, which is the degree to which information that has meaning is diffused among relevant users within an organization. Intelligence transmission includes those processes by which information that has been analyzed is distributed horizontally and vertically (top-down and bottom-up) throughout an organization (Argyris and Schon 1978; Day 1991; Kohli and Jaworski 1990).

Previous research suggests that organizations should have structures that facilitate the timely flow of synthesized information to its point of use (Fildes and Hastings 1994). Marketing literature suggests that more frequent sharing of market intelligence represents a superior dissemination process (see Anderson and Weitz 1989). Dissemination frequency is therefore a necessary, but not sufficient, condition for effective intelligence dissemination (Fisher, Maltz, and Jaworski 1997). Timeliness means more than mere frequency of intelligence dissemination (Maltz and Kohli 1996). As some of the interview participants pointed out, it also represents the time between when the intelligence is generated to when the intelligence is received by the other party.

Further, effective logistics market intelligence dissemination is more than simply transmitting a large amount of information to everyone in the organization. On the contrary, if market intelligence is to play a critical role in an organization's pursuit to become more market oriented, it must be effectively disseminated to key functions and

managers (Menon and Varadarajan 1992). Specific market intelligence should be disseminated only to appropriate individuals within the organization. Daft and Huber (1987) term this ‘message routing,’ which refers to selectively distributing information to the appropriate individuals or groups. The depth interviews echoed this aspect of logistics market intelligence dissemination, “*Selected others want, or need, the information and others don’t.*” Interview respondents also described negative consequences of sending information to everyone in the organization, “*It is important to know who to inform and who not to, um, so we don’t lose credibility.*” Others commented, “*When I receive blanketed emails to everyone here, I instinctively disregard it because it isn’t for me, ..., it should be targeted to the proper person, or maybe group*” and “*I’m, um, inundated with emails, phone calls, newsletters so, if it isn’t for me, I don’t pay attention to it.*”

Therefore, we build on Kohli and Jaworski’ (1990) definition of intelligence dissemination to define logistics market intelligence dissemination (hereafter referred to as LMID) as the **timely sharing of market intelligence by the logistics function to appropriate personnel within the logistics function and other areas within the organization.**

Both the literature and the interview respondents suggest that intelligence can be disseminated formally and informally, and that more effective intelligence dissemination uses a mix of both (Maltz and Kohli 1996). The market intelligence dissemination process can be formal, organized, or structured, including policies, training sessions, presentations, company memoranda, emails, newsletters, and meetings (Moorman 1995). Additionally, information transmission may occur informally through interpersonal

interactions, such as “hall talk,” discussions held over lunch or coffee, one-on-one conversations in offices or cubicles, etc. (Kohli and Jaworski 1990; Mohr and Nevin 1990).

Some researchers argue that too much information sharing can be dysfunctional due to information overload (e.g., Daft and Huber 1987; Fiol and Lyles 1985; Huber 1991). Maltz and Kohli (1996) found that beyond a certain threshold more frequent dissemination of intelligence hinders the receiver's perceived quality of intelligence. They posit that the formality of the intelligence dissemination process has a nonlinear (inverted U-shaped) effect on a person's perceptions of the quality of intelligence received. The flow of information has a curvilinear link with outcomes; an inflection point can be reached at which dealing with more information is overwhelming (Huber 1991; Hult, Ketchen, and Slater 2004). Based on this logic, Hult, Ketchen, and Slater (2004) suggest that knowledge acquisition and information dissemination levels should not be related.

However, information overload is managed and mitigated by effectively summarizing, delaying, and modifies the intelligence once it is collected (Daft and Huber 1987). According to Daft and Huber (1987), message summarizing refers to reducing the amount of information while effectively maintaining its meaning. Message delay refers to prioritizing the intelligence. Message modification is intentionally altering the information in order to make corrections and reduce errors.

The analysis aspect of LMIG insures that collected information is summarized, prioritized, and modified in a manner that reduces information overload. Effective LMIG captures market intelligence quickly and, if summarized, prioritized, and modified, the

more often that needed intelligence will be available to disseminate in a timely manner, which increases LMID. Analyzing the information also allows logistics managers to determine the appropriate recipient of the information, which facilitates message routing and effective LMID.

Further, as the following quote from an interview recipient reflects, logistics managers disseminate available market intelligence to all appropriate individuals in the organization in order to achieve desired outcomes (Baker and Sinkula 1999), “*When I hear something from a customer that, um, may affect what we do, I feel it is a duty of mine to tell others, so we can take advantage of that opportunity, or more often, avoid a mistake.*” This reflects research in knowledge management that suggests the decision to transfer intelligence is triggered by the discovery of new intelligence (Cohen, March, and Olsen 1972). There is an inherent desire of those that discover intelligence that is perceived as superior to existing intelligence to share that intelligence with their peers (Szulanski 1996). Thus, logisticians that generate market intelligence will have the desire to disseminate that intelligence to their cohorts. Based upon the literature and interview respondents, the following hypothesis is derived:

H1: An increase in the level of logistics market intelligence generation increases the level of logistics market intelligence dissemination.

Research in a variety of disciplines highlights the importance of effective intelligence dissemination (Griffin and Hauser 1996). Effective intelligence dissemination has been linked to impacting an organization’s responsiveness (Cooper 1984; Dougherty 1992; Fisher, Maltz, and Jaworski 1997; Gupta, Raj, and Wilemon 1985; Hartline, Maxham, and McKee 2000; Kohli and Jaworski 1990; Souder 1988).

Organizational learning, knowledge management, and information processing research, however, posits that the impact of intelligence dissemination on responsiveness will be much greater if mediated by the process of reaching a shared interpretation (Huber 1982; Hult, Ketchen, and Slater 2004). These streams of research also suggest that intelligence dissemination and intelligence shared interpretation are separate, distinct concepts. Organizational learning for example, describes information distribution, the process by which information from different sources is shared and thereby leads to new understanding, as separate from information interpretation, the process by which distributed information is given one or more commonly understood interpretations among a collection of individuals (Huber 1991, p. 90).

### **Logistics Market Intelligence Shared Interpretation**

Simply “throwing information over the wall” to other functions or departments does not ensure that intelligence has been disseminated. Although the information may be transmitted, the understanding of the information may not be effectively shared. When an individual engages in activities geared toward understanding the current and future needs of markets, a market oriented function shares not only the information about the market, but also the *understanding* of such information across individuals (Kohli and Jaworski 1990).

Huber (1991) suggested that the development of diverse interpretations creates learning because diversity of opinion increases an organization's repertoire of potential responses. Although diverse opinions create learning and all personnel may not agree on the chosen plan of action based on the market intelligence, there must be a high level of

agreement among the individuals on the meaning of the market intelligence in order to choose and deliver a unified response. Diverse views of concepts such as priority of service and shipment need to be resolved so effort can be focused on necessary activities (Handfield and Nichols 2002; Hult, Ketchen, and Slater 2004).

Differences in “world-views” of managers from distinct logistics expertise and responsibilities can result in a lack of shared interpretation due to language dissimilarities, as well as conflicts of goals, preferred solutions, and trade-offs (Griffin and Hauser 1996; Maltz and Kohli 1997). A shared understanding of market intelligence requires the departments or individuals to recognize the value of the information transmitted as an aid to decision making, as opposed to considering it a disruption (Beyer and Trice 1982; Menon and Varadarajan 1992; Moorman 1995). Since information may have multiple interpretations, logistics functions should attempt to achieve consensus on the meaning of the market intelligence in order to develop an appropriate and unified response (Day 1994a).

Therefore, a market-oriented logistics function does not just disseminate intelligence to others (Fisher, Maltz, and Jaworski 1997; Mohr, Fisher, and Nevin 1996; Mohr and Nevin 1990). Logisticians and their counterparts in other functions provide feedback about transmitted information in order to improve understanding (Fisher 1978). This feedback allows both parties to increase the clarity of the information, which reduces misunderstandings due to language and culture differences (Fisher, Maltz, and Jaworski 1997; Wheelwright and Clark 1992).

The interview responses also reflected these aspects of shared interpretation. Not only was logistics market intelligence shared interpretation (hereafter referred to as

LMISI) described as achieving agreement about disseminated market intelligence, but also reaching a cohesive understanding within a brief period of time. One manager described a situation where his logistics group missed a key opportunity because they spent too much time arguing and trying to “*get them all on board.*” On the other hand, one logistics manager said that because the culture of his team was such that agreements were reached quickly, they were able to capitalize on market intelligence much faster. Therefore, effective LMISI is achieved in a prompted manner.

For a logistics function to adapt to market needs, market intelligence must be communicated and perhaps even sold to relevant individuals in the organization (Kohli and Jaworski 1990). This suggests that logisticians must cultivate norms of open communication, where there is a desire to arrive at a consensus about the market intelligence in order to plan and execute an appropriate response (Troy, Szymanski, and Varadarajan 2001). In addition, previous research suggests that formalized processes can facilitate the organization and syntheses of market intelligence used to arrive at a consensus (Hartline, Maxham, and Mckee 2000). Such processes may be structured for systematic participation of logistics personnel, both laterally and horizontally, such as liaison positions, integrator and/or internal boundary spanning roles, and cross-functional meetings (Lysonski 1985). Organizations can also encourage individuals to challenge others’ opinions and assumptions regarding the meaning of market information to achieve a shared understanding (Argyris and Schon 1978).

The logistics interview participants indicated that they must persuade other managers to be receptive to questions in order to effectively reach an agreed upon understanding of the market intelligence. As one logistics manager stated, “*That is the*

*hardest challenge, getting people to be receptive to listen to those questions.”*

Respondents discussed how sometimes they would intentionally change the focus of the questions and conversations to center around the customer, while at other times they would focus on the managers' metrics to make their counterparts more receptive.

Managers also described situations where they would adopt a more forceful approach, such as elevating the issue to the other manager's superior.

Thus, logistics market intelligence shared interpretation is defined **as the process of quickly achieving a cohesive understanding of market intelligence disseminated by logistics personnel.**

Arriving at consensus about the meaning of market intelligence is dependent on each individual having access to the market intelligence. Without effective transmission of available market intelligence, an organization will not be able to achieve agreement among individuals. Furthermore, evidence from previous research suggests that higher levels of communication are required to achieve a consensus about market intelligence (e.g., Amabile 1997; Troy, Szymanski, and Varadarajan 2001). Extending the organizational information processing literature, research on media richness suggests that transmitting varied cues through rich media and encouraging a high level of interaction such as face-to-face meetings facilitates shared understandings (Daft and Lengel 1986). The more emphasis placed on discussions, meetings, and information sharing, the more individuals may become familiar with each other, which should provide opportunity to develop a common mind-set about issues (Gioia and Thomas 1996; Hult, Ketchen, and Slater 2004).

Effective LMID results in market intelligence being shared with the appropriate individuals in a timely manner. Sharing intelligence with the appropriate individuals ensures that the intelligence is available to begin discussions in order to reach a cohesive understanding. Sharing the intelligence in a timely manner increases the likelihood that a collective agreement can be achieved more quickly. Thus, the literature and interview responses lead to the following hypothesis:

H2: An increase in the level of logistics market intelligence dissemination increases the level of logistics market intelligence shared interpretation.

### **Logistics Market Intelligence Responsiveness**

Day (1994b) states that the half-life of usable market intelligence is shrinking because the environment is rapidly changing, markets are becoming more fragmented, and media and supply chains are proliferating. This rapidly changing environment is an incentive for logisticians to be responsive and act on market intelligence before it becomes obsolete (Bourgeois and Eisenhardt 1988; Eisenhardt 1989; Weiss and Heide 1993).

Responsiveness has been used in the logistics discipline in a variety of ways (for a review, see Keller et al. 2002). Some examples include the ability of a firm's logistics system to react to logistics needs (McGinnis and Kohn 1990), ability of a firm to react quickly to the market (McGinnis and Kohn 1990), pursuing resolutions to truck driver concerns (Keller and Ozment 1999), willingness to help customers and provide prompt service (Crosby and LeMay 1998), the ability to alter or modify operations to meet supply and demand fluctuations (Stank, Daugherty, and Ellinger 1996), the ability to

respond to customer needs (Fawcett, Calantone, and Smith 1996), and the ability to respond to changing environmental conditions (McGinnis, Kochunny, and Ackerman 1995).

In the market orientation, information processing, and knowledge management literature bases, responsiveness refers to action taken in the form of planning and implementing a reaction to the shared understanding of market intelligence that is generated and disseminated (Kohli and Jaworski 1990; Moorman 1995; Nonaka and Takeuchi 1995). It is typically operationalized as the extent to which market intelligence changes the actions of an organization and the speed with which action is taken based on the market intelligence (Kohli and Jaworski 1990).

The speed with which action is taken based on the market intelligence was greatly emphasized by the interview respondents as highly important to the logistics function. For example, when discussing responsiveness to market intelligence, one logistics manager stated, *“Once we’re informed of that, my responsibilities are to focus on speed, cycle time reduction, knowing what to do now, not later. Other functions can know later and have success, not us. It is critical that we know now. That is the value add that we give to [our company]... Now do it, do it, do it now, now. Here is the end state, go make it happen. And we get it done because we are focusing on the customer.”*

Some thought that speed of response to the market knowledge was uniquely relevant to the logistics function. For example, one logistics manager stated:

*“... we don’t ever want a hiccup on delivery. As soon as we do, it will be all over the media that, because of course this business is very competitive and you don’t wanna, you know stop. So, um, we have to know those hiccups immediately. We*

*constantly try to reduce time to know and respond to those hiccups. That is our job in logistics and supply chain, speed to customer. You know, with our [region] sales director, that immediacy is not so meaningful to her. But in logistics, we handle the transportation and the delivery side of it, which made us critical to get the people in place, to ship [products]...”*

Another logistics manager told the following story that involved responding to knowledge of the market in a very short time period:

*I think we got word on Tuesday... So we started working on it immediately. Okay, and we had our infrastructure re-routed to a [company] managed facility in [city] that we are currently using for other ah, fulfillment opportunities um and had its work re-positioned and by Thursday, we were fulfilling all of it ourselves. And that's a Herculean effort to get, not only the capability, from getting orders pushed there, to getting, you know people in place, to getting inventory in place, getting a, basically a line set up to do that fulfillment.*

Furthermore, Kohli and Jaworski (1990) suggested that virtually all individuals participate in responding to market trends in a market-oriented company. In a logistics function, personnel responsible for finished goods inventory, materials handling, industrial packaging, distribution planning, order processing, inbound and outbound transportation, and customer service are often at odds with each other. Many logistics decisions (e.g., facility location, packaging, etc.) require making trade-offs among facility costs, inventory costs, transportation costs, and customer service (Braglia 2000; Lee 2004; George, Jeffrey, and Audrey 1994; Nozick and Turnquist 2001; Odekerken-Schroder and Gaby 2003; Prendergast and Pitt 1996; Tyagi and Das 1997). An example

is the well-known trade-off between inventory and transportation. As inventory is reduced transportation costs increase because smaller quantities are shipped more frequently. On the other hand, if transport costs are decreased from shipping in larger quantities by less expensive modes, inventory levels in the system rise. Logistics costs often move in opposite directions, and thus, logistics personnel are often in conflict with each other. In a highly market-oriented logistics function, however, logistics personnel quickly work through the conflict and respond to market intelligence in a united manner. As one logistics manager commented, even if there are trade-offs and disagreements among logistics personnel, *“there are people who carry more of a vote and there are times when you have to be the good soldier and say, ‘yes sir, I’ll get it done.’”* He went on to describe how, eventually, a final decision is made as to how each person will respond.

Therefore, this paper includes both the time involved in responding to market intelligence and the extent to which all logistics personnel are involved in the planning and implementation of responding to market intelligence. As such, logistics market intelligence responsiveness (hereafter referred to as LMIR) is defined as **the speed with which unified action is taken by logistics personnel based upon the shared interpretation of market intelligence.**

A higher level of LMIR results in a stronger agreement among logistics personnel with regards to the meaning of market intelligence. The more those logistics personnel have a cohesive understanding of the market intelligence, the more likely that they will be able to plan and implement a response with a unified front.

While there has been much conceptual speculation on the relationship between shared interpretation and organized action (Donnellon, Gray, and Bougon 1986; Eisenberg and Witten 1987; Weick 1979), organizational information processing literature, both conceptual and empirical studies, suggests that shared meaning provides a basis for commonly directed effort among organizational members (Daft and Weick, 1984; Thomas, Clark, and Gioia 1993). Thus, a response should be more unified if the development of shared interpretation of market intelligence among logistics personnel effectively guides the planning and implementation of their actions (Hult, Ketchen, and Slater 2004). As one interview respondent commented, *“I broke what we shipped from cases to ‘eaches,’ as a result from [a customer] asking us to deliver that way. And I told, uh, [the finished goods manager], but he didn’t shipped ‘eaches’ for another two months. He assumed we would keep shipping based on the contract, which was for another two months... We weren’t on the same page. I was billing in eaches and he was shipping in cases. We almost lost [that customer].”*

In addition, effective LMISI also results in logistics personnel reaching a cohesive agreement quickly. The faster that a shared interpretation is reached, the earlier a response can be planned and implemented. Having a shared interpretation also reduces the amount of redundancies, conflicts, and confusion in the process of planning and implementing a response because shared interpretation becomes the means to ensure coordination (Handfield and Nichols 2002; Hult, Ketchen, and Slater 2004), which should reduce the time involved in responding to market intelligence (Thomas et al. 1993). Thus, the literature and interview responses lead to the following hypothesis:

H3: An increase in the level of logistics market intelligence shared interpretation increases the level of logistics market intelligence responsiveness.

## **Performance**

A logistics function can generate market intelligence, disseminate it internally, and achieve a shared interpretation of the market intelligence; however, unless it responds to the market needs, very little is accomplished. If the logistics function and the organization as a whole are to receive improved performance from market intelligence, there must be an action based on that market intelligence. The following suggests that logistics responsiveness impacts both the performance of the logistics function.

With the increasing influence of logistics in business strategy and the growing awareness of the benefits from leveraging logistics to increase customer value (Mentzer and Williams 2001), measuring the performance of logistics has become a high priority (Bowersox and Daugherty 1995; Chow, Heaver, and Henricksson 1994). Logistics performance has been conceptualized and empirically tested in a variety of ways (e.g., Fawcett, Calantone, and Roath 2000; Fawcett and Smith 1995; Fawcett, Smith, and Cooper 1997; Scannell, Vickery, and Dröge 2000). Traditional logistics performance measures include “hard” measures, such as service measures (e.g., order cycle time, fill rates, damage rates, error rates in picking orders, “perfect order”), cost measures (e.g., cost per order, logistics cost per unit, and cost per unit for each functional area of logistics such as storage cost per unit, per square foot, etc.), and return on assets or investments measures (Brewer and Speh 2000; Morash, Dröge, and Vickery 1997). It has also been suggested that logistics performance measures should include soft measures,

such as customer satisfaction and loyalty (Holmberg 2000; Chow, Heaver, and Henricksson 1994). Further, logistics performance measures should incorporate customer's perspectives (Mentzer, Flint, and Kent 1999; Mentzer, Flint, and Hult 2001; Brewer and Speh 2000) and be linked to corporate strategy (Chow, Heaver, and Henricksson 1994; Gilmore 1999; Holmberg 2000).

The cumulative evidence of the logistics literature reveals that logistics performance is multidimensional and is a function of resources utilized, the extent to which interrelated goals are achieved, and results compared to competitors (Bobbit 2004; Langley and Holcomb 1992; Mentzer and Konrad 1991; Smith 2000). Mentzer and Konrad (1991) suggest that both effectiveness, the extent to which an objective or goal has been achieved, and efficiency, a measure of how well an organization uses resources in creating outputs, should be used when measuring performance. Langley and Holcomb (1992) described effectiveness as whether the logistics function meets customer requirements in certain critical result areas, such as product guarantee, in-stock availability, fulfillment time, convenience, retail service, innovation, and market standing. They described efficiency as the ability to provide the desired product/service mix at a level of cost that is acceptable to the customer. Halley and Huilhon (1997) more narrowly describe efficiency as the contribution of logistics activities to sales turnover, profitability, customer satisfaction, and employee motivation. Comparing results to competitors refers to the logistics performance dimension, differentiation. "Differentiation manifests itself in the ability of logistics to create value for the customer through the uniqueness and distinctiveness of logistical service (Langley and Holcomb 1992, p. 8).

In order to capture the multidimensional aspects (effectiveness, efficiency, and differentiation) of logistics performance, this dissertation adapts Bobbitt's (2004) definition, based on Smith (2000), to define logistics performance as **the degree of efficiency, effectiveness, and differentiation associated with the accomplishment of logistics activities**. The three dimensions (effectiveness, efficiency, and differentiation) of logistics performance are also adapted from Bobbit (2004). Efficiency is defined as **how well the logistics function's resources are utilized**. Effectiveness is defined as **the degree to which a logistics function's goals are achieved**. Lastly, differentiation is defined as **the perceived difference in logistics performance when evaluated against competitors**.

Logistics performance should be heavily influence by LMIR. Kohli and Jaworski's (1990) qualitative research findings suggest that responding to market intelligence with a unified focus reduces redundant and unnecessary activities within functions, thus improving efficiency. The more united the logistics personnel in planning and implementing a response, the less conflict and divergence from the task at hand will exist in carrying out logistics activities, which should further increase efficiency. Presenting a unified front to the customer should also increase the customers' perception of delivered product and service, thus improving effectiveness, because there will be less discord between key customer contact employees (Hartline, Maxham, and McKee 2000). The promise to deliver made by certain logistics customer contact employees is more likely to be aligned with what is actually delivered by other logistics customer contact employees. The less time required to plan and implement a response to market intelligence, the smaller amount of overall input will be invested, thus increasing logistics

efficiency. Effectiveness should be improved because a higher level of LMIR results in a faster response implementation, which should increase the likelihood of meeting deadlines for pre-defined goals. In addition, the more a response is based on market intelligence as opposed to internal politics, the more unified the logistics personnel; and the faster they plan and implement a response, the more likely they will succeed over the competition in delivering value to the customer. The following hypothesis is derived.

H4: An increase in the level of logistics market intelligence responsiveness increases the level of logistics performance.

LMIR should influence organizational performance above and beyond the logistics function. The potential positive impact of logistics activities on organizational performance is well documented (e.g., Claycomb, Germain, and Dröge 1999; Daugherty, Dröge, and Germain 1994; Dröge and Germain 2000; Ellinger, Daugherty, and Keller 2000; Germain, Dröge, and Spears 1996; Lynch, Keller, and Ozment 2000; Stank, Daugherty, and Ellinger 1999). In particular, given the association between MO and organizational learning, Ellinger, Ellinger and Keller's (2002) results suggest that there is a positive association between logistics individual level learning behavior and organizational performance. In evaluating the impact of four logistics capabilities (delivery speed, delivery reliability, responsiveness to target markets, and low cost distribution), Morash, Dröge, and Vickery (1996) found that responsiveness to target market(s) had the strongest impact on firm performance and performance relative to competitors.

In many cases, logistics customer contact employees are the first and/or last personal representation of an organization (Hartline, Maxham, and McKee 2000).

Customers often base their impressions on the organization largely on the dealings with these logistics customer contacts. Parasuraman, Zeithaml, and Berry's (1985) study findings suggest that frontline service employees are pivotal in forming a customer's level of perceived service quality. Since logistics is a primary means in which customer value is created and delivered to the final customer (Innis and Lalonde 1994), speedy and unified logistics response to market intelligence should positively impact organizational performance.

Many measures of organizational performance have been used in finding a positive relationship between market orientation and performance (e.g., Baker and Sinkula 1999; Han, Kim, and Srivastava 1998; Jaworski and Kohli 1993; Narver and Slater 1990). This dissertation adopts Matsuno, Mentzer, and Ozsomer's (2002) measures of organizational performance, which include both absolute terms and competitive terms (i.e., compared with an organization's relevant competitors), such as market share growth, percentage of new product sales to total sales, and return on investment. Thus, the final hypothesis is derived:

H5: An increase in the level of logistics performance increases the level of organizational performance.

## **SUMMARY**

This chapter provided the theoretical justification from which the logistics market orientation model was developed. The theoretical justification was based on a literature review of resource-based and knowledge-view of the firm, market orientation, and logistics. Other literature bases in the justification for the model and hypotheses included

organizational learning, information processing, knowledge management, strategic management, and organizational behavior. The theory was integrated with qualitative research from observing the phenomenon to provide antecedent justification for the constructs and their interrelationships.

The constructs that comprise the logistics market orientation model are: logistics market intelligence generation, logistics market intelligence dissemination, logistics market intelligence shared interpretation, logistics market intelligence responsiveness, logistics performance, and organizational performance. Five research hypotheses that represent the relationships between the model constructs were presented and are summarized below:

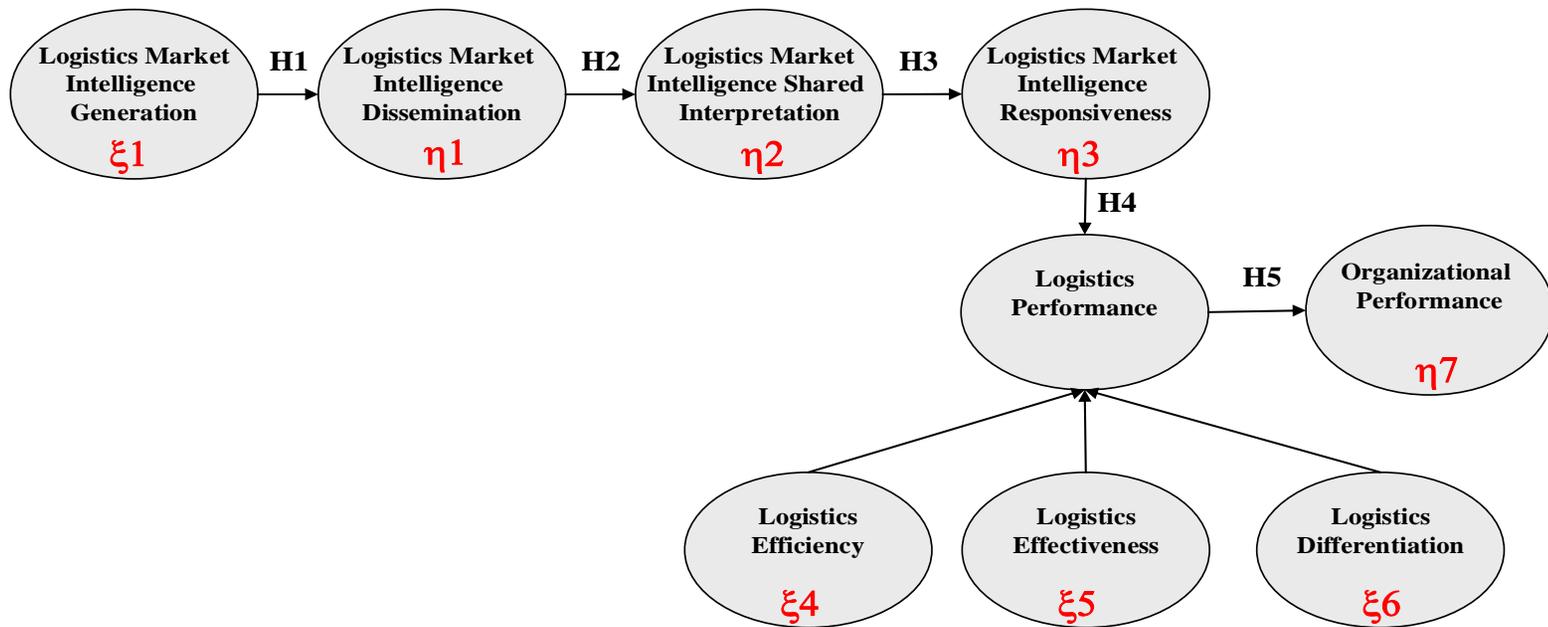
- H1: An increase in the level of logistics market intelligence generation increases the level of logistics market intelligence dissemination.
- H2: An increase in the level of logistics market intelligence dissemination increases the level of logistics market intelligence shared interpretation.
- H3: An increase in the level of logistics market intelligence shared interpretation increases the level of logistics market intelligence responsiveness.
- H4: An increase in the level of logistics market intelligence responsiveness increases the level of logistics performance.
- H5: An increase in the level of logistics market intelligence responsiveness increases the level of organizational performance.

## **CHAPTER 3 – TESTING THE THEORY**

This chapter provides details of the procedures used for testing the theoretical hypotheses presented in Chapter 2. First, the hypotheses are reviewed and the theoretical model is presented as a structural equation model. Next, the research design for the pretest and final test is described, including a discussion of the sampling plan and the data collection methods used. This is followed by a description of the measurement development process, including details on the construct operationalization and scale development. Finally, details on the final collection and analysis of data are presented.

### **STRUCTURAL EQUATION MODEL**

This section provides the theoretical logistics market orientation model (LMOM) introduced in Chapter 2 in the form of a structural equation model. The LMOM in Figure 3.1 identifies one exogenous (independent) variable and seven endogenous (dependent) variables. The exogenous variables are logistics market intelligence generation, logistics efficiency, logistics effectiveness, and logistics differentiation. The endogenous variables are: logistics market intelligence dissemination, logistics market intelligence shared interpretation, logistics market intelligence responsiveness, and organizational performance. The construct of logistics performance is a second order construct composed of the three first order constructs: logistics efficiency, logistics effectiveness, and logistics differentiation. The nomological network is presented by the relationships among the eight constructs, represented by the directional paths shown in Figure 3.1.



**Figure 3.1**  
**Logistics Market Orientation Empirical Model**

The hypotheses are reviewed below:

- H1: An increase in the level of logistics market intelligence generation increases the level of logistics market intelligence dissemination.
- H2: An increase in the level of logistics market intelligence dissemination increases the level of logistics market intelligence shared interpretation.
- H3: An increase in the level of logistics market intelligence shared interpretation increases the level of logistics market intelligence responsiveness.
- H4: An increase in the level of logistics market intelligence responsiveness increases the level of logistics performance.
- H5: An increase in the level of logistics market intelligence responsiveness increases the level of organizational performance.

## **RESEARCH DESIGN**

To gather the necessary data to test the LMOM and this dissertation's hypotheses, nonexperimental survey methodology (Kerlinger and Lee 2000) was employed. Survey methodology is deemed appropriate because surveys result in data that are easily quantifiable and suitable for statistical testing for significance of results, reduce the degree of interviewer bias or variability (Boyd and Westfall 1955), are suitable for collecting a large number of responses in a relatively cost-effective manner, and provide a means for simultaneously reaching respondents who are geographically dispersed (Kanuk and Berenson 1975). The following section describes the sampling plan, which is followed by a discussion of the data collection methods used for testing the theory.

## **Sampling**

Because this dissertation is interested in the logistics function, the targeted respondents were those individuals within organizations that have logistics responsibilities. The unit of analysis is the respondents' perception of the logistics market-oriented behaviors within their organization and of the performance of their logistics unit and of the organization as a whole. Thus, each variable of interest was assessed by measuring and analyzing the respondents' perceptual evaluations.

Specifically, the targeted respondents are the organization's mid- and top-level logistics professionals because they are believed to have a higher degree of knowledge of virtually all the logistics areas (e.g., inbound transportation, outbound transportation, customer service, warehousing) within the organization and regarding logistics' market-oriented behaviors, organizational performance, and logistics performance relative to competitors. The interviews conducted for this dissertation revealed that lower level managers were more focused on their limited responsibilities and had less understanding of the overall logistics function. In addition, the unit of analysis suggests that the targeted respondents must be members of organizations where logistics exists as a separate function. A range of organizations from various industries and positions within the supply chain were sampled in order to achieve a reasonable level of external validity (Cook and Campbell 1979) and generalizability.

Because a large number of logistics professionals within organizations where logistics exists as a separate function are members of the Council of Supply Chain Management Professionals (CSCMP), a CSCMP membership list containing more than 3,000 logistics contacts were used for the pretest and the final test for this dissertation.

This list was examined for organizations and individuals that do not represent the desired unit of analysis. Specifically, according to CSCMP's categorization of members, respondents were limited to those within manufacturing organizations. Merchandise/retailers were eliminated because they most likely do not carry out outbound logistics and related activities. The other organizations, for example third party logistics providers and consulting firms, most likely do not have a separate logistics function. Additionally, respondents with the following responsibilities were omitted from the list because they do not fall under the desired position of "mid- or top-level logistics manager:" MIS Planning/Control, Marketing/Sales, General Management, Education/Training, Internal Consulting or Corporate Research, Finance/Accounting, and Other. Any other non-logistics professionals and lower-level logistics professionals were also eliminated from the list. Furthermore, pre-qualifying calls were placed to insure the respondents fit the above criteria of the desired sample (e.g., mid- and top-level managers, knowledge of virtually all the logistics areas within the organization) (see Appendix A for pre-qualifying protocol, which is further explained in the "Survey Pre-Test" section).

### **Measure Development**

The first step in developing measures for nonexperimental survey methodology was to operationalize the constructs of interest (Dillman 2000). Using the existing literature and results from in-depth interviews with logistics professionals, the definitions for the eight constructs used in this dissertation were defined and described in Chapter 2. The construct operationalizations are based on these definitions. For each of the constructs, multi-item measures were used to increase reliability, decrease measurement

error, allow for greater distinction among respondents, and minimize the specificity associated with each item when multiple items are averaged (Churchill 1979). According to Anderson and Gerbing (1988), each construct should consist of 3-5 items in order to effectively measure the construct and analyze it using structural equation modeling. No new items were developed for the four performance related constructs. This is because these constructs were adapted from previous studies, the current measures reflect the logistics managers' responses during the in-depth interviews, and were deemed appropriate for this study.

For the other four constructs (LMIG, LMID, LMISI, and LMIR), initially, twelve to seventeen items per construct were adapted from previous MO research (Jaworski and Kohli 1993; Matsuno, Mentzer, and Özsomer 2002) and an additional eleven to twenty-four potential new items were developed for each construct based on responses from the in-depth interviews. The methodology for developing measures was based on the guidelines provided by Churchill (1979), Anderson and Gerbing (1991), Dunn, Seaker, and Waller (1994), and Mentzer and Flint (1997). The goal of developing the survey items was to ensure that the questions are easy to understand and comprehend and are not vague, ambiguous, or difficult to answer (Dillman 2000; Belson 1981). The questions needed to be specific enough to communicate uniform meaning to all of the respondents, not too lengthy, and are not biased (Converse and Presser 1986; Payne 1951). Closed-ended questions were used in the survey because this dissertation's research is confirmatory in nature (Bradburn and Sudman 1978; Converse and Presser 1986). The newly created items tap the definitions that were developed using the actual terms used by those interviewed. Because it is accepted as appropriate in measuring opinions,

beliefs, and attitudes (DeVellis 1991), a Likert scale was used for each of the measures. In particular, a 7-point scale will be used to provide greater opportunity for the respondents to discriminate between the response items and because many empirical studies on market orientation, from which many of the items were adapted (e.g., Jaworski and Kohli 1993; Matsuno, Mentzer, and Özsomer 2002), used this same scale.

This large pool of items (adaptations from previous MO scales and the newly developed items from qualitative interviews) were presented to five subject matter experts to evaluate the measurement items along with drafts of the survey from the standpoint of representativeness, item specificity, clarity of instructions, readability, content validity, and face validity. Based on the feedback, many items were deemed unacceptable, leaving approximately fifteen to twenty-eight items per construct, many of which were also reworded. Next, a revised draft of the survey was pilot tested on six mid- and top-level logistics managers. After the managers completed and returned the survey, they were contacted and asked questions regarding the representativeness, readability, item clarity, and face validity. Based on their comments, the survey format and items were once again revised, which resulted in twelve to twenty items per construct. The survey was then presented to three additional logistics managers and one additional subject matter expert. Based on their comments, the number of survey items, the wording of the items, and the overall survey format was once again revised.

This iterative process of reviewing and revising the survey with a total of six subject matter experts and nine logistics managers resulted in the survey pre-test shown in Appendix A. The Pre-Test Survey in Appendix A shows the questions, scales, and anchors for all eight constructs, in addition to the classification questions (the overall

format of the survey will appear differently when posted to the Internet). The “Pre-Test Survey Item Source” in Appendix A shows the source for each of the questions for all of the constructs, except the logistics performance constructs, which were adapted from Bobbitt (2004), and the organizational performance construct, which were adapted from Matsuno, Mentzer, and Rentz (2000). The definitions and descriptions of the eight constructs (shown in Table 3.1), along with the second-order formative construct of logistics performance, are presented next.

### *Logistics Market Intelligence Generation*

Logistics market intelligence generation is the collection and evaluation of market information relative to its usefulness to logistics business decisions. It is operationalized as the perception of logistics personnel’s participation in activities to gather and analyze information about the market. It is described as the extent to which logistics personnel formally or informally generate intelligence about the market, which includes customers, competitors, suppliers, regulatory aspects, social and cultural trends, and the macro-economic environment. For the pre-test survey, 11 items represent LMIG. The questions reflect the collection and evaluation of market intelligence from logisticians participating in activities, for example, having lunch or coffee with industry friends, visiting facilities of the leaders in their industry, being involved in sales activities, accompanying employees who deliver logistics service to observe how operations are carried out, and reading reports from government and regulatory bodies. The result of the pilot test with the nine logistics managers revealed that logistics managers cannot easily separate the activities of collection and evaluation of market intelligence and that separating the two

**TABLE 3.1 - SUMMARY OF CONSTRUCT DEFINITIONS AND OPERATIONALIZATIONS**

| <b>Construct</b>                                    | <b>Definition</b>   | <b>Operationalization</b>   |
|---|---|---|
| Logistics Market Intelligence Generation            | the collection and evaluation of market information relative to its usefulness to logistics business decisions.   | perception of logistics personnel's participation in activities to gather and analyze information about the market.   |
| Logistics Market Intelligence Dissemination         | the timely sharing of market intelligence by the logistics function to appropriate personnel within the logistics function and other areas within the organization. | perception of logistics personnel's participation in formal and informal activities to transfer market information to relevant logistics personnel and others vertically and horizontally within the organization and of how promptly that information is transmitted once it is available. |
| Logistics Market Intelligence Shared Interpretation | the process of quickly achieving a cohesive understanding of market intelligence disseminated by logistics personnel.   | perceptions of the extent to which and how fast logistics personnel reach a common understanding of market information.   |
| Logistics Market Intelligence Responsiveness        | the speed with which unified action is taken by logistics personnel based upon the shared interpretation of market intelligence.                                    | perceptions of how united logistics personnel are when responding to market information and how fast action is taken based upon market information.   |
| Logistics Performance                               | the degree of efficiency, effectiveness, and differentiation associated with the accomplishment of logistics activities.  | dimensions of logistics efficiency, logistics effectiveness, and logistics differentiation.   |
| Logistics Efficiency                                | how well the logistics function's resources are utilized.   | perceptions of the logistics function's performance on efficiency measures.   |
| Logistics Effectiveness                             | the degree to which a logistics function's goals are achieved.  | perceptions of the degree to which the logistics function's actual costs met the budgeted costs.  |
| Logistics Differentiation                           | the difference in logistics performance when evaluated against competitors.   | perceptions of the logistics function's performance compared to competitors.  |
| Organizational Performance                          | financial performance of the organization relative to competitors.  | perceptions of the business unit's performance compared to primary competitors.   |

resulted in redundant questions. Based on the logistics managers' suggestions, the stem for each of the questions includes both collection and evaluation of market intelligence.

#### *Logistics Market Intelligence Dissemination*

Logistics market intelligence dissemination is the timely sharing of market intelligence by the logistics function to appropriate personnel within the logistics function and other areas within the organization. It is operationalized as the perception of logistics personnel's participation in formal and informal activities to transfer market information to relevant logistics personnel and others vertically and horizontally within the organization and of how promptly that information is transmitted once it is available. For the pre-test survey, 8 items represent LMID. The questions tap the amount of market information disseminated informally (hall talk, one-on-one discussions, etc.) and formally (inter-departmental meetings, presentations, etc.). The timelines of sharing market intelligence is tapped by asking how quickly logistics personnel share market intelligence with other logistics personnel, other departments, and senior management. The appropriateness aspect of LMID is tapped by asking several questions on whether logistics personnel distribute information to only those appropriate individuals that need the information.

#### *Logistics Market Intelligence Shared Interpretation*

Logistics market intelligence shared interpretation is the process of quickly achieving a cohesive understanding of market intelligence disseminated by logistics personnel. It is operationalized as the perception of the extent to which and how fast

logistics personnel reach a common understanding of market information. For the pre-test survey, 6 items represent LMISI. The questions reflect both the extent to which and the speed that shared interpretation of market intelligence is reached among logistics personnel. A few of the questions ask, for example, how quickly logistics personnel resolve disagreements about the meaning of the market intelligence, if individuals are encouraged to challenge others' opinions regarding the meaning of the market intelligence, and if they agree on how the intelligence is to be used.

#### *Logistics Market Intelligence Responsiveness*

Logistics market intelligence responsiveness is the speed with which unified action is taken by logistics personnel based upon the shared interpretation of market intelligence. It is operationalized as the perceptions of how fast cohesive action is taken based upon market information. For the pre-test survey, 10 items represent LMIR. The questions reflect the speed with which logistics personnel respond to market intelligence through items that ask how fast they would be able to plan and execute a response to changes in various business areas, such as customer preferences, competitor offerings, and government regulatory policies. Questions also reflect the level of participation by logistics personnel and if logistics personnel understand how responses to market intelligence impacts logistics, other functions, and the corporation as a whole.

#### *Logistics Performance*

Logistics performance is the degree of efficiency, effectiveness, and differentiation associated with the accomplishment of logistics activities. It is

operationalized through its dimensions of logistics efficiency, logistics effectiveness, and logistics differentiation. The initial measures for each of the three dimensions were created by Smith (2000) and were subsequently refined by Bobbitt (2004). This dissertation adapts the Bobbitt (2004) measures for logistics efficiency, effectiveness, and differentiation.

### *Logistics Efficiency*

Logistics efficiency refers to how well the logistics function's resources are utilized. It is operationalized as the perceptions of the logistics function's performance on efficiency measures. Six items for this first-order construct ask respondents to rate their logistics function's performance on various logistics activities such as orders shipped on time, inventory turns per year, and order cycle time.

### *Logistics Effectiveness*

Logistics effectiveness is the degree to which a logistics function's goals are achieved. It is operationalized by the perceptions of the degree to which the logistics function's actual costs meet the budgeted costs. Five items for this dimension ask respondents to compare budgeted costs against their actual performance for the last year in areas such as transportation, warehousing, inventory, etc.

### *Logistics Differentiation*

Logistics differentiation is the perceived difference in logistics performance when evaluated against competitors. It is operationalized by the perceptions of the logistics

function's performance compared to competitors. Eight items are used for this dimension, which ask respondents to indicate their performance compared to competitors they have experience with on logistics activities, such as damage free deliveries, line item fill rate, and on-time delivery.

### *Organizational Performance*

Organizational performance is the performance of the organization relative to its primary competitors. Since market orientation, and thus, logistics market orientation, is considered to result in a competitive advantage (Hunt and Morgan 1996), organizational performance variables are measured relative to those of the organization's relevant competition (Matsuno, Menzter, and Özsoymer 2002). Therefore, each item is phrased so that respondents evaluate aspects of business performance relative to their business unit's primary competitors (Conant, Mokwa, and Varadarajan 1990; Matsuno, Mentzer, and Özsoymer 2002). Specifically, the following three self-reported, relative organizational performance indicators were developed: market share, percentage of new product sales to total sales, and return on investment. These subjective performance measures are used because objective relative performance measures are virtually impossible to obtain at the business unit level. Furthermore, subjective measures have been found to be valid substitutes for objective data and are widely used in organizational research (Powell and Dent-Micallef 1997; Powell 1992; Tracey 1998), particularly in prior market orientation-performance research (Jaworski and Kohli 1993; Matsuno, Menzter, and Özsoymer 2002; Narver and Slater 1990; Slater and Narver 1994). For the pre-test survey, 7 items represent organizational performance.

Furthermore, the survey instrument is designed to be easily understood by providing logical instructions, beginning with easy, non-threatening questions, and ordering the questions in a logical manner in order avoid confusing the respondents (Bradburn, Sudman, and Wansink 2004). Transitional headers are used to assist the respondent, redundant questions were avoided to keep the survey as short as possible, and demographic questions appear at the end of the survey (Bradburn, Sudman, and Wansink 2004; Dillman 2000).

### **Survey Pretest**

A pretest was conducted in order to validate both the adapted measures and the newly developed measures for this dissertation. The five step process recommended by Dillman (2000, p. 604) was used for the implementation of the pretest survey. In addition, it helped identify potential problems with the design of the survey. The process should provide face validity of the measures.

The pre-test was administered through a web-based survey, following Dillman (2000). Walton (1997) suggested that researchers should be aware of the new possibilities of survey research offered through advances in information technology. Griffis, Goldsby, and Cooper (2003) compared web-based surveys to mail surveys and found that web-based surveys are particularly appropriate for research involving large sample sizes (as this dissertation requires), given the negligible costs associated with the mass electronic mailings and data entry. Specifically, they found support that, compared to mail surveys, web-based surveys exhibit higher response rates, faster responses, and lower costs for large sample sizes. Griffis, Goldsby, and Cooper (2003) also found that

there are no differences in the nature of the data gathered by web-based and mail surveys. They found that most respondents actually prefer web-based surveys over mail surveys and that web-based surveys provide more detail regarding visits to the survey website, surveys initiated, and surveys completed, which provides greater knowledge of what aspects of the survey can be improved.

Dillman (2000) also found support for the use of web-based surveys. Web-based surveys using a mixture of contact modes (email and telephone) have been shown to produce response rates comparable to those obtained by paper mail surveys using a mixture of contact modes (mail, telephone, and/or email) (Dillman 2000). Because previous research suggests that the use of paper and email to contact respondents produced lower response rates than the use of telephone and email (Dillman 2000), this study used both telephone and email to contact respondents.

A web-based survey approach is appropriate for this dissertation because the population of interest is businesses, where coverage issues are not present due to the high rates of computer use (Dillman 2000), and the sample size is large (Griffis, Goldsby, and Cooper 2003). Furthermore, the benefits of survey administration (e.g., electronic contact, reduced data entry, low cost, higher responses, speedier responses), survey design (e.g., understanding how well the survey is performing based on the greater level of detail provided of the number of visits to the web survey, surveys initiated, and surveys completed), and survey distribution (e.g., speed of delivery to respondents, confirmation of failed delivery) makes a web-based survey an attractive approach for this survey.

For the pretest, once the CSCMP database list was obtained, a random sample of approximately 105 contacts were drawn from the database. This list was used for the pre-qualification calls, in which potential respondents were asked to verify their email address, that they are not a third party logistics organization, are in a mid- to top-level managerial position, and whether they would agree to participate in the research. The protocol used for this prequalification call is presented in Appendix A.

A first wave of emails were sent to the respondents that qualify as a result of the prequalification calls, along with a message that allowed the respondent to click on a highlighted internet address that was transferred them to the web-based survey (see Appendix A for Initial Survey Email). The message also explained the importance of the research and request their participation. This was followed by a second wave to those that have not responded approximately one week after the first wave (see Appendix A for reminder email 1). Depending on the response rate achieved, at least two additional reminder emails (see Appendix A for reminder email 2) was sent to the respondents to remind them to complete the survey. Finally, of those respondents that indicated a willingness to participate that had not yet responded were called to determine the status of response. Nonresponse information (5 substantive questions) was collected from those that indicated an unwillingness to participate in the survey.

Once the surveys were completed, the data was downloaded from the Internet database into the software tool, AMOS 4.01. The surveys were examined for respondent errors, including providing more than one response for an item and other potential problems that may decrease the integrity of the data. Missing data analysis was conducted to identify potential problems with the survey instrument. Missing data was

examined for each respondent and each variable. Where a large amount of missing data exists (for a respondent or a variable), that respondent or variable was eliminated. For the remaining respondents and variables, analysis was conducted to insure that missingness was random using Little's MCAR Test (Little and Ruben 2002).

### **Scale purification**

Construct unidimensionality, reliability, internal consistency, convergent validity, and discriminant validity was assessed following Garver and Mentzer (1999). The measures for each variable was tested for unidimensionality to verify the existence of one latent construct underlying a set of measures (Hattie 1985). Since it provides a more stringent interpretation of unidimensionality than other methods (e.g., exploratory factor analysis, item total correlations, and coefficient alpha) (Gerbing and Anderson 1988), confirmatory factor analysis was used to test for each construct by itself, then for all possible pairs, and finally for the overall measurement model and each construct in the presence of other constructs (Garver and Mentzer 1999; Medsker, Williams, and Holahan 1994). The above analysis resulted in a reduction in the number of items to measure each construct and provide evidence of unidimensionality (see final survey in Chapter 4, Article 2).

Reliability was assessed using Cronbach's Coefficient Alpha, with the rule of thumb that an alpha above .70 indicates good correlation between the item and the true scores and much lower alpha levels suggest that the sample of items is a poor indicator of the construct (Churchill 1979). Furthermore, because coefficient alpha tends to underestimate scale reliability and has several limitations, Garver and Mentzer's (1999, p.

44) formulae for SEM scale reliability measures, construct reliability, and variance extracted, was calculated. If the construct reliability measure is greater than .70 and the variance extracted is .50 or greater, then support for reliability should be appropriately met. Construct validity was assessed through both convergent validity and discriminant validity. Convergent validity was judged by assessing the overall fit of the measurement model, and the magnitude, direction, and statistical significance of the estimated parameters between the latent variables (e.g., logistics market intelligence generation) and their indicators (survey items for LMIG), with .70 being the value of substantial magnitude of the parameter estimate (Garver and Mentzer 1999). For discriminant validity, paired construct correlation of the constructs was performed. Correlations among the constructs of the measurement model was compared to the theoretical model and the chi-square test was utilized to test the differences between the two. If the chi-square difference test is significant when all of the correlations between the constructs are fixed to one for the theoretical model, and for the measurement model allowing the two constructs to correlate freely, then the constructs were deemed as possessing discriminant validity.

The above analysis resulted in a reduced number of overall items, along with insight into other survey improvements that was used for the final test.

## **FINAL DATA COLLECTION AND ANALYSIS**

After improvements are made to the survey instrument, as a result of the survey pre-test, the 105 pre-test potential respondents were removed from the CSCMP database list. Then, the remaining potential respondents were used for the final survey. The

survey was administered using the same 5-step approach as described previously in the Survey Pretest section.

The final analysis was also performed using structural equation modeling (SEM). By combining the measurement model (confirmatory factor analysis) and the structural model (regression or path analysis) into a simultaneous statistical test (Garver and Mentzer), SEM provides a powerful statistical technique for simultaneously testing multiple relationships among latent variables, especially when there is more than one dependent variable in the model, as is the case with this dissertation's model. Anderson and Gerbing's (1988) two-step procedure for employing SEM was used for this dissertation. In the first step, the measurement model was validated through confirmatory factor analysis by assessing construct validity by testing construct unidimensionality, reliability, convergent validity, and discriminant validity (as described in the Survey Pretest section). While not assessed in the pretest analysis, the final study tests for predictive validity. In the second step, the theoretical model was tested by assessing the structural relationships between latent variables. Anderson and Gerbing (1988) was followed as described in the Survey Pretest section and, as such, a complete detailed description of that procedure is not repeated here.

To test the structural model, a confirmatory assessment of the nomological validity was made. In particular, the fit of the theoretical model was assessed by analyzing the theoretical model, a null structural submodel (where all parameters relating the latent variables to one another are fixed at zero), and a saturated structural model (where all possible parameters relating the latent variables to one another are estimated) using AMOS modeling software.

The models were assessed using a collection of measures, since SEM does not have a single statistical test of model strength (Marsh 1994; Rigdon 1996). Overall fit, comparative fit to the null model, and model parsimony were assessed using goodness-of-fit measures that are frequently used in SEM and are appropriate for large sample sizes (Hair et al. 1998; Marsh 1994).

## **SUMMARY**

Nonexperimental survey methodology was used to collect data to test the theoretical model presented in Chapter 2. The model was analyzed using SEM. This chapter described the steps, according to currently acceptable practices, that was used during the research design, measure development, measure purification, data collection, and data analysis. The results and discussion of the survey analysis are presented in Chapter 5.

## **CHAPTER 4 – ARTICLE 1: THE ROLE OF LOGISTICS IN MARKET ORIENTATION**

As the business environment becomes more turbulent and competitive, organizations are realizing the resources that have historically sustained competitive advantage are no longer viable. Increasingly, survival depends on acquiring intelligence from outside the organization (Agarwal 2004; Drucker 1997; Friedman 2005; Steensma and Lyles 2000) and on the ability and strength to execute based on intelligence (Bossidy and Charam 2002; Gummesson 1998; Olsen, Slater, and Hult 2005; Piercy 1998; Zahra and George 2002). Acquiring and executing based on market intelligence is the essence of market orientation, which suggests that capturing, managing, and responding to intelligence on the external market is essential to organizational success (Jaworski and Kohli 1993).

Market orientation (MO) has been recognized as strategically important (something beyond the mere responsibility of the marketing function) by the broader academic field (e.g., management, strategic management, accounting, human resources, information systems, organizational behavior, new-product development). One of the central contributions of MO is that all functions are involved in generating, disseminating, and responding to market intelligence. Marketing has traditionally, however, assumed the role of coordinator in creating a market-oriented organization (Elg 2002; Leemon 1995). While marketing is, no doubt, critical to the success of MO, marketers only give one perspective of the market. Other functions also play key roles in

generating, disseminating, facilitating shared interpretation of, and responding to market intelligence.

Due to their internal and external integrating roles and their interaction with customers, suppliers, and third parties, logistics personnel are in the distinct position to carry out many of these MO behaviors. While logistics literature has recognized the broader role of logisticians as learners, marketers, and innovators (Ellinger, Ellinger, and Keller 2002; Flint and Mentzer 2000; Flint et al. 2005), previous literature has yet to address the logistics function's distinct involvement in creating and maintaining a market-oriented organization.

With the blitz of relationship management and time-based competitive strategies (Angulo, Nachtmann, and Waller 2004; Bowersox, Closs, and Stank 1999; Brown and Bukovinsky 2001; Daugherty, Myers, and Autry 1999; Frohlich 2002; McCarthy and Golicic 2001; Pagh and Cooper 1998; Waller, Johnson, and Davis 1999), logistics analysts, managers, and executives have gained the responsibilities of harmonizing inter-organizational systems, sharing logistics and product movement information with suppliers and customers, and joint inter-organizational planning for promotional activity and product changes (Day 1994; Ellinger, Ellinger, and Keller 2002). Logisticians are increasingly tasked with the development and maintenance of collaborative relationships by interacting with external marketplace participants and, thus, are in the distinct position to discover new market intelligence from their supply chain partners and share it with others in their organization so less myopic decisions can be made. Opportunities also exist to increase MO during routine logistics activities, such as warehouse employees and transportation operators interacting on receipt and delivery of products.

The objective of this paper is to explore and understand the role of logistics in market orientation. In particular, we sought to explore the following two broad research questions: (1) How do logisticians participate in the market orientation behaviors? (2) How does a market-oriented logistics function impact logistics and business performance? To accomplish the objective, we reviewed the market orientation, knowledge management, organizational behavior, information processing, and strategic management literature. Next, we conducted in-depth interviews with managers representing a wide range of logistics managerial responsibilities. The interviews were conducted according to theoretical sampling guidelines and analyzed by qualitative research procedures (Strauss and Corbin 1998). The literature and in-depth interviews were analyzed to build a theoretical framework and develop propositions of logistics market orientation (LMO), defined as a logistics function that carries out market-oriented behaviors.

The contributions of our research to theory and practice include a managerially-based recognition of the central role of logistics in creating and maintaining a market-oriented organization, an in-depth evaluation of logistics' participation in generating, disseminating, reaching a shared interpretation of, and responding to market intelligence, the development of a causal model of logistics market orientation and its effect on logistics and business performance, and identifying future research to better support industry practice.

## **MARKET ORIENTATION**

According to the resource-based view of the firm, achieving and sustaining a competitive advantage results from an organization's internal resources (Day and Wensley 1988, Hunt and Morgan 1995; Wernerfelt 1984). Of all the resources that can result in a competitive advantage, the knowledge-based view of the firm contends that new knowledge is an organization's most valuable resource (Grayson and O'Dell 1998; Zack 1999). Not only is knowledge as a whole considered the most powerful source of competitive advantage, market knowledge, in particular, has been proposed as an organization's only enduring source of advantage (Birkinshaw et al. 2000). Therefore, MO is particularly important in creating and sustaining a competitive advantage because it focuses on knowledge of markets.

With over 100 studies investigating the MO-performance relationship since 1990 (Baker and Sinkula 2005; Menguc and Auh 2006; Narver, Slater, and MacLachlan 2004), market orientation represents the realization of the marketing concept (Barksdale and Darden 1971; Felton 1959; McNamara 1972) and is at the "heart of marketing theory" (Levitt 1960; Sin and Tse 2000, p. 911). One of the foundational frameworks of market orientation is the research conducted by Narver and Slater (1990), who view market orientation as an organizational culture consisting of three components (customer orientation, competitor orientation, and inter-functional coordination) and two decision-making criteria (a long-term focus and a profit focus). Kohli and Jaworski (1990) propose a more process-driven model that considers the stages of generating, disseminating, and responding to market intelligence as the essence of market orientation. Matsuno, Mentzer, and Rentz (2005) offer a reconciliation of these two

conceptualizations, proposing a holistic framework that suggests a market oriented culture is an antecedent to market oriented behaviors, i.e., generation, dissemination, and responsiveness to market intelligence. We adopt this holistic framework, where “market orientation” represents a set of behaviors (Kohli and Jaworski 1990) with market oriented cultural antecedents (Narver and Slater 1990).

Previous research has examined market orientation as an organizational phenomenon and, hence, the unit of analysis of MO research has been at the organizational level. One of the key contributions of MO is the idea that every function in the organization is responsible for marketing and for the market intelligence processes that are central to a successful market orientation (Day 1994; Elg 2002). In a market-oriented organization, each organizational function generates market intelligence that is uniquely useful for that particular function and market intelligence that is useful for other functions and the organization as a whole. A function may collect and analyze information that is valuable to carrying out its own responsibilities and/or that is helpful in providing insight to other functions within the organization. Also, each function disseminates market intelligence internally to individuals within that function and externally to other functions and organizations. Lastly, although a market oriented organization responds to market intelligence as a unified front, each function also develops and implements a unique response to the market intelligence that contributes to the overall organization-wide response.

Further, each function may focus more on one market than another. Markets refer to more than customers. It also includes all relevant market participants (competitors, suppliers, and third parties), regulatory aspects, social and cultural trends, and macro-

economic environmental factors (Matsuno, Mentzer, and Rentz 2000). Although marketing may be tasked with the responsibility of competitor analysis, it rarely has direct physical interaction with competitors. Thus, whereas individuals within marketing mainly interact with one marketplace participant (the customer), the logistics function, which manages the supply and physical flow of goods, information, and services to customers, interacts with customer, suppliers, third party logistics providers, and competitors. There is little research, however, on the role of non-marketing functions (i.e., logistics) in developing and maintaining a market-oriented organization.

## **LOGISTICS MARKET ORIENTATION**

A dominant theme during the evolution of logistics is one of increasing integration (Geoffrion and Powers 1995; Kent and Flint 1997). Due to its role as the driver of external and internal integration and coordination, the logistics function may be uniquely critical to creating a market oriented organization. Logistics, a key integrator with customers, suppliers, and third party logistics providers, is positioned to generate market intelligence by interacting with each of those parties (Flint and Mentzer 2000). Additionally, because it is considered an integrator of functions (Morash, Dröge, and Vickery 1996; Novack, Rinehart, and Wells 1992; Poist 1986; Sabath and Whipple 2004) and an advocate of cross-functional supply chain initiatives (Bowersox, Closs, and Stank 2000), the logistics function is in the distinct position to disseminate intelligence throughout the organization (Deeter-Schmelz 1997; Narasimhan and Kim 2001; Powell and Dent-Micallef 1997; Sanders and Premus 2005, 2002; Stank, Daugherty, and Ellinger 1999; Whipple, Frankel, and Daugherty 2002; Zhao, Dröge, and Stank 2001; Kahn and

Mentzer 1996; Leenders and Wierenga 2002; Mentzer, Min, and Bobbitt 2004). The logistics integrator has the opportunity to assess market intelligence and facilitate the exchange of market knowledge (Kiessling, Harvey, and Garrison 2004).

In the product and service delivery process, the logistics function is one of the few functions that actually “touches” the customer and is often the last “touch” the customer has with the organization (Ellinger, Ellinger, and Keller 2002). In addition, logistics interacts with the supply side through purchasing activities, inbound and reverse logistics, and dealing with third party logistics providers (Stock, Gries, and Kasarda 1998; Ganesan, 1994).

With today’s emphasis on relationship marketing and building long-term mutually beneficial relationships on a global basis (Day 2000; Lambert, Knemeyer, and Gardner 2004; Reicheld 1996), logisticians are increasingly called on to develop mutually beneficial relationships with customers, suppliers, and third parties (Neuschel 1987). The logistics personnel role has extended beyond the traditional transaction type mentality (i.e., truck driver, material handler, purchaser) to relationship development, understanding customer value, and generating market intelligence (Flint and Mentzer 2000; Kiessling, Harvey, and Garrison 2004). In setting new collaborative initiatives, such as vendor-managed inventory and just-in-time programs, logisticians have ample opportunity to gain and apply new insights from customers, suppliers, and third party logistics providers.

Therefore, to better understand the role of logistics personnel in creating a market-oriented logistics function, we conducted qualitative research to develop a model with propositions of a logistics market orientation.

## **METHODOLOGY**

Because literature on logistics' involvement in market orientation behaviors is sparse, qualitative research was conducted in order to supplement existing research. Subsequent to the initial literature review, qualitative research was performed to ensure that existing literature and theory were aligned with the phenomenon of interest. While sensitive to the possibility of changing the theory, the qualitative results were continually compared to the existing literature in order to discover differences and similarities between existing research and the phenomenon. In addition to gaining confidence in the existing theory, the qualitative research resulted in the development of a deeper, richer understanding of the phenomenon and thus a stronger theory. Specifically, the qualitative research helped clarify the constructs and gain understanding of the relationships among them. The following will describe the research design, data collection and analysis, sample, and trustworthiness of the research.

### **Research Design**

The qualitative research was conducted following guidelines offered by Strauss and Corbin (1998), which is appropriate when the research problem requires exploring concepts and establishing relationships in raw data and organizing these concepts and relationships into a theoretical explanatory scheme (Stern 1980). This approach is particularly relevant because the role of logistics in the market orientation involves situations in which individuals interact (e.g., logistics analysts, traffic managers, and

truck drivers), take action, and engage in a process (e.g., responding to market intelligence) in response to a phenomenon (Creswell 1998).

### **Data Collection and Analyses**

The data were collected and systematically analyzed throughout the research. Consistent with Maxwell (1996) and Strauss and Corbin (1998), the relevant literature was reviewed up-front in order to provide an initial starting point for choosing the data collection samples in addition to gaining sensitivity to the data throughout the research process. Insights from interviews also led to different literature as a secondary data source after the data collection started.

The grand touring technique (McCracken 1988; Spradley 1979), where the participants were asked to recall memories of personal experiences related to their involvement in MO behaviors and would be prompted to explain further when necessary, was used during the forty-five to ninety minute interviews with the managers, which were conducted in team rooms near the participants' offices or in the managers' offices or cubicles. Interview questions were open-ended (see Figure 2.1 for the Interview Protocol) and varied in sequence. During each interview, the participants were asked to recall memories of personal experiences related to their involvement in MO activities. In order to minimize researcher bias and provide data quality/reliability in the analysis, all seventeen interviews were audio recorded and transcribed. Data analysis was conducted using open, axial, and selective coding procedures (for review and to learn more about these procedures, see Strauss and Corbin 1998). ATLAS.TI (Scientific Software Development 1997) facilitated coding of the transcripts.

The principal researcher took field notes from observations obtained from touring production and distribution facilities, business meetings, sales calls, and reviewing corporate documents (e.g., intra-company magazines, vendor performance reports, contractual documents), when available. For example, during a visit to one of the sample companies, the principal researcher participated in a logistics and supply chain training program. In addition to the seventeen audio recorded interviews, the principal researcher met and discussed the research phenomenon with nine other individuals that held various responsibilities and hierarchical levels throughout the organizations (e.g., vice-president of operations, corporate communications, service sales support, sales director, quality engineer, materials handler, truck driver, forklift operator). Thus, insights from total of twenty-six practitioners were used in constructing the theory.

### **Sampling**

The initial interview respondent was chosen based on logistics responsibilities and involvement in the MO dimensions. Interview participants were chosen based on theoretical sampling guidelines (see Belk, Sherry, and Wallendorf 1988; Glaser 1978; Strauss and Corbin 1998) that suggest choosing participants that reflect diversity along several dimensions. Initially, because MO involves a high level of interaction between multiple individuals, it was deemed appropriate to explore certain aspects of logistics and MO within the same organization to gain perspectives of the interaction between multiple logistics personnel. Based on the analysis of these initial interviews, it was deemed necessary to interview individuals from other organizations to look for confirming and disconfirming examples of the insights gained from previous interviews and the emergent

theory. Thus, after nine interviews within one organization were conducted and analyzed, subsequent interviews were conducted with eight respondents from six other organizations in order to capture diversity of organizational contexts (e.g., industry characteristics and position within the supply chain).

Data redundancy was reached after fourteen interviews. Three more interviews were conducted to make certain theoretical saturation was reached and the complexity of the phenomenon was captured. Thus, seventeen interviews from seven organizations were recorded and transcribed for coding analysis. The sample reflected diversity along several dimensions, such as job position (e.g., customer logistics manager, logistics manager, logistics analyst, director of global logistics, director of logistics, traffic manager), tenure on the job, organization size, products manufactured, the organization's position within the supply chain (e.g., original equipment manufacturer, first-tier supplier, second-tier supplier), and industry (e.g., building products, automotive, aluminum, aerospace, specialty materials, food, high-tech).

For theory testing, seventeen interviews would be considered too small of a sample, but in theory building one seeks comprehensive concepts, and it is common to rely on the deep understanding of a few key informants (McCracken 1988). Seventeen interviews is in line with qualitative research guidelines, which indicate that it is common to interview eight or fewer informants until saturation is reached (McCracken 1988; Strauss and Corbin 1998). The goal is to deeply explore managers' knowledge. Generalizability is not sought in theory building, but rather is reserved for future theory-testing research (Flint and Mentzer 1997).

## **Trustworthiness**

The set of criteria appropriate for qualitative studies in the discovery phase of research are credibility, transferability, dependability, confirmability, integrity, fit, understanding, generality, and control (each are defined in Table 1). Such criteria have an evaluative role in interpretive research and are analogous to that of the criteria of internal validity, external validity, and reliability (Hirschman 1986; Lincoln and Guba 1985). Therefore, the trustworthiness of this research process was assured by meticulously following the interpretive research guidelines, as described in Table 2.1 (adapted from Flint, Woodruff, and Gardial 2002, p. 106 and Flint and Mentzer 2000, p. 23). The findings from the qualitative research analysis are integrated with existing literature to develop the theoretical framework.

## **FINDINGS**

By integrating the results of the interviews and previous literature, we developed a model of logistics' role in market orientation and the impact of logisticsians' participation in market-oriented behaviors on logistics and business performance (see Figure 1.1).

Though previous research conceptualizes MO as a second-order construct consisting of three dimensions, there is little research on the relationships among the market orientation behaviors. Market intelligence must be generated before it can be disseminated. In turn, the generated intelligence must be effectively shared throughout the organization before a unified response can be developed and implemented. Also, as reflected by the interview participants, intelligence is an asset only if it is used and action

guided by market intelligence is required to impact performance. Therefore, disaggregating the MO behaviors to evaluate their interrelationships evaluates the direct link from responsiveness to performance, instead of the link between the holistic second-order MO construct and performance.

### **Logistics Market Intelligence Generation**

While logisticians' participation in traditional market research activities (e.g., developing economic market trend analysis models) was sparsely mentioned, interview participants were adamant about the importance of their participation in generating market intelligence. The logistics managers in our research presented a wide range of actions to capture market intelligence, such as visiting customers' sites to better understand their needs, visiting facilities of successful firms in other industries, and talking with trade partners. They discussed experiences of both front-line employees and logistics executives generating market intelligence. They also described the importance of capturing both tactical and strategic market intelligence. One interview participant described how he would ask truck drivers, who were on a dedicated route with one of their customers, about the customer's inventory levels and other supply chain and product issues because, as he stated, the "best source of information is the truck driver rather than the marketing folks." These frontline logistics employees have access to important market knowledge through the customer-service delivery connection. Frontline logisticians, such as the motor carrier operator, may spend more time face-to-face with key customer representatives than any other company employee (Bowersox, Closs, and Stank 2000).

A logistics executive told the story of capturing more strategic market intelligence.

“When [setting up a new supply chain process] with one of our... suppliers, [I saw] the newest materials that were coming out of new product development in our industry, the visions... or directions of our competitors ... I heard their opinions on the needs of the customer ... sometimes they know more about our customers than we know.”

Another commented,

“It was on a tour of a [leader in another industry] facility and we had also heard about it from some of our shipping partners. This is something which we had not heard about.”

There were also examples of the lack of logisticians’ participation in logistics market information generation. For example, one manager described experiences of asking, “Why didn’t I see this coming before? And it would be too late.” He said they “just didn’t think that way ... it’s not a part of our frame of mind.”

Whether the interview participants discussed the existence of logistics participation in generating market intelligence (or lack thereof), respondents were adamant about the importance of logisticians’ role in generating market intelligence. For example, one manager described how they capture intelligence that marketing and sales are not able to acquire.

“We have the opportunity to see what others can’t. We are involved after the sale has been made. So ... we see the real issues that arise... We are walking around with [our customers] on a weekly basis sometimes.”

Others stated,

“We learn about customers more because we have more contact with them” and

“Since we touch the customer so much we saw it before [others] did.”

When describing experiences of generating market intelligence, we prompted the participants to describe it in more detail. The interview participants not only discussed activities of collecting market information, but also analyzing the information to create market intelligence. The following manager discussed collecting information and analyzing the information to determine its importance:

“We talk to people in logistics industries, and this would include not only carriers, but also our warehousing providers. Quietly speaking to suppliers in addition to our 3PLs. We also stay abreast of what is in the literature. I mean there are a couple more specific air transport magazines, warehousing magazines. And when we hit upon an idea which we think has merit... we become very interested. So we get information from a variety of sources. Then we scrutinize it.”

Thus, we build on Kohli and Jaworski (1990) to define logistics market intelligence generation as the **collection and evaluation of market information relative to its usefulness to logistics and other functions’ business decisions**. It is the extent to which logistics personnel formally and informally recognize and filter new intelligence about the market.

### **Logistics Market Intelligence Dissemination**

Drawing from literature addressing organizational communication, organizational learning, and knowledge management, information dissemination has been identified as an important determinant of interfunctional relationships (e.g., Boisot 1995; Levitt and

March 1988; Ruekert and Walker 1987; Sanders and Premus 2005), but has made only limited progress beyond the fact that the transfer of intelligence between organizational members is exceptionally difficult. Intelligence dissemination, described as vertical and horizontal transmission of information that has been analyzed (Argyris and Schon 1978; Day 1991; Kohli and Jaworski 1990; Moorman 1995).

The qualitative interviews revealed that effective dissemination of intelligence involved distributing the intelligence to the appropriate individuals and sending it in a timely manner. For example, one manager stated, “Selected others want, or need, the information and others don’t.” Interview respondents also described negative consequences of sending information to everyone in the organization, “It is important to know who to inform and who not to ... so we don’t lose credibility.” Others commented,

“When I receive blanketed emails to everyone here, I instinctively disregard it because it isn’t for me ... it should be targeted to the proper person, or maybe group” and “I’m ... inundated with emails, phone calls, newsletters so, if it isn’t for me, I don’t pay attention to it.”

Therefore, effective dissemination is more than simply transmitting a large amount of information to everyone in the organization (Fildes and Hastings 1994). This is similar to Daft and Huber’s (1987) “message routing,” which refers to selectively distributing information to the appropriate individuals or groups.

Interviews also described time elements when discussing dissemination of market intelligence. One actually described his lack of informing appropriate co-workers in a timely manner. “If I would have just told [a coworker] about what I knew sooner, we could have avoided that mishap.” Another logistics manager said, “He had been sitting

on [the intelligence]. He waited too long to tell me about ...[the intelligence]. Once he told me, our environment changed ... and [the intelligence] was irrelevant.”

By integrating the qualitative results with previous literature, we define logistics market intelligence dissemination as the **timely sharing of market intelligence by the logistics function with appropriate personnel within the logistics function and other areas within the organization.**

Some researchers argue that too much information sharing can be dysfunctional due to information overload (Fiol and Lyles 1985; Huber 1991; Hult, Ketchen, and Slater 2004; Maltz and Kohli 1996). However, information overload is mitigated when intelligence is effectively analyzed (summarized, delayed, prioritized, modified, etc.) once it is collected (Daft and Huber 1987). The evaluation aspect of logistics market intelligence generation ensures that collected information is summarized, prioritized, and modified in a manner that reduces information overload. Effective logistics market intelligence generation captures market intelligence quickly, making it available to disseminate in a more timely manner, increasing logistics market intelligence dissemination. Analyzing the information allows logistics managers to determine the appropriate recipient of the information, which facilitates message routing (Daft and Huber 1987) and effective logistics market intelligence dissemination.

Additionally, results from interview participants indicate logistics managers disseminate available market intelligence to all appropriate individuals in the organization in order to achieve desired outcomes. For example, one stated, “When I hear something from a customer that may affect what we do, I feel it is a duty of mine to tell others so we can take advantage of that opportunity, or more often, avoid a mistake.”

This reflects research in knowledge management, strategic management, and marketing that suggests the decision to transfer intelligence is triggered by the discovery of new intelligence and there is an inherent desire of those that discover intelligence that is perceived as superior to existing intelligence to share it with their peers (Baker and Sinkula 1999; Cohen, March, and Olsen 1972; Szulanski 1996). Based upon the literature and interview respondents, the following proposition is offered:

**RP1: An increase in the level of logistics market intelligence generation increases the level of logistics market intelligence dissemination.**

Effective intelligence dissemination has been linked to impacting an organization's responsiveness (Cooper 1984; Dougherty 1992; Fisher, Maltz, and Jaworski 1997; Griffin and Hauser 1996; Gupta, Raj, and Wilemon 1985; Hartline, Maxham, and McKee 2000; Kohli and Jaworski 1990; Souder 1988). Organizational learning, knowledge management, and information processing research, however, posit that the impact of intelligence dissemination on responsiveness will be much greater if mediated by the process of reaching a shared interpretation (Huber 1982; Hult, Ketchen, and Slater 2004; Nonaka and Takeuchi 1995). These streams of research also suggest that intelligence dissemination and intelligence shared interpretation are separate, distinct concepts. Organizational learning for example, describes information distribution, the process by which information from different sources is shared and thereby leads to new understanding, as separate from information interpretation, the process by which distributed information is given one or more commonly understood interpretations among a collection of individuals (Huber 1991).

## **Logistics Market Intelligence Shared Interpretation**

While describing experiences of sharing market intelligence, the logistics managers discussed the process of reaching a shared interpretation once each appropriate party received the market intelligence. They emphasized that simply transmitting or “throwing information over the wall” to other functions or departments does not ensure that intelligence has been disseminated. A market-oriented logistics function shares not only the information about the market, but also the shared *understanding* of such information across individuals (Fisher, Maltz, and Jaworski 1997; Kohli and Jaworski 1990; Mohr, Fisher, and Nevin 1996; Mohr and Nevin 1990). Huber (1991) suggested that the development of diverse interpretations creates learning because diversity of opinion increases an organization's repertoire of potential responses. Although diverse opinions create learning and all personnel may not agree on the chosen plan of action based on the market intelligence, there must be a high level of agreement among the individuals on the meaning of the market intelligence in order to choose and deliver a unified response.

Differences in “world-views” of managers can result in a lack of shared interpretation due to language dissimilarities, as well as conflicts of goals, preferred solutions, and trade-offs (Griffin and Hauser 1996; Maltz and Kohli 1997). Diverse views of concepts such as priority of service and shipment need to be resolved so effort can be focused on necessary activities (Handfield and Nichols 2002; Hult, Ketchen, and Slater 2004). A shared understanding of knowledge requires the departments or individuals to recognize the value of the information transmitted as an aid to decision making, as opposed to considering it a disruption, is discussed in several different

streams of research (e.g., organizational behavior, marketing, information processing, knowledge management, psychology) (Beyer and Trice 1982; Brockman and Morgan 2003; Deshpande' and Zaltman 1982, 1984; Menon and Varadarajan 1992; Mohammed 2001; Moorman 1995; Nonaka and Takeuchi 1995; Rentsch and Klimoski).

Organizations should attempt to achieve consensus on the meaning of the market intelligence in order to develop an appropriate and unified response since information may have multiple interpretations, (Day 1994a).

Not only was logistics market intelligence shared interpretation described as achieving agreement about disseminated market intelligence during the interviews, but also reaching a cohesive understanding within a brief period of time. One manager described a situation where his logistics group missed a key opportunity because they spent too much time arguing and trying to “get them all on board.” On the other hand, one logistics manager said that because the culture of his team was such that agreements were reached quickly, they were able to capitalize on market intelligence much faster. Therefore, effective logistics market intelligence shared interpretation is achieved in a prompted manner.

Interview responses also described this as encouraging individuals to challenge others' opinions and assumptions regarding the meaning and importance of the market information to achieve a shared understanding. One described a situation where his coworker found out about an innovative new approach to packaging their products, “we pressed each other on what it implies, what it entails, and the significance of it.”

Extending previous MO research, we introduce shared interpretation as an important necessary behavior of market orientation, and define logistics market

intelligence shared interpretation as **the process of quickly achieving a cohesive understanding of market intelligence disseminated by logistics personnel.**

Arriving at consensus about the meaning of market intelligence is dependent on each appropriate individual possessing market intelligence first. Without effective transmission of available market intelligence, an organization will not be able to achieve agreement among individuals. Evidence from previous research suggests that higher levels of communication are required to achieve a consensus about market intelligence (e.g., Amabile 1997; Troy, Szymanski, and Varadarajan 2001).

Effective logistics market intelligence dissemination results in market intelligence being shared with the appropriate individuals in a timely manner. Interview respondents emphasized that sharing intelligence in a timely manner increases the likelihood that a collective agreement can be achieved more quickly. For example, one respondent stated, “It depends on us being certain we each know about it ... the more we tell each other the moment we [find out about it], the more we’ll lay it out there and so we can talk about it, ... argue about it, make sense of it as a whole.” Distributing intelligence with the appropriate individuals ensures that the intelligence is available to begin discussions in order to reach a cohesive understanding.

Thus, the literature and interview responses lead to the following research proposition:

**RP2: An increase in the level of logistics market intelligence dissemination increases the level of logistics market intelligence shared interpretation.**

## **Logistics Market Intelligence Responsiveness**

The half-life of usable market intelligence is shrinking because the environment is rapidly changing, markets are becoming more fragmented, and media and supply chains are proliferating (Day 1994b). This rapidly changing environment is an incentive for logisticians to be responsive and act on market intelligence before it becomes obsolete (Bourgeois and Eisenhardt 1988; Eisenhardt 1989; Weiss and Heide 1993).

Responsiveness has been conceptualized in logistics in a variety of ways (e.g., Crosby and LeMay 1998; Fawcett, Calantone, and Smith 1996; Keller and Ozment 1999; McGinnis, Kochunny, and Ackerman 1995; McGinnis and Kohn 1990; and for a review see Keller et al. 2002). In the market orientation, information processing, and knowledge management literature, responsiveness refers to action taken in the form of planning and implementing a reaction to the shared understanding of market intelligence that has been generated and disseminated (Kohli and Jaworski 1990; Moorman 1995; Nonaka and Takeuchi 1995). It is typically operationalized as the extent to which market intelligence changes the actions of an organization (Kohli and Jaworski 1990).

Interview respondents emphasized that the speed with which action is taken based on market intelligence is highly important to the logistics function. For example, when discussing responsiveness to market intelligence, one logistics manager stated,

“Once we’re informed of that, my responsibilities are to focus on speed, cycle time reduction, knowing what to do now, not later. Other functions can know later and have success, not us. It is critical that we know now. That is the value add that we give to [our company]... Now do it, do it, do it now, now. Here is the

end state, go make it happen. And we get it done because we are focusing on the customer.”

Some thought that speed of response to market knowledge was uniquely relevant to the logistics function. For example, one logistics manager stated,

“... finance provides resources, IT allows us to see our supply chain, ...marketing and sales create a want, a desire for our products, ... logistics in-charge of executing on the delivery of the product, so we act fast.”

Another stated:

“... we don't ever want a hiccup on delivery. As soon as we do, it will be all over the media, because of course this business is very competitive and you don't want to, you know, stop. So we have to know those hiccups immediately. We constantly try to reduce time to know and respond to those hiccups. That is our job in logistics and supply chain, speed to customer. You know, with our [regional] sales director, that immediacy is not so meaningful to her. But in logistics, we handle the transportation and the delivery side of it, which made us critical to get the people in place, to ship [products]...”

Another logistics manager told the following story that involved responding to knowledge of the market in a very short time period:

“I think we got word on Tuesday ... So we started working on it immediately. Okay, and we had our infrastructure re-routed to a [company] managed facility in [city] that we are currently using for other fulfillment opportunities and had its work re-positioned and by Thursday we were fulfilling all of it ourselves. And that's a Herculean effort to get, not only the capability, from getting orders

pushed there, to getting people in place, to getting inventory in place, getting a line set up to do that fulfillment.”

Furthermore, Kohli and Jaworski (1990) suggested that virtually all individuals participate in responding to market trends in a market-oriented company. In a logistics function, personnel responsible for finished goods inventory, materials handling, industrial packaging, distribution planning, order processing, inbound and outbound transportation, and customer service are often at odds with each other. Many logistics decisions (e.g., facility location, packaging, etc.) require making trade-offs among facility costs, inventory costs, transportation costs, and customer service (Braglia 2000; Lee 2004; George, Jeffrey, and Audrey 1994; Nozick and Turnquist 2001; Odekerken-Schroder, Gaby, and Schumacher 2003; Tyagi and Das 1997). Logistics costs often move in opposite directions, and thus, logistics personnel are often in conflict with each other. In a highly market-oriented logistics function, however, logistics personnel quickly work through the conflict and respond to market intelligence in a united manner. As one logistics manager commented, even if there are trade-offs and disagreements among logistics personnel, “there are people who carry more of a vote and there are times when you have to be the good soldier and say, ‘yes sir, I’ll get it done.’” He went on to describe how, eventually, a final decision is made as to how each person will respond.

Therefore, logistics market intelligence responsiveness includes both the time involved in responding to market intelligence and the extent to which the necessary logistics personnel are involved in the planning and implementation of responding to market intelligence. As such, logistics market intelligence responsiveness is defined as **the speed with which unified action is taken by logistics personnel based upon the**

**shared interpretation of market intelligence.** It refers to using the available market intelligence to develop solutions quickly (proactive and/or reactive) and acting on the response in unison.

A higher level of logistics market intelligence shared interpretation results in a stronger agreement among logistics personnel with regards to the meaning of market intelligence. The interview respondents indicated that the more those logistics personnel have a cohesive understanding of the market intelligence, the more likely they will be able to plan and implement a response with a unified front.

“Looking back, when we’ve reacted the best, successfully, ... when we’ve nailed it, our individual grasp [of the market intelligence], the hottest process or latest approach to this whole supply chain beast, was ... fused into one collective march. We aligned our footsteps and drumbeats.”

While there has been much conceptual speculation on the relationship between shared interpretation and organized action, both conceptual and empirical organizational information processing studies indicate that shared meaning provides a basis for commonly directed effort among organizational members (Daft and Weick 1984; Donnellon, Gray, and Bougon 1986; Eisenberg and Witten 1987; Thomas, Clark, and Gioia 1993; Weick 1979). Thus, a response should be more unified if the development of shared interpretation of market intelligence among logistics personnel effectively guides the planning and implementation of their actions (Hult, Ketchen, and Slater 2004). As one interview respondent commented on the lack of shared interpretation’s effect on the response,

“I broke what we shipped from cases to ‘eaches,’ as a result from [a customer] asking us to deliver that way. And I told [the finished goods manager] but he didn’t ship ‘eaches’ for another two months. He assumed we would keep shipping based on the contract, which was for another two months ... We weren’t on the same page. I was billing in ‘eaches’ and he was shipping in cases. We almost lost [that customer].”

Effective logistics market intelligence shared interpretation also results in logistics personnel reaching a cohesive agreement quickly. The faster a shared interpretation is reached, the earlier a response can be planned and implemented. Having a shared interpretation also reduces the amount of redundancies, conflicts, and confusion in the process of planning and implementing a response because shared interpretation becomes the means to ensure coordination (Handfield and Nichols 2002; Hult, Ketchen, and Slater 2004), which should reduce the time involved in responding to market intelligence. Thus, the literature and interview responses lead to the following research proposition:

**RP3: An increase in the level of logistics market intelligence shared interpretation increases the level of logistics market intelligence responsiveness.**

### **Logistics Performance**

A logistics function can generate market intelligence, disseminate it internally, and achieve a shared interpretation of the market intelligence. However, unless it responds to market needs, very little is accomplished. If the logistics function and the

organization as a whole are to receive improved performance from market intelligence, there must be action based on that market intelligence.

With the increasing influence of logistics in business strategy and the growing awareness of the benefits from leveraging logistics to increase customer value (Mentzer and Williams 2001), measuring the performance of logistics has become a high priority (Bowersox and Daugherty 1995; Chow, Heaver, and Henricksson 1994). The cumulative evidence of the logistics literature reveals that logistics performance is multidimensional, and is a function of resources utilized, the extent to which interrelated goals are achieved, and results compared to competitors (Bobbit 2004; Griffis et al. 2004; Langley and Holcomb 1992; Mentzer and Konrad 1991; Smith 2000). Mentzer and Konrad (1991) suggest that both effectiveness, the extent to which an objective or goal has been achieved, and efficiency, a measure of how well an organization uses resources in creating outputs, should be used when measuring performance. Langley and Holcomb (1992) described effectiveness as whether the logistics function meets customer requirements in certain critical areas, such as product guarantee, in-stock availability, fulfillment time, convenience, retail service, innovation, and market standing. They described efficiency as the ability to provide the desired product/service mix at a level of cost that is acceptable to the customer. Halley and Huilhon (1997) more narrowly describe efficiency as the contribution of logistics activities to sales turnover, profitability, and employee motivation. Comparing results to competitors refers to the logistics performance dimension, differentiation. “Differentiation manifests itself in the ability of logistics to create value for the customer through the uniqueness and distinctiveness of logistical service (Langley and Holcomb 1992, p. 8).

In order to capture the multidimensional aspects (effectiveness, efficiency, and differentiation) of logistics performance, we define logistics performance as **the degree of efficiency, effectiveness, and differentiation associated with the accomplishment of logistics activities** (Bobbitt 2004; Smith 2000). Efficiency is defined as how well the logistics function's resources are utilized. Effectiveness is defined as the degree to which a logistics function's goals are achieved. Differentiation is defined as the perceived difference in logistics performance when evaluated against competitors.

Logistics performance should be heavily influenced by logistics market intelligence responsiveness. Kohli and Jaworski's (1990) qualitative research findings suggest that responding to market intelligence with a unified focus reduces redundant and unnecessary activities within functions, thus improving efficiency. The more united the logistics personnel in planning and implementing a response, the less conflict and divergence from the task at hand will exist in carrying out logistics activities, which should further improve efficiency. Presenting a unified front to the customer should also increase the customers' perception of delivered product and service, thus improving effectiveness, because there will be less discord between key customer contact employees (Hartline, Maxham, and McKee 2000). The promise to deliver made by certain logistics customer contact employees is more likely to be aligned with what is actually delivered by other logistics customer contact employees. The less time required to plan and implement a response to market intelligence, the smaller amount of overall input will be invested, thus increasing logistics efficiency. Effectiveness should be improved because a higher level of logistics market intelligence responsiveness results in a faster response implementation, which should increase the likelihood of meeting deadlines for pre-

defined goals. In addition, the more a response is based on market intelligence as opposed to internal politics, the more unified the logistics personnel; and the faster they plan and implement a response, the more likely they will succeed over the competition in delivering value to the customer. The following research proposition is derived.

**RP4: An increase in the level of logistics market intelligence responsiveness increases the level of logistics performance.**

### **Organizational Performance**

Improvements in logistics efficiency, effectiveness, and differentiation should influence organizational performance above and beyond the logistics function. The potential positive impact of logistics activities on organizational performance is well documented (e.g., Claycomb, Germain, and Dröge 1999; Daugherty, Dröge, and Germain 1994; Dröge and Germain 2000; Ellinger, Daugherty, and Keller 2000; Germain, Dröge, and Spears 1996; Lynch, Keller, and Ozment 2000; Stank, Daugherty, and Ellinger 1999). Logistics improvements allow organizations to achieve customer satisfaction through inventory availability, timely delivery, and less product failure (Bowersox and Closs 1996; Day 1994; Mentzer and Williams 2001; Olavarrieta and Ellinger 1997). For instance, Morash, Dröge, and Vickery (1996) found that logistics delivery speed, delivery reliability, responsiveness to target markets, and low cost distribution improved organizational performance and performance relative to competitors. In addition, improvement in logistics performance has also been found to increase organizational performance through competitive advantage (Bobbitt 2004).

The impact of logistics performance on organizational performance can also be understood by evaluating the strategic profit model, an approach developed to see interactions among principal elements of an organization's profit and loss statement and balance sheet (Davis 1950; Lambert and Burduroglu 2000; Stapleton et al. 2002; Stephenson 1976). For example, increasing logistics efficiency by eliminating waste in the form of time, effort, quality, and inventory should reduce expenses, inventory, and cash (Larsen and Lusch 1990; Mentzer, Bobbitt, and Min 2004). Assuming logistics managers set objectives for improvement in managing logistics activities, increasing logistics effectiveness by meeting pre-defined goals for budgeted performance items such as sales and transportation, warehousing, and inventory costs should increase gross margin and reduce total expenses and assets. Enhancing logistics differentiation by improving overall customer-perceived value when compared to competitors for on-time and damage-free deliveries, line-item fill rates, forecast accuracy, etc. should positively impact sales, inventory, and overall capital (Langley and Holcomb 1992; Morash, Dröge, and Vickery 1996; Manrodt, Holcomb, and Thompson 1997). Each of these improvements in logistics performance dimensions positively impacts net margin and asset turnover, thereby improving return on assets. Thus, the following research proposition is offered.

**RP5: An increase in the level of logistics performance increases the level of organizational performance.**

## **IMPLICATIONS AND CONCLUSIONS**

It is typically assumed that marketers develop and hold most knowledge of the customer through activities such as demand forecasting, market research, marketing surveys, etc. In interview after interview, it was interesting to hear respondents provide examples that emphasized logistics' key role in creating a market-oriented organization by participating in market orientation behaviors. The research has both research and managerial implications.

Our qualitative research consolidated the inter-disciplinary research (e.g., organizational behavior, knowledge management, information processing, strategic management, marketing, and logistics) to facilitate the exploration of logistics' role in market orientation. The interview results and integration of research efforts led to a better understanding of the specific behaviors involved in LMO and interrelationships among the market-oriented behaviors. Understanding these interrelationships allows evaluation of the impact of actions that directly impact performance, i.e., responsiveness.

Because market intelligence exists in all aspects of markets (e.g., suppliers and 3PLs) and not only customers, the results identify many opportunities for logisticians to capture market intelligence. Instead of assuming that the role of logistics in the firm should be limited to a supporting one in market orientation, the research suggests that logistics may play a more vital role in generating, disseminating, reaching a shared interpretation of, and responding to market intelligence. The logistics function is increasingly recognized as strategically important to organization success (Fuller et al. 1993; Mentzer and Williams 2001; Sharma, Grewal, and Levy 1995). Logistics creates a competitive advantage if it contributes to the organization's core competencies (Stank,

Davis, and Fugate 2005). Since market orientation can be considered an organizational competence (Morgan and Hunt 1994), the research contributes to the understanding of the role of logistics in the organization as a key contributor to the development of an organization's market orientation, and thus, to creating competitive advantage.

The rigorous qualitative approach taken in the research was necessary to build thorough and sound theory (Frankel, Naslund, and Bolumole 2005) of LMO, but has limitations that offer additional future research opportunities. Since participant observation was not an option in most of the situations during this research, the data came mainly from interviews with logistics managers. The results are not generalizable or empirically verified, given the relatively small sample size of respondents because of the theoretical sampling approach to develop an in-depth understanding of the phenomenon. Thus, the LMO model should be empirically evaluated by developing and testing the constructs of logistics market intelligence generation, dissemination, shared interpretation, and responsiveness. Valid measures need to be developed to tap each of these constructs in future studies. The qualitative findings should assist in the development of appropriate scales to measure the logistics market orientation constructs.

Participation in LMO behaviors varied greatly among the sample participants. Future research should explore the antecedents that influence LMO. The research provides a foundation to understand organizational cultural and structural antecedents and moderators of the LMO behaviors in future studies. For example, a market oriented culture (Narver and Slater 1990), as well as entrepreneurial (Barringer and Bluedorn 1999; Bhuian, Menguc, and Bell 2005; Covin and Slevin 1989), learning (Ellinger, Ellinger, and Keller 2002; Hanssen-Bauer and Snow 1996; Sinkula, Baker, and

Noordewier 1997), and innovative (Flint et al. 2005; Hurley and Hult 1998; Menon and Varadarajan 1992; Narver, Slater, and MacLachlan 2004) cultures, may create distinct manifestations of logistics participation in generating, disseminating, reaching a shared interpretation of, and responding to market intelligence.

Additionally, future research should explore the relationships between logistics functional salience (Zacharia and Mentzer 2004), the influence and importance of logistics within the firm, and LMO. Since knowledge is power, LMO may impact the functional salience of logistics, or visa-versa. It would also be interesting to investigate the relationship between external supply chain relational variables (Golicic and Mentzer 2005) and logistics market intelligence generation, as closer, long-term, and trusting supply chain relationships may provide more opportunity to generate knowledge from and with supply chain partners (customers, suppliers, and third parties) (Martin and Grbac 2003; Sin et al. 2005; Tse et al. 2004). For example, one interview respondent commented, “We are very well tied in with major players in logistics industries, FedEx, UPS in the air and ground transportation ... So that type relationship gives one, I guess, access to new trends that are happening in the big corporations.”

Additionally, the relationship between inter-functional coordination and empowerment variables and logistics market intelligence dissemination, shared interpretation, and responsiveness may be an important avenue for future research. The reduction of organizational layers in many firms has created emphasis on developing cross-functional teams and processes as an approach to increase inter-functional integration (Deeter-Schmelz 1997; Devine and Clayton 1999; Petzinger 1999; Stock and Lambert 2001). While our research took a necessary initial step in understanding market

orientation within the logistics function, future research can investigate the dynamics of logistics collectively generating, disseminating, reaching a shared interpretation of, and responding to market intelligence with other functions.

While generalizable inferences cannot be provided, the findings provide several important insights for managers. This research should help managers from all areas of the organization become aware of the potential insights that can be gained from logistics personnel.

With the increased emphasis on building long-term, mutually beneficial business-to-business collaborative relationships, the logistics integrator becomes more important. Logistics personnel who integrate with trading partners have the opportunity to gather necessary intelligence, such as information on order patterns, planned production promotions, and valuable service feedback (Flint et al. 2005; Sigauw, Simpson, and Baker 1998; Stank, Keller, and Daugherty 2001). Logisticians must be knowledgeable, trained, and politically empowered to carry out these responsibilities, so their counterparts in other functions and organizations will be motivated to act on the information disseminated.

One interview with a logistics executive discussed how many traditional logistics activities are considered non-value added and tactical, but offer the opportunity to capture strategic market intelligence if only the firms would take a market-oriented approach to carrying out their responsibilities. He described, for example, how the freight audit and payment activity within firms is an often over-looked area, ripe with an abundance of market intelligence. He commented that databases exist within firms, but “the traffic manager is sitting there with all this market information, but no one recognizes and uses

it.” This executive will often look at the available freight audit and payment databases first to understand market intelligence, such as “region 7 has a 14% growth rate,” and information on product mixes. He even described training not only logistics managers, but also marketing managers, to pay attention to such valuable, hidden intelligence.

The above example illustrates the vast potential for traditional non-strategic responsibilities of logisticians to be elevated within the organization through logistics’ participation in market orientation behaviors. Logisticians are central to market orientation, and play an important role in creating a market oriented firm.

## **CHAPTER 5 – ARTICLE 2: THE ROLE OF LOGISTICS IN THE MARKET ORIENTATION PROCESS**

Market orientation, based on the implementation of the marketing concept, is considered one of the most important contributions, if not the heart of, the marketing discipline (Menguc and Auh 2006; Sin and Tse 2000). While much research has found empirical support for its impact on organizational performance, a number of research studies have found no relationship or even negative effects (Agarwal, Erramilli, and Dev 2003; Bhuian 1997; Sandvik and Sandvik 2003) of MO on organizational performance (Baker and Sinkula 2005; Langerak 2003). The cumulative results of previous research in revisiting scale properties, applying scales in new contexts (e.g., government, international), and investigating the relationship between MO and a range of antecedents and consequences (Darroch et al. 2004) suggests that while we have made great strides, we have a long way to go in understanding the nature of market orientation.

Marketing researchers should therefore continue to revisit what it means to be market-oriented. An initial step is to reevaluate the activities that directly improve performance. While previous research (Kohli and Jaworski 1990) measures the impact of MO as a holistic, second-order construct on performance, generating and disseminating market intelligence cannot directly impact performance unless there is action taken based on the intelligence. Thus, this study reconceptualizes MO to measure the direct link between market intelligence responsiveness and performance.

In further reevaluating the nature of MO by paralleling the behavioral conceptualization of market orientation (Kohli and Jaworski 1990) with organizational learning, information processing, and knowledge management, it is evident that MO is

missing one critical behavior—reaching a shared interpretation of market intelligence. This gap in existing MO research is important because a central premise of market orientation is that a response based on market intelligence must be carried out in a unified manner. Shared interpretation is essential to the theory of MO because simply disseminating market knowledge throughout the organization does not necessarily mean that all relevant parties have a shared understanding of the intelligence. A lack of cohesive understanding of market intelligence would result in a disjointed response. Achieving a shared interpretation of market intelligence limits “tribal mentality” and “silo-thinking” within groups and encourages a coherent focus for responding to market intelligence (Day 1994; Morgan 2004; Slater and Narver 1995). This research study introduces the behavior of reaching a shared interpretation to MO research in an attempt to explain part of the mixed results of MO performance.

Another gap in the market orientation research is understanding how each function uniquely contributes to developing and sustaining a market-oriented organization. One central tenant of market orientation often neglected in previous studies is that MO is an organization-wide phenomenon (Kohli and Jaworski 1990). All functions are responsible for marketing and participate in the creation and maintenance of a market-oriented organization. This does not imply, however, that every function plays the same role. Previous MO research either assumes that all functions contribute to MO in the same manner or that marketing should take the lead in generating, disseminating, and responding to market intelligence (Moorman and Rust 1999). On the other hand, individuals within some functions, potentially non-marketing functions (Day 1994), are inherently better positioned to capture, share, and respond to intelligence derived from

certain markets. Existing research has largely ignored MO at the functional level, especially regarding non-marketing functions. Arguing that one function (e.g., marketing) is more important to MO or that one function's participation in MO impacts organizational performance more than another is not a goal of this paper. Rather, this paper contends that for marketing managers and researchers to fully capitalize on the potential of MO, marketing needs to investigate the role of non-marketing functions in a market-oriented organization.

Generating and disseminating intelligence from all marketplace participants—customers, suppliers, competitors, third parties, etc. (Matsuno, Mentzer, and Rentz 2000)—requires those involved in spanning the boundaries across and within organizations (Thompson 1967). Considered a boundary spanning function, logistics is one function that may be uniquely positioned to contribute to a market-oriented organization. It is one of the few functions that is required to strategically and tactically span both customer and supplier boundaries and, thus, often plays a critical role in generating intelligence of markets. Labeled an integrator of intra-organizational functions (Morash, Dröge, and Vickery 1996; Novack, Rinehart, and Wells 1992), the logistics function is also essential in disseminating and facilitating a shared interpretation of market intelligence. As key employees involved in the customer delivery process, thus affecting customer perceptions of logistics service quality (Mentzer, Flint, and Hult 2001), logisticians are vital in responding to market intelligence (Srivastava, Shervani, and Fahey 1999).

Therefore, this research seeks to answer the research question, “What is the role of logistics in the MO process?” To answer this question, the following issues are

addressed: What are the behaviors that comprise MO and the relationships among them? What is the process by which the logistics function participates in MO behaviors? What is the impact of their participation in the MO process on logistics and organizational performance?

To address these questions, we provide a brief literature review of market orientation, introduce the behavior of reaching a shared interpretation, and discuss market orientation at the functional level and in the logistics function. We then develop a model of logistics market orientation as a result of literature and qualitative interviews. Lastly, we present the empirical results from analyzing survey responses via structural equation modeling, and its implications and future research directions.

## **MARKET ORIENTATION AS A PROCESS OF BEHAVIORS**

This paper takes the holistic viewpoint that “market orientation” represents the behaviors of generating, disseminating, and responding to market intelligence (Kohli and Jaworski 1990) with market-oriented cultural antecedents (Narver and Slater 1990). (For a review of this holistic view of MO, see Hult, Ketchen, and Slater 2005 and Matsuno, Mentzer, and Rentz 2005). Interestingly, several streams of literature (organizational learning (OL), information processing (IP), and knowledge management (KM)) offer insight into the behaviors involved in a market-oriented organization. In the same manner as MO, each of these streams of literature includes the behaviors of intelligence (or knowledge) generation and dissemination. KM and IP literature also include behaviors similar to responding to intelligence. By paralleling these streams of literature

(see Figure 2.3), however, it is evident that market orientation is missing one important behavior, i.e., reaching a shared interpretation.

OL, IP, and KM research posit that the impact of intelligence dissemination on responsiveness will be much greater if mediated by the process of reaching a shared interpretation (Huber 1982; Hult, Ketchen, and Slater 2004; Nonaka and Takeuchi 1995). These streams of research also suggest that intelligence dissemination and intelligence shared interpretation are separate, distinct concepts. OL, for example, describes information distribution, the process by which information from different sources is shared and thereby leads to new understanding, as separate from information shared interpretation, the process by which distributed information is given one or more commonly understood interpretations among a collection of individuals (White, Varadarajan, and Dacin 2003; Huber 1991).

According to OL literature, shared interpretation refers to the degree of consensus on the meaning and implications of the information that was disseminated (Slater and Narver 1995). It is similar to IP's information commitment aspect of conceptual utilization, which refers to the extent to which an organization recognizes the value of information agents and products (Beyer and Trice 1982; Menon and Varadarajan 1992; Moorman 1995; White, Varadarajan, and Dacin 2003) and the processes through which information is given meaning to a collection of individuals (Daft and Weick 1984).

The inclusion of reaching a shared interpretation of market intelligence in MO is critical because the transfer of intelligence is difficult. According to Kohli, Jaworski, and Kumar (1993), intelligence dissemination is conceptualized and operationalized as the transmission of intelligence horizontally and vertically throughout the organization, but

lacks the following step of reaching a shared interpretation. While subsequent tests of MO are void of the concept of shared interpretation, Day (1994) suggests that market-driven firms must achieve mutually informed interpretations (i.e., shared interpretation). If a response is to be unified, there must be a shared interpretation of the market intelligence. Grant (1996) views the organization as an institution for intelligence integration. The ability of a firm to integrate the specialized intelligence of its employees is critical to planning and implementing an effective response. The OL literature points to the role of common cognitive schema and frameworks (Spender and Grant 1996; Weick 1979), metaphor and analogy (Nonaka and Takeuchi 1995, p. 64), and stories (Brown and Duguid 1991) as vehicles for molding, integrating, and reconciling different individuals' comprehension (Grant 1996). Therefore, it is concluded that Kohli and Jaworski's (1990) second order construct of MO is incomplete and that market orientation is better conceptualized as consisting of the following four behaviors: intelligence generation, intelligence dissemination, reaching a shared interpretation, and responsiveness.

As illustrated in Figure 2.3, previous literature has consistently conceptualized information and intelligence activities as comprised of a series of processes (Deshpande' and Zaltman 1982, 1984; Menon and Varadarajan 1992; Moorman 1995). For example, Slater and Narver (1995, p. 64) describe organizational learning as “a three stage process” and Moorman (1995) conceives information processing as a set of interrelated activities beginning with information acquisition and ending with instrumental utilization. While authors differ in the terminology used in describing the knowledge management process, the aggregate of their works can be described as a process of several activities

starting with knowledge creation and ending with knowledge application (Nonaka and Takeuchi 1995; Shin, Holden, and Schmidt 2001).

As recognized by Kohli and Jaworski (1990, p. 12), market intelligence must be generated before it can be disseminated. In turn, the generated intelligence must be effectively disseminated throughout the organization before the parties can reach a shared interpretation and develop and implement a unified response. For market intelligence to impact performance, organizational members must go beyond generating, disseminating, and reaching a shared interpretation of the market intelligence. There must be a response based on that market intelligence. The current conceptualization of market orientation as a second-order construct does allow this to be captured. Decomposing the construct and evaluating the MO behaviors as a process, however, allows for the measurement of the direct link between responsiveness and performance. It allows for better control of errors of individual first-order constructs that may influence more holistic measurement attempts (Noble, Sinha, and Kumar 2002). Therefore, we study MO as a process of four disaggregated behaviors, instead of a second order construct composed of four first-order constructs.

## **MARKET ORIENTATION AT THE FUNCTIONAL LEVEL**

One of the key contributions of MO is the idea that every function in the organization is responsible for the market intelligence behaviors that are central to a successful MO (Day 1994; Elg 2002). One should not, however, assume each function contributes to MO in the same manner. MO has been likened to a symphony orchestra in which a conductor tailors and integrates the contribution of each function and

recommends that marketing should play the role of conductor (Narver and Slater 1990). Elg (2002) proposes that marketing should guide MO behaviors, as it is instrumental in coordinating the activities of all departments, with the marketing function playing a pivotal role in the success of the firm because everyone is involved in marketing activities. Although these propositions regarding marketing's role in MO are normative, they imply each function plays a unique role in market orientation. It may be, as Day (1994) suggests, marketing adopts a very different, possibly subordinate MO role in some organizations.

Additionally, while MO as an organization-wide phenomenon is frequently given verbal and written support, for example, by arguing for the terms "Market Orientation" instead of "Marketing Orientation," MO research is still disproportionately conducted from a marketing perspective. For instance, many of the samples used for data collection in MO studies are skewed toward marketing managers (e.g., Dobni and Luffman 2003; Kohli, Jaworski, and Kumar 1993; for exceptions, see for example Hult and Ketchen 2001; Hurley and Hult 1998). In some studies, the sample includes only marketing managers (e.g., Han, Kim, and Srivastava 1998; Matsuno, Mentzer, and Özsomer 2002). In addition, existing MO scales attempt to measure MO as an organization-wide phenomenon by asking questions from the perspective of the marketing function. An example of this is in Jaworski and Kohli's 1993 survey item, "Marketing personnel in our business unit spend time discussing customers' future needs with other functional departments."

In a market-oriented organization, each organizational function generates market intelligence that is uniquely useful for that particular function and market intelligence that

is useful for other functions and the organization as a whole. A function may collect and analyze information that is valuable to carrying out its own responsibilities and/or that is helpful in providing insight to other functions within the organization. Also, each function disseminates market intelligence internally to individuals within that function and externally to other functions and organizations. Lastly, although a market-oriented organization responds to market intelligence as a unified front, each function also develops and implements a unique response to the market intelligence that contributes to the overall organization-wide response.

Additionally, the term “markets” includes all relevant market participants (customers, competitors, suppliers, and third parties), regulatory aspects, social and cultural trends, and macro-economic environmental factors, not just customers (Matsuno, Mentzer, and Rentz 2000). While the marketing function gathers critical environmental information and links the organization to its target customer market segments (Hutt, Mokwa, and Shapiro 1986; Moorman and Rust 1999; Varadarajan, Bharadwaj, and Thirunarayana 1994), other market participants are relatively untapped by the marketing function. There is little research on the role of non-marketing functions in carrying out the MO behaviors while interacting with these other markets. Following suggestions from Leemon (1995, p. 9) and reiterated by Moorman and Rust (1999), the marketing function must broaden its view of its practice areas (Brown et al. 2005) and take the lead in “rallying the whole organization to support them,” thus changing from “functional expert” to “process orchestrator” in assuming its place in customer-driven processes. Because the value of the marketing function is related positively to marketing's ability to connect the customer to service delivery (Moorman and Rust 1999), marketers should

strive to understand those functions, like logistics, that they are dependent on to effectively make this connection.

## **LOGISTICS MARKET ORIENTATION**

Day (1994) stressed the critical need for spanning capabilities in building a market-oriented organization. Developing these spanning capabilities to generate and disseminate market intelligence requires individuals within an organization to cross organizational boundaries and interact with customers, suppliers, and other market participants (Adams 1980; Aldrich 1979; Leifer and Delbecq 1978; Lysonski 1985). A function's responsibilities determine its need for environmental exchanges and transactions, which directly affects the development of boundary spanning roles by the function (Thompson 1967). Certain functions inherently require dealing with the external environment more than others, and thus require more boundary spanning roles (Hickson et al. 1971; Schwab, Ungson, and Brown 1985). In turn, the extent of boundary spanning roles a function maintains directly impacts its participation in the market-oriented behaviors.

Due to its boundary spanning nature with both customers and suppliers, the logistics function, which deals with the supply and physical flow of goods and services to customers, may be uniquely important to create a market-oriented organization. Considered the 4<sup>th</sup> "P" in the traditional marketing domain of the 4Ps, logistics personnel are responsible for many "outside-in" and "inside-out" boundary spanning processes, such as customer order fulfillment, purchasing, and customer service delivery (Day 1994, p. 41). Logisticians are responsible for carrying out activities such as order planning,

order generation, order entry and prioritization, order scheduling, order fulfillment, billing and payment, and post sales service (Day 1994). Thus, they are positioned to generate market intelligence by interacting with customers and suppliers (Flint and Mentzer 2000). In addition, because of its internal boundary spanning role and its role as the driver of cross-functional supply chain initiatives (Bowersox, Closs, and Stank 2000), the logistics function is in the distinct position to disseminate intelligence throughout the organization (Powell and Dent-Micallef 1997; Stank, Daugherty, and Ellinger 1999).

With “over ninety percent of all logistical work taking place outside the vision of any supervisor” (Bowersox, Closs, and Stank 2000, p. 7), a large portion of frontline logistics employees and the logistics managers they report to are considered boundary spanners. Each has the opportunity to facilitate the exchange of intelligence derived from the various markets (customer, supplier, competitor, etc.) and, based on such intelligence, assess and respond to customer needs (Kiesling, Harvey, and Garrison 2004).

Understanding logistics’ participation in the market-oriented behaviors on the customer side is particularly important to marketers. Moorman and Rust (1999, p. 184) suggest that the focus of the customer-service delivery connection, the design and delivery actions involved in providing a firm’s goods and services to the customer, is generally the frontline employee who is involved in moving products from one firm to another, i.e., the logisticians. Frontline logistics employees have access to important market knowledge through the customer-service delivery connection. In fact, frontline logisticians, such as the motor carrier operator, may spend more time face-to-face with key customer representatives than any other company employee (Bowersox, Closs, and Stank 2000). In the product and service delivery process, the logistics function is one of the few

functions that actually “touches” the customer and is often the last “touch” the customer has with the organization (Ellinger, Ellinger, and Keller 2002).

In addition, logistics interacts with the supply side by carrying out the responsibilities of procurement, supplier development/training, requirements planning, inbound transportation, reverse logistics, etc. (Novack, Rinehart, and Wells 1992; Ganesan 1994). MO research has largely neglected one of its key markets, the supply side (for exceptions, see Ottesen and Gronhaug 2002), because it is generally not the responsibility of marketers, who are focused on downstream customer activities. Supply side intelligence can be important to understanding customers’ current and changing desired value. Open-systems theory suggests that an organization relies on inputs from its surrounding environment to create a competitive and customer responsive output (Pfeffer and Salancik 1978). The effectiveness of an organization to compete on a global basis is increasingly dependent on its ability to differentiate itself in its input market, i.e., the supply side (White and Hanmer-Lloyd 1999).

Further, the identification and transfer of best practices and the implementation of time-based competitive supply chain processes (e.g., efficient consumer response, vendor-managed inventory, quick response) requires the development of collaborative relationships with customers, suppliers, and third parties (Bowersox, Closs, and Stank 2000; Srivastava, Shervani, and Fahey 1999). Logisticians are increasingly tasked with the development and maintenance of these collaborative relationships and, thus, are in the distinct position to discover new market intelligence from their supply chain partners and infuse such intelligence throughout their organization. The following quote from Ellinger, Ellinger, and Keller (2002, p. 19) reflects logistics’ distinct responsibilities within the

organization that facilitates the central role in generating, disseminating, reaching a shared interpretation of, and responding to market intelligence from both the customer and supplier side of the organization:

“As the ‘quarterbacks’ for supply chain initiatives, logistics managers are expected to get closer to the customer (Quinn 1997), break down traditional intra-organizational barriers (Copacino 1997), collaborate with suppliers (Corbett, Blackburn, and Van Wassenhove 1999), and provide enhanced levels of service while simultaneously reducing costs (Christopher 1998).”

Given the importance of evaluating MO as a process, the inclusion of shared interpretation as a MO behavior, and the central role of logistics in a market-oriented organization, we conducted a qualitative study to integrate with existing literature to develop a model and accompanying hypotheses of a logistics market orientation.

## **QUALITATIVE STUDY**

While there is an abundance of literature on MO and its behaviors, literature on logistics’ involvement in market orientation behaviors is sparse. Thus, after the initial literature review, we conducted qualitative research following guidelines offered by Strauss and Corbin (1998) to ensure that existing literature and theory were aligned. This resulted in a more sound theory by providing a deeper, richer understanding of the role of logistics in market orientation behaviors and helped clarify each construct and the relationships among them.

## **Data Collection and Analyses**

We started by reviewing the relevant literature (Maxwell 1996; Strauss and Corbin 1998) to gain theoretical sensitivity for choosing our data samples. Insights from interviews also led to different literature as a secondary data source after data collection started. Thus, we systematically collected and analyzed data throughout the research study. We followed the grand touring technique (for a review, see McCracken 1988 and Spradley 1979) during the on-site forty-five to ninety-minute interviews. After introductions, we asked the following open-ended questions: “Could you describe the ideal world of logistics involvement in learning and responding to the external environment?” and “How well does [company] bring in and react to external market intelligence?” After discussions began, we prompted the participants by asking questions such as how they were involved in MO behaviors, who else was involved, and if they could give examples of or tell stories of their experiences in MO behaviors.

We audio recorded and transcribed all seventeen interviews in order to minimize researcher bias and provide data quality/reliability in the analysis. We analyzed the data by following Strauss and Corbin’s (1998) open, axial, and selective coding procedures. ATLAS.TI (Scientific Software Development 1997) facilitated coding of the transcripts. In addition to the interviews, the principal researcher took field notes from observations while touring production and distribution facilities, sales calls, business meetings, and by reviewing corporate documents (e.g., supplier benchmarking reports, customer contracts, intra-firm announcements). The principal researcher also informally interviewed nine other individuals that held various responsibilities and levels throughout the sample

organizations (e.g., vice-president of operations, corporate communications, service sales support, sales director, quality engineer, materials handler, truck driver, forklift operator). Therefore, the theory was constructed based on literature and insights from twenty-six practitioners.

### **Sampling**

Based on theoretical sampling guidelines (Belk, Sherry, and Wallendorf 1988; Glaser 1978; Strauss and Corbin 1998), we chose participants who reflected diversity along several dimensions of logistics responsibilities and involvement in MO behaviors. We began by interviewing multiple logistics personnel within one organization and, based on the analysis of those interviews, expanded our sample to other organizations to look for confirming and disconfirming examples of the insights gained from the initial interviews and the emergent literature- and qualitative-based theory. Therefore, we interviewed and analyzed nine logistics personnel within one organization and eight logistics personnel from six other organizations to capture diversity of organizational contexts (e.g., industry characteristics and position within the supply chain).

We reached theoretical saturation after audio recording, transcribing, and analyzing interviews with seventeen logistics managers from seven organizations. Seventeen interviews is in line with qualitative research guidelines, which indicate that it is common to interview eight or fewer informants until saturation is reached because the goal is not generalizability, but rather theory building (McCracken 1988; Strauss and Corbin 1998). The sample reflected diversity along several dimensions: job position (e.g., customer logistics manager, logistics manager, logistics analyst, director of global

logistics, director of logistics, traffic manager), tenure on the job, organization size, products manufactured, the organization's position within the supply chain (e.g., original equipment manufacturer, first-tier supplier, second-tier supplier, retailer), and industry (e.g., building products, automotive, aluminum, aerospace, specialty materials, food, high-tech).

### **Analysis of Research Trustworthiness**

We assessed a set of criteria that are appropriate for qualitative studies in the discovery phase of research (Flint, Woodruff, and Gardial 2002; Hirschman 1986; Lincoln and Guba 1985). Credibility and understanding were addressed via independent coding and analysis of text and reviewing interpretations with colleagues and practitioners (summary of interpretations were provided to participants for feedback). Dependability was supported because we found consistency across participants' reflections of many past and recent experiences. Integrity of our findings was addressed by ensuring the interviews were professional and of a non-threatening nature, and that responses would remain anonymous. The use of theoretical sampling techniques and extensive, open-ended interviews provided support for generality and transferability of our findings, allowing us to capture multiple aspects of the phenomenon.

### **MODEL DEVELOPMENT**

Figure 3.1 presents the logistics market orientation model we developed as a result of integrating the findings from the qualitative study and existing literature. The following discussion presents representative quotes from interview participants along

with supporting literature to build hypotheses of logistics' role in MO and the impact of logisticians' participation in market-oriented behaviors on logistics and business performance.

### **Logistics Market Intelligence Generation**

Both front-line and logistics executives were adamant about the importance of, and told stories about their participation in, generating market intelligence to capture both tactical and strategic market intelligence, such as visiting customers' sites to better understand their needs, visiting facilities of successful firms in other industries, and talking with trade partners. One manager described how a customer oriented process was initiated by their logistics group, capturing market intelligence that marketing and sales were not able to obtain otherwise.

“We were meeting with [our customer] several times a week. Our marketing and sales people were never there. We were able to watch what [our customer] needed and wanted. That is why we are doing this now.”

Another described how they are able to gather market intelligence that others are not able to access because logistics is involved during the post-sale service process. Regarding the supply-side, the following quotes highlight logistics' involvement in acquiring strategic market intelligence:

“When [setting up a new supply chain process] with one of our... suppliers, [I saw] the newest materials that were coming out of new product development in our industry, the visions... or directions of our competitors ... I heard their

opinions on the needs of the customer ... sometimes they know more about our customers than we know.”

“It was on a tour of a [leader in another industry] facility and we had also heard about it from some of our shipping partners. This is something which we had not heard about.”

When describing experiences of generating market intelligence, we prompted the participants for more details. The interview participants not only discussed activities of collecting market information, but also analyzing the information to create market intelligence. The following manager discussed collecting information and analyzing the information to determine its importance:

“It’s important because the world is changing. You can’t rely on others to... direct us... to turn the rudder... to keep pace with [customer] changes. We are there, you know, facing our customers every day. But doing that is insufficient. You have to keep your eye on, on the changes yourself... You know, reading all this [literature] that [academics] come up with... I pore over it to see if I can [apply it] here. I’m calling [our transportation provider representative]... getting that kind of knowledge. Sometimes it’s useful... other times... it doesn’t relate [to our situation].”

Based on responses from our interview participants and existing literature (Kohli and Jaworski 1990), we define logistics market intelligence generation (LMIG) as the **collection and evaluation by the logistics function of market information relative to its usefulness to logistics and other functions’ business decisions**. It is the extent to

which logistics personnel formally and informally recognize and filter new intelligence about the market.

### **Logistics Market Intelligence Dissemination**

Intelligence dissemination has been described as vertical and horizontal transmission of information that has been analyzed (Dougherty 1992; Fisher, Maltz, and Jaworski 1997; Griffin and Hauser 1996; Hartline, Maxham, and McKee 2000; Kohli and Jaworski 1990; Moorman 1995). Interview participants revealed two important aspects of intelligence dissemination: transmitting the information in a timely manner and only to appropriate individuals. The following two quotes represent our participants' emphasis on speed as an important element of intelligence dissemination.

“He had been sitting on [the intelligence]. He waited too long to tell me about ...[the intelligence]. Once he told me, our environment changed ... and [the intelligence] was irrelevant.”

Conversely, distributing market information to everyone in the organizations was described as resulting in damaging outcomes. One interview participant said, “It is important to know who to inform and who not to ... so we don't lose credibility.” Effective dissemination is, therefore, more than simply transmitting a large amount of information to everyone in the organization (Fildes and Hastings 1994), but rather “routing the message” (Daft and Huber 1987) or selectively and quickly distributing information to the appropriate individuals or groups. Therefore, we define logistics market intelligence dissemination (LMID) as the **timely sharing of market intelligence**

**by the logistics function with appropriate personnel within the logistics function and other areas within the organization.**

In today's information-based economy, organizational members are at risk of information overload (Fiol and Lyles 1985; Huber 1991; Hult, Ketchen, and Slater 2004; Maltz and Kohli 1996). Effectively analyzing (summarizing, delaying, prioritizing, modifying, etc.) collected intelligence, an aspect of LMIG presented earlier, alleviates information overload (Daft and Huber 1987). Effective LMIG captures market intelligence quickly, making it available to disseminate in a timelier manner, increasing LMID. Analyzing the information allows logistics managers to determine the appropriate recipient of the information, which facilitates message routing (Daft and Huber 1987) and effective LMID.

Furthermore, research in knowledge management, strategic management, and marketing suggests that transferring intelligence is prompted by the learning of new intelligence and there is an innate desire of those that discover superior intelligence to pass it on to their colleagues (Baker and Sinkula 1999; Cohen, March, and Olsen 1972; Szulanski 1996). As one interview participant stated, "When I hear something from a customer that may affect what we do, I feel it is a duty of mine to tell others so we can take advantage of that opportunity, or more often, avoid a mistake." Thus:

**H<sub>1</sub>: An increase in the level of logistics market intelligence generation increases the level of logistics market intelligence dissemination.**

## **Logistics Market Intelligence Shared Interpretation**

Interview participants often discussed the criticality of reaching a shared interpretation after each appropriate party possessed the disseminated market intelligence. After we recognized that the participants were describing an additional process occurring subsequent to transmitting market information, we prompted them to explain further. They described experiences that went beyond “throwing information over the wall” and even two-way communication. The participants would undertake a deeper process of not only sharing the information about the market, but also the accompanying understanding of such information among individuals (Fisher, Maltz, and Jaworski 1997; Kohli and Jaworski 1990; Mohr, Fisher, and Nevin 1996; Mohr and Nevin 1990). It involved the development of diverse interpretations that fostered learning because diversity of opinion increases an organization's repertoire of potential responses (Huber 1991). With additional prompting, our participants suggested that even though parties may disagree on the chosen plan of action, based on differences in “world-views” (Griffin and Hauser 1996; Maltz and Kohli 1997), they should agree on the meaning and significance of the market intelligence as an aid to decision-making, as opposed to considering it a disruption before moving forward (Beyer and Trice 1982; Brockman and Morgan 2003; Deshpande and Zaltman 1982, 1984; Menon and Varadarajan 1992; Mohammed 2001; Moorman 1995; Nonaka and Takeuchi 1995; Rentsch and Klimoski). For example, differences in opinions regarding priority of service and delivery should be resolved so effort can be focused on necessary activities (Handfield and Nichols 2002; Hult, Ketchen, and Slater 2004).

Participants also emphasized reaching a cohesive understanding within a brief period of time. One manager told a story of missing out on an important opportunity because those involved spent too much time arguing because he felt they should “be on the same page.” Others described experiences of capitalizing on market intelligence because agreements were reached quickly. In addition to reaching agreements quickly, participants portrayed reaching a shared interpretation as promoting an acceptance of challenging others’ beliefs and motivations about the meaning and importance of market information. One described a situation where his colleague discovered a ground-breaking process of packaging products, and “we pressed each other on what it implies, what it entails, and the significance of it.”

Therefore, we introduce reaching a shared interpretation as an essential behavior of MO and define logistics market intelligence shared interpretation (LMISI) **as the process of quickly achieving a cohesive understanding of market intelligence disseminated by logistics personnel.**

Previous research findings support the contention that higher levels of information sharing are required to achieve a consensus about market intelligence (e.g., Troy, Szymanski, and Varadarajan 2001). Arriving at consensus about the meaning of market intelligence is dependent on each appropriate individual possessing market intelligence first. Interview respondents emphasized that distributing intelligence in a timely manner (LMID) increases the likelihood that a collective agreement will be achieved more quickly. For instance, one participant stated,

“It depends on us being certain we each know about it ... the more we tell each other the moment we [find out about it], the more we’ll lay it out there and so we can talk about it, ... argue about it, make sense of it as a whole.”

Distributing intelligence with the appropriate individuals ensures that the intelligence is available to begin discussions in order to reach a cohesive understanding. Thus:

**H<sub>2</sub>: An increase in the level of logistics market intelligence dissemination increases the level of logistics market intelligence shared interpretation.**

### **Logistics Market Intelligence Responsiveness**

The MO, information processing, and knowledge management literature describes responsiveness as action taken in the form of planning and implementing a reaction based on market intelligence (Moorman 1995; Nonaka and Takeuchi 1995) and operationalizes it as the extent to which market intelligence changes the actions of an organization (Kohli and Jaworski 1990). Participants were adamant that speed of response was highly important to the logistics function.

“Once we’re informed of that, my responsibilities are to focus on speed, cycle time reduction, knowing what to do now, not later. Other functions can know later and have success, not us. It is critical that we know now. That is the value add that we give to [our company]... Now do it, do it, do it now, now. Here is the end state, go make it happen. And we get it done because we are focusing on the customer.”

Some expressed quick responses were uniquely relevant to the logistics function:

“... finance provides resources, IT allows us to see our supply chain, ...marketing and sales create a want, a desire for our products, ... logistics is in-charge of executing on the delivery of the product, so we act fast.”

“We constantly try to reduce time to know and respond to those hiccups. That is our job in logistics and supply chain, speed to customer. You know, with our [regional] sales director, that immediacy is not so meaningful to her. But in logistics, we handle the transportation and the delivery side of it, which made us critical to get the people in place, to ship [products]...”

Logistics personnel are often at odds with each other because many logistics decisions require trade-offs among facility costs, inventory costs, transportation costs, and customer service (Lee 2004; Odekerken-Schroder, Gaby, and Schumacher 2003). Market-oriented logistics personnel, however, resolve disagreements quickly and respond cohesively. Though conflicts arise, as one participant commented, “there are people who carry more of a vote and there are times when you have to be the good soldier and say, ‘yes sir, I’ll get it done’” so everyone understands his or her own role in responding. Based on the participants’ comments and the literature, logistics market intelligence responsiveness (LMIR) refers to using the available market intelligence to develop solutions quickly (proactive and/or reactive) and acting on the response in unison. We define it as **the speed with which unified action is taken by logistics personnel based upon the shared interpretation of market intelligence.**

“Looking back, when we’ve reacted the best, successfully, ... when we’ve nailed it, our individual grasp [of the market intelligence], the hottest process or latest

approach to this whole supply chain beast, was ... fused into one collective march. We aligned our footsteps and drumbeats.”

This quote represents participants’ view that the more they collectively understand the market intelligence (LMISI), the more likely they will be able to respond in a unified manner. Previous research contends that shared meaning provides a basis for commonly directed effort among organizational members (Daft and Weick 1984; Donnellon, Gray, and Bougon 1986; Eisenberg and Witten 1987; Thomas, Clark, and Gioia 1993; Weick 1979). Thus, a response should be more unified if the development of shared interpretation of market intelligence among logistics personnel effectively guides the planning and implementation of their actions (Hult, Ketchen, and Slater 2004). Further, the faster a shared interpretation is reached (LMISI), the quicker those involved can begin planning a response. One participant commented on the lack of shared interpretation’s effect on the response,

“I broke what we shipped from cases to ‘eaches,’ as a result from [a customer] asking us to deliver that way. And I told [the finished goods manager] but he didn’t ship ‘eaches’ for another two months. He assumed we would keep shipping based on the contract, which was for another two months ... We weren’t on the same page. I was billing in ‘eaches’ and he was shipping in cases. We almost lost [that customer].”

Integrating the literature with the interview responses, we derive the following hypothesis:

**H<sub>3</sub>: An increase in the level of logistics market intelligence shared interpretation increases the level of logistics market intelligence responsiveness.**

### **Logistics Performance**

The cumulative evidence of the logistics literature reveals that logistics performance is multidimensional, and is a function of resources utilized, the extent to which interrelated goals are achieved, and results compared to competitors (Griffis et al. 2004; Langley and Holcomb 1992; Mentzer and Konrad 1991; Smith 2000). Therefore, we define logistics performance as **the degree of efficiency, effectiveness, and differentiation associated with the accomplishment of logistics activities** (Bobbitt 2004). Efficiency is defined as how well logistics function resources are utilized. Effectiveness is defined as the degree to which logistics function goals are achieved. Differentiation is defined as the perceived difference in logistics performance when evaluated against competitors.

The more united logistics personnel are in planning and implementing a response, the less redundancies, conflicts, and confusion exist during the response (Handfield and Nichols 2002; Hult, Ketchen, and Slater 2004), which should improve efficiency. The less time required to plan and implement a response to market intelligence, the smaller amount of overall input invested, thus increasing logistics efficiency and the likelihood of meeting deadlines for pre-defined goals (i.e., effectiveness). Presenting a unified front to the customer should also increase the customers' perception of delivered product and service, thus improving effectiveness because there will be less discord between key

customer contact employees (Hartline, Maxham, and McKee 2000). The promise to deliver made by certain logistics customer contact employees is more likely to be aligned with what is actually delivered by other customer contact employees. In addition, the more a response is based on market intelligence as opposed to internal politics and the faster they plan and implement a response, the more likely they will succeed over the competition in delivering value to the customer. Thus:

**H<sub>4</sub>: An increase in the level of logistics market intelligence responsiveness increases the level of logistics performance.**

### **Organizational Performance**

The end purpose of marketers directing other functions (i.e., logistics) in MO behaviors is to positively impact organizational performance beyond the particular function they are guiding. The impact of logistics activities on organizational performance is well documented (e.g., Ellinger, Daugherty, and Keller 2000; Lynch, Keller, and Ozment 2000; Stank, Daugherty, and Ellinger 1999) as improving customer satisfaction through inventory availability, timely delivery, and less product failure (Mentzer and Williams 2001). For instance, Morash, Dröge, and Vickery (1996) found that logistics delivery speed, delivery reliability, responsiveness to target markets, and low-cost distribution improved organizational performance and performance relative to competitors. In addition, improvement in logistics performance has also been found to increase organizational performance through competitive advantage (Bobbitt 2004).

Increasing logistics efficiency by eliminating waste in the form of time, effort, quality, and inventory should reduce expenses, inventory, and cash (Mentzer and Konrad

1991). Assuming logistics managers set objectives for improvement in managing logistics activities, increasing logistics effectiveness by meeting pre-defined goals for budgeted performance items such as sales and transportation, warehousing, and inventory costs should increase gross margin and reduce total expenses and assets. Enhancing logistics differentiation by improving overall customer-perceived value when compared to competitors for on-time and damage-free deliveries, line-item fill rates, forecast accuracy, etc., should positively impact sales, inventory, and overall capital (Langley and Holcomb 1992; Morash, Dröge, and Vickery 1996). Each of these improvements in logistics performance dimensions positively impacts net margin and asset turnover, thereby improving return on assets (Stapleton et al. 2002) and overall organizational performance. Thus:

**H<sub>5</sub>: An increase in the level of logistics performance increases the level of organizational performance.**

## **QUANTITATIVE STUDY**

### **Data Collection**

We collected data in a nationwide survey using a list obtained from the Council of Supply Chain Management Professionals (CSCMP), which identified more than 3,000 logistics professionals. We constructed a sampling frame of 530 firms by prescreening based on information provided by CSCMP and by pre-contacting potential respondents to determine if they were appropriate for our unit of analysis: the mid- to top-level logistics professionals who worked for U.S. manufacturing organizations.

For the pretest, 105 randomly selected firms from the sampling frame were emailed a link to a web-based questionnaire (for review of electronic surveys, see Klassen and Jacobs 2001 and Dillman 2000). Eighty-four respondents completed the questionnaire (80% response rate), which was used to validate both the adapted measures and the newly developed measures (Dillman 2000). Items were purified by evaluating substantive criteria, such as breadth of content coverage, clarity of meaning, and comprehensibility of the item; and empirical criteria, such as descriptive and fit statistics. The “Measures” section provides details of the measurement validation throughout the pretest and final data collection.

The 425 remaining firms from the sampling frame were emailed links to a web-based questionnaire. Three-hundred and thirty-six respondents completed the questionnaires for an effective response rate of 79%. The 336 respondents averaged over seven years of experience in their department and had an average of 92 direct and indirect reports. The respondents held titles that fit our sample criteria and were responsible for logistics activities, including warehousing, transportation, inventory management, forecasting, order processing, materials handling, and customer service. Appendix B provides the company profiles (annual sales volume and industry) of the pretest and final test respondents.

Non-response bias was evaluated by testing responses of 32 non-respondents for significant differences as proposed by Mentzer and Flint (1997). These respondents were contacted by telephone and asked to respond verbally to five substantive items related to key constructs. There were no significant differences ( $p < .05$ ) in responses to any item, leading to the conclusion that non-response bias was not a problem.

Of the total data points, only .06% were missing from the 336 questionnaires. Little's MCAR test was significant, which indicated the data were not missing completely at random (Little and Ruben 2002). However, we were unable to discern any pattern of missing data and given the large data set and small number of missing data points, missing data were replaced by using the SPSS 11.0.1 Expectation-Maximization algorithm. The items were estimated to be normal, as the farthest skewness or kurtosis from zero was -.95.

### **Scale Development**

Measurement scales for LMIG, LMID, LMISI, LMIR, and Logistics Performance (LPERF) were developed following procedures of Anderson and Gerbing (1988), Churchill (1979), Dillman (2000), and Dunn, Seaker, and Waller (1994). Measurement scales for Logistics Efficiency (LEFF), Logistics Effectiveness (LEFV), and Logistics Differentiation (LDIF) were adapted from Bobbitt (2004), and the Organizational Performance (OPERF) measures were adopted from Matsuno, Mentzer, and Özsoy (2002). The performance measures were measured using subjective scales, since it provided a larger available sample size than if objective measures were requested. Past research has found that managerial assessments are consistent with objective internal performance (Dess and Robinson 1984; Slater and Narver 1994) and with external secondary data (Venkatraman and Ramanujam 1986). Also, we requested objective measures for organizational performance. For each of the four measures (sales growth %, gross revenue %, and ROI, and ROA) for which we received 30 or more responses, there

was a positive correlation between the subjective and objective measure of over .65 (except ROI correlated at .59).

Because a number of the Jaworski and Kohli (1993) MO items were not applicable to the logistics context, many new items were developed using the qualitative research and literature review. By operationalizing each construct based on their definitions, an initial 12 to 17 items per construct were reduced to 5 to 11 items per construct through an iterative process of reviewing, pilot testing, and revising the survey with a total of 8 subject matter experts and 9 logistics managers (LPERF consists of 3 items because it is a 2<sup>nd</sup> order formative construct). These 7-point Likert Scale items served as the basis for the pretest survey. Analysis of the 84 pretest responses found that 5 items needed to be removed from the survey, 7 items required minor revisions of wording, the anchors for the logistics efficiency items needed to be revised, and several minor format changes to the survey were necessary.

## **RESULTS**

### **Measurement Model**

We purified the scales of the final survey results prior to hypothesis testing by means of AMOS 5 (SmallWaters Corp. 2003). We examined the items within the theoretical context of each scale and removed 13 items based on substantive and statistical reasons (Anderson and Gerbing 1988). Evaluating unidimensionality, convergent and discriminant validity, and reliability resulted in 45 acceptable items, with no items exhibiting modification indices greater than 10, standardized residuals greater than 2, or standardized parameter estimates less than .70. Coefficient alpha for each

construct was .89 or greater and average variance extracted was .65 or greater. The 45 acceptable items and the 13 items removed during scale purification, along with their respective literature sources (unless newly developed), are shown in Appendix B (the 4 items for the construct, Global Reach, used to test common method bias are also shown in Appendix B). The standardized estimates and significance for each item and reliability scores for each construct are shown in Appendix B. The overall fit statistics for the measurement model ( $\chi^2 = 1559.05$ ; degrees of freedom [d.f.] = 909; comparative fit index [CFI] = .96; comparative fit index adjusted for parsimony [PCFI] = .88; root mean square error of approximation [RMEA] = .04) demonstrated acceptable fit.

Discriminant validity among the constructs was assessed by first evaluating whether the intercorrelations among the constructs is less than .70, which suggests the constructs have less than half their variance in common (Mackenzie, Podsakoff, and Jarvis 2005). All pairs of constructs met this cut-off, except for the intercorrelation of .77 between LPERF and LDIF. Discriminant validity was further tested by running a series of nested CFA model comparisons in which we constrained the covariance between each pair of constructs to one (this was conducted for one pair at a time) (Anderson and Gerbing 1988; Bagozzi and Yi 1988). The  $\chi^2$  difference tests for all 36 pairs of constructs were significant at  $p < .05$ . Additionally, discriminant validity was assessed using Fornell and Larcker's (1981) recommended procedure by comparing the average variance extracted for each construct with the square of the correlation between all possible pairs of constructs. In all cases, the average variance extracted is greater than the square of the correlation between all pairs of constructs. Overall, the results offer support for discriminant validity among the constructs (see Appendix B).

Since both independent and dependent measures were obtained from the same source, there were no reverse-coded items, and all the hypotheses were stated in a positive direction, we included a dummy variable (a construct that theoretically should not be related to any of the other constructs in the study) to test for common method bias (Lindell and Whitney 2001; Podsakoff and Organ 1986; Menon, Bharadwaj, and Howell 1996). We used a construct developed by Fawcett, Calantone, and Smith (1996) labeled Global Reach, consisting of four reflective items (V59-V62 in Appendix B) that measure the ability to better manage dispersed operations. We evaluated convergent validity, discriminant validity, and reliability for the scale. The coefficient alpha for the scale was .90 and all standardized estimates were above .70 for the construct. To assess common method bias, we allowed the nine substantive constructs in Figure 3.1 to load onto one second-order factor and compared that model to one that also allowed the Global Reach construct to load onto the second-order factor. The model without Global Reach resulted in better fit and all paths were significant at  $p < .001$  except the path to Global Reach ( $p = .18$ ). The results offer support that common method bias did not exist in the study.

Based on theoretical grounds (Jarvis, Mackenzie, and Podsakoff 2003), the second-order logistics performance construct was developed and tested as a formative construct as opposed to a reflective construct. As presented in the Model Development section, the first-order constructs (LDIF, LEFF, LEFV) are defining characteristics of logistics performance, not manifestations, and also may have different antecedents. Additionally, dropping any one of the first-order constructs would change the domain of logistics performance; i.e., all three are required. Thus, the second-order formative

logistics performance construct was measured by three reflective items (V30, V31, V32 in Appendix B) to ensure the model achieved identification. As expected, the three first-order constructs loaded positively on logistics performance (see Appendix B).

### **Hypothesis Testing**

The hypotheses were tested using Amos 5 and are provided in Appendix B, including the parameter estimates and their corresponding significance levels. The overall fit statistics for the structural model ( $\chi^2 = 1635.64$ ; degrees of freedom [d.f.] = 931; comparative fit index [CFI] = .95; comparative fit index adjusted for parsimony [PCFI] = .90; root mean square error of approximation [RMEA] = .05) demonstrated acceptable fit.

H<sub>1</sub> through H<sub>5</sub> were supported at  $p < .001$ . As expected, logistics market intelligence generation is positively related (standardized estimate = .46) to logistics market intelligence dissemination (H<sub>1</sub>). Logistics market intelligence dissemination has a positive relationship (standardized estimate = .43) with logistics market intelligence shared interpretation (H<sub>2</sub>). Logistics market intelligence shared interpretation has an expected positive effect (standardized estimate = .38) on logistics market intelligence responsiveness (H<sub>3</sub>). Logistics market intelligence responsiveness is positively related (standardized estimate = .36) to logistics market responsiveness (H<sub>4</sub>). Logistics performance has an expected positive effect (H<sub>5</sub>) on organizational performance (standardized estimate = .45).

It has been suggested that researchers compare rival models in addition to testing the theorized model by conducting *post hoc* analysis (Bollen and Long 1992; Rust, Lee,

and Valente 1995; Selnes and Sallis 2003). To compare models, one should test the overall fit of the competing models to degrees of freedom, the number of hypothesized parameters that are significant, and the ability to explain variance in the outcome of interest (Morgan and Hunt 1994; Rust, Lee, and Valente 1995). Since our theory-based model added reaching a shared interpretation as a specific behavior of MO, one rival model removes LMISI and adds the direct relationship between logistics between LMID and LMIR into the model. Examining the  $\chi^2$  difference tests between these competing models, the overall fit of the rival model is better than the proposed model ( $p < .001$ ). Both model-implied covariance matrices, however, fit the sample covariance matrix well. Further, the relationship between LMID and LMIR is not significant at  $p = .05$ , and the explained variance of the outcome of interest construct (LMIR) decreases by nine percent. Overall, these results provide stronger support for our theoretical proposed model over the rival model.

In conducting additional *post hoc* analysis, a test of all other possible paths in the model found the only paths significant, though relatively weak, are between LMIG-LMISI (standardized estimate of .12,  $p = .04$ ), between LMID-OPERF (standardized estimate of .19,  $p < .001$ ), and between LMIR-OPERF (estimate of .19,  $p < .01$ ). A possible explanation of the LMID-OPERF path is that logisticians disseminate market intelligence beyond the logistics group to other functional areas in the organization, which allows those other functions to perform better at their tasks, thus impacting overall organizational performance. Regarding the significant LMIR-OPERF relationship, logistics personnel responding faster to market intelligence may positively affect

organizational performance variables such as market share growth and ROI, in addition to the performance of the logistics functions.

## **DISCUSSION AND IMPLICATIONS**

The reported findings support our argument that (1) reaching a shared interpretation is an important behavior of market orientation, (2) market orientation is better conceptualized as a process of behaviors, and (3) non-marketing functions such as logistics play key roles in creating and maintaining a market-oriented organization. Each of these findings provides managerial and theoretical insights into the mixed results of previous research on the MO-Performance link and to our overall understanding of the nature of MO.

The strength and significance of the hypothesized mediating effect of logistics market intelligence shared interpretation, along with the lack of a significant relationship between LMID and LMIR in the *post hoc* analysis, provides support for the importance of including shared interpretation as one of the MO behaviors. This implies the simple transfer of market intelligence does not provide a basis for an effective response. The understanding of the intelligence must also be shared for a unified response to be implemented. Thus, managers should undertake the necessary steps to ensure the delicate balance of, on one hand, encouraging individuals to thoroughly question disseminated intelligence to gain a collective understanding of its meaning and significance while, on the other hand, also resolving diverse interpretations quickly.

In addition, the variance explained for LMISI in our study was .19, which theoretically implies future research should investigate other predictors of shared

interpretation. For example, the ability of a group of individuals to agree on the meaning and importance of intelligence and to be receptive of the opinions of others regarding the intelligence could be greatly impacted by cultural characteristics of that group (Moorman 1995; White, Varadarajan, and Dacin 2003). Further, we could learn from research on absorptive capacity (Zahra and George 2002) from the management literature that suggests firms should apply social integration mechanisms to achieve higher levels of shared interpretation of obtained intelligence (Szulanski 1996). Structural (Garvin 1993), cognitive (Garud and Nayyar 1994), behavioral (David 1985), and political (Foster 1986) barriers may stifle reaching a shared understanding. Previous MO research has investigated several of these antecedents (formalization, centralization, departmentalization, etc.) and other marketing research has investigated antecedents to and consequences of an individual's market situation interpretation (White, Varadarajan, and Dacin 2003). Future research should now investigate the explicit impact of these and other antecedents on reaching a shared interpretation.

The results of this study also provide evidence of the importance of conceptualizing MO as a process, and specifically measuring the direct link between responding to market intelligence and performance. The strong support for the hypothesized LMIR-LPERF relationship in addition to our *post-hoc* analysis that found no significant relationship of any of the other MO behaviors to logistics performance, suggests there must be a response to impact performance. Measuring MO as a holistic, second-order construct (Kohli and Jaworski 1990) does not capture this link explicitly. This implies that even if market intelligence is effectively generated and disseminated and a shared interpretation of the market intelligence is achieved, performance may still

not be impacted if there is no action taken based on the intelligence. Managers should analyze and make explicit to appropriate parties the cost trade-offs from lost opportunities of not responding to market intelligence in a timely manner. This implies properly harmonizing thorough analysis and research with speedy responses.

The study's finding that a more market-oriented logistics function improves both logistics performance and organizational performance reveals the importance of the role of nonmarketing functions' participation in creating and maintaining a MO. Marketing researchers and managers should be aware of and investigate the impact of other nonmarketing functions' participation and role in the MO behaviors. Some industry characteristics may suggest certain functions play a more important and even distinct role in MO. For instance, human resources regularly interacts with governmental agencies regarding equal employment opportunity regulations, accounting often assumes the role of understanding new policies such as Sarbanes-Oxley, and finance deals with third-party financial and stock market institutions (Russ, Galang, and Ferris 1998). Some functions, on the other hand, are uniquely positioned to generate market intelligence because of their unique structure, such as their direct contact (i.e., span organizational boundaries) with customers, competitors, and suppliers. Engineering, for example, may have direct contact with customers and suppliers to learn about new product development. Accounting may play a critical role in disseminating intelligence throughout the firm because it is regarded by some as an information exchange function that collects and provides information for all functions so they can make more informed management decisions (Rudolph and Welker 1998).

Each organization possesses a unique organization-wide culture made up of individual sub-cultures within each division and function (Denison and Mishra 1995; Deshpande and Webster 1989; Srivastava, Shervani, and Fahey 1999). Future research should integrate the cultural MO conceptualization (Narver and Slater 1990) at the functional level to explore the impact of these sub-cultures on a function's MO. Other structural characteristics of organizations and particular functions within the organization, such as the salience of a particular function, should heavily influence its participation. Interesting future research would be to drill down and develop unique measures that tap into other functions' involvement in MO behaviors, their distinctive antecedents and consequences, and the type of market intelligence dealt with by each function (White, Varadarajan, and Dacin 2003).

In particular, the strength of the relationship of LMIR on logistics performance (standardized estimate = .36) and then logistics performance on organizational performance (estimate = .45) reveal the crucial impact of a boundary spanning function, logistics, in the MO process. Considered a key area critical to the focus of marketing input (Srivastava, Shervani, and Fahey 1999) and to the customer-delivery connection (Rust and Moorman 1999) for customer value creation, logistics' participation in MO activities improves all three of the performance areas: effectiveness, efficiency, and differentiation. This suggests that marketing managers should work closely with their organization's logisticians in guiding and coordinating an integrated approach to fostering and carrying out MO behaviors. Because of logistics managers' direct "touch" with customers and their ability to provide the often ignored supply-side perspective of MO, marketers should evolve their view of logistics beyond the traditional management

of move/store activities and transactions, to that of logisticians as knowledge gatherers (Kiessling, Harvey, and Garrison 2004).

Furthermore, as more and more organizations outsource non-core competencies, many of the traditional tasks of functions are carried out by third parties. These third parties may become more and more important to the effective generation, dissemination, shared interpretation of, and response to market intelligence. In a recent interview with a VP of Marketing for a large third-party logistics provider, for example, he discussed his initiative in helping their clients become more market-oriented because they were one of the "go-betweens" in the client/customer and the supplier/client relationship. While research has begun to investigate the use of external organizations to acquire market intelligence (Ganesan, Malter, and Rindfleisch 2005) and MO from an inter-firm perspective (Elg 2002), future research should extend this to investigating the role of third parties in MO, beyond market research firms.

Our qualitative and empirical findings highlight the need for future research in understanding the nature of market orientation by reevaluating the behaviors necessary in creating and maintaining a market-oriented organization and those behaviors that have the greatest impact on performance. Regardless of whether one takes a process or function view of marketing (Brown et al. 2005) in today's cross-functional and inter-organizational business environment, we as marketers must continue to explore MO at both the organization-wide and functional level.

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## APPENDICES

## **APPENDIX A: PRETEST SURVEY DOCUMENTS**

## PREQUALIFICATION PROTOCOL

Hello, Mr/Ms \_\_\_\_\_, please.

*If secretary answers and asks who is calling:* “I am calling on behalf of Dr. Tom Mentzer from the University of Tennessee.”

*When speaking to contact:*

My name is [First Name].

I am calling on behalf of Dr. Tom Mentzer and Brian Fugate from the University of Tennessee, to ask if you would complete a short web-based survey on how logistics personnel recognize and react to information about the business environment. The survey should take about 12 minutes to complete and is aimed at people who have direct experience with logistics operations. All responses will be held in strict confidence. Neither your name nor your company’s name will be recorded with any of the responses.

### **Would you be willing to participate in the research?**

{If they say **yes** –}

- Great! Just to verify, your company is not a third party logistics provider (e.g., transportation provider, consulting, etc.), correct?  
{If they are not a third party logistics provider –} Are you familiar with the logistics and supply chain activities in your firm?
  - {If they say **no** –} Is there someone more appropriate in your company who would be able to fill out this survey?
  - {If they say **yes** –} {Verify their email address} then {Go to closing}  
{If they are a third party logistics provider -} {Thank them for their time and indicate that they do not fit our survey target}

{If they say **no** –}

Is there someone else in your company who would be able to fill out this survey?

{Get name and number of the suggested person.}  
{Go to closing}

### **{CLOSING}**

Thank you for your time. Within the next couple of days, you will be receiving an email from Brian Fugate that will allow you to simply click on a highlighted Internet address that will transfer you to the web survey. Again, we appreciate your willingness to participate in this research.

## PRE-TEST SURVEY

### INSTRUCTIONS

The following questions relate to **how logistics personnel in your organization recognize and react to information about the business environment**. When answering the questions, please keep in mind the following points:

**Business environment** refers to **customers, competitors, suppliers, regulatory environment, and cultural and social trends**.

Please think about all those responsible for **logistics activities** within your business unit, including warehousing, transportation, inventory management, forecasting, order processing, materials handling, and customer service.

### SECTION 1: GENERATION OF MARKET INTELLIGENCE

**(1) Our logistics personnel attempt to collect and evaluate important information about our business environment by...**

|   | Never |   |   |   |   |   | Very<br>Frequently |
|---|-------|---|---|---|---|---|--------------------|
| a) polling customers.   | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| b) visiting customers' sites to better understand their needs.  | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| c) being involved in sales activities.  | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| d) being involved in helping to resolve customer problems.  | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| e) accompanying our employees who deliver logistics service to observe how things work.   | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| f) talking with trade partners.   | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| g) visiting facilities of the leaders in their industry.  | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| h) visiting suppliers to learn more about various aspects of their business (e.g., logistics processes, industry practices, clientele).                                       | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| i) reading industry and trade magazines.  | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| j) attending events that allow networking, such as business colleges, research bodies, industry associations, trade shows, etc.   | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |
| k) reading reports from the government and regulatory bodies, for example, the Department of Transportation, Federal Transport Administration, Federal Trade Commission, etc. | 1     | 2 | 3 | 4 | 5 | 6 | 7                  |

## SECTION 2: DISSEMINATION OF MARKET INTELLIGENCE

**(2) When one of our logistics personnel becomes aware of trends and developments in our business environment, he or she...**

|  | <b>Strongly<br/>Disagree</b> |   |   |   |   |   |   | <b>Strongly<br/>Agree</b> |
|--|------------------------------|---|---|---|---|---|---|---------------------------|
|  | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| a) quickly shares it among our logistics personnel.  | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| b) quickly shares it with other functional departments.  | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| c) quickly shares it with senior management.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| d) shares it with <u>only appropriate</u> other logistics personnel (as opposed to distributing to all logistics personnel).       | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| e) shares it with <u>only appropriate</u> other functional departments (as opposed to distributing to all functional departments). | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| f) shares it with <u>only appropriate</u> senior managers (as opposed to all senior managers).                                     | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| g) shares a lot of the information through informal means (hall talk, one-on-one discussions etc.).                                | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| h) shares a lot of the information through formal means (inter-departmental meetings, presentations, etc.).                        | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |

## SECTION 3: SHARED INTERPRETATION OF MARKET INTELLIGENCE

**(3) When our logistics personnel receive information about an important change in our business environment, we...**

|   | <b>Strongly<br/>Disagree</b> |   |   |   |   |   |   | <b>Strongly<br/>Agree</b> |
|---|------------------------------|---|---|---|---|---|---|---------------------------|
|   | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| a) quickly resolve disagreements about what it means.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| b) agree on the significance of the information.  | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| c) agree on how the information should be used.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| d) encourage individuals to challenge others' opinions regarding the meaning of the information.                            | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| e) are receptive to others' opinions about the information.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |
| f) would share a similar understanding of the role the acquired information would play in our logistics business decisions. | 1                            | 2 | 3 | 4 | 5 | 6 | 7 |                           |

## SECTION 4: RESPONSE TO MARKET INTELLIGENCE

**(4) Please indicate your level of agreement or disagreement with the following statements.**

|   | <b>Strongly<br/>Disagree</b> |   |   |   |   |   | <b>Strongly<br/>Agree</b> |
|---|------------------------------|---|---|---|---|---|---------------------------|
|   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| a) All of our logistics personnel participate in planning responses to changes in our business environment.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| b) Our logistics personnel understand how our responses to changes in the business environment impact logistics.  | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| c) Our logistics personnel understand how our responses to changes in the business environment impact other functional departments.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| d) Our logistics personnel understand how our responses to changes in the business environment impact the corporation as a whole.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| e) Our logistics personnel carry out responses to changes in our business environment as a cohesive unit.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| f) Our logistics personnel are slow to start business with new suppliers even though we think they are better than existing ones.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| g) We are quick to respond when we find out that customers are unhappy with our logistics service offerings.  | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| h) If a special interest group (e.g., consumer group, environmental group) were to publicly accuse us of harmful logistics business practices, we would take corrective action immediately. | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |
| i) We quickly respond when one of our competitors launches a campaign based on logistics service offerings targeted at our customers.   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                         |

## SECTION 5 - PERFORMANCE

**(5) Please rate your firm's performance on logistics activities in comparison to the competitors you have experience with.**

|   | <b>Much<br/>Worse</b> |   |   |   |   |   | <b>Much<br/>Better</b> |
|---|-----------------------|---|---|---|---|---|------------------------|
| a) Damage Free Deliveries.                  | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| b) Finished Goods Inventory Turns.          | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| c) Forecasting Accuracy.                    | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| d) Line Item Fill Rate.                     | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| e) Time Between Order Receipt and Delivery. | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| f) Time on Backorder.                       | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| g) Total Inventory Turns.                   | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| h) On-Time Delivery.                        | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |

**(6) Please circle the value that best represents your business unit's logistics performance for the year 2004.**

|  |               |       |       |       |       |       |     |
|--|---------------|-------|-------|-------|-------|-------|-----|
| a) Orders Shipped to Customers from the Primary Location Designated to Serve Those Customers <b>(Percentage)</b> . | <89           | 90-91 | 92-93 | 94-95 | 96-97 | 98-99 | 100 |
| b) Line Item Fill Rate <b>(Percentage)</b> (Percentage of order items the picking operation actually found.).      | <89           | 90-91 | 92-93 | 94-95 | 96-97 | 98-99 | 100 |
| c) Orders Shipped on Time <b>(Percentage)</b> .  | <89           | 90-91 | 92-93 | 94-95 | 96-97 | 98-99 | 100 |
| d) Shipments Requiring Expediting <b>(Percentage)</b> .  | <4            | 4-6   | 7-9   | 10-12 | 13-15 | 16-18 | >18 |
| e) Inventory Turns per Year <b>(Number)</b> .  | <3            | 3-5   | 6-8   | 9-11  | 12-14 | 15-17 | >17 |
| f) Average Order Cycle Time <b>(In Days)</b> (Time between order receipt and order delivery.).                     | 1 day or less | 2-7   | 8-13  | 14-19 | 20-25 | 26-30 | >31 |

**(7) This question is concerned with your business unit's actual performance compared to budgeted performance, based on 2004 results.**

|                           | <b>Much<br/>Worse</b> |   |   |   |   |   | <b>Much<br/>Better</b> |
|---------------------------|-----------------------|---|---|---|---|---|------------------------|
|                           | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| a) Sales (Dollars).       | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| b) Transportation Costs.  | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| c) Warehousing Costs.     | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| d) Inventory Costs.       | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |
| e) Total Logistics Costs. | 1                     | 2 | 3 | 4 | 5 | 6 | 7                      |

### **SECTION 6 – ORGANIZATIONAL PERFORMANCE**

**(8) In your judgment, how did your BUSINESS UNIT perform *relative to its major competitor last year with respect to each criteria?* If you are associated with a company that does not consist of business units or divisions, please answer the following based on your company.**

|   | <b>Far Below<br/>Competitors</b> |   |   |   |   |   | <b>Far Above<br/>Competitors</b> |
|---|----------------------------------|---|---|---|---|---|----------------------------------|
|   | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| a) Overall performance.                           | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| b) Market share growth in our primary market.     | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| c) Sales growth.                                  | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| d) Percentage of sales generated by new products. | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| e) Return on sales (ROS).                         | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| f) Return on assets (ROA).                        | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |
| g) Return on investment (ROI).                    | 1                                | 2 | 3 | 4 | 5 | 6 | 7                                |

**SECTION 7 - INFORMATION ABOUT YOUR FIRM**

**The following information will help the research team understand differences in various business settings. Please check all that apply.**

**(9)** Which term best describes your firm’s position in the supply chain?

- Manufacturer
- Supplier to a manufacturer
- Other: \_\_\_\_\_

**(10)** Which term best describes your firm’s industry?

- Automotive
- Medical/pharmaceutical
- Apparel/textiles
- Electronics
- Industrial products
- Consumer packaged goods
- Chemicals/plastics
- Appliances
- Other: \_\_\_\_\_

**(11)** How would you characterize the rate of change in your industry?

- Very Slow
- Slow
- Average
- Fast
- Very Fast

**(12)** What is your business unit’s approximate annual sales revenue?

- Less than \$1 million
- \$1-50 million
- \$51-500 million
- \$501 million - \$1 billion
- Greater than \$1 billion

**(13)** How many logistics personnel directly or indirectly report to you? \_\_\_\_\_

**(14)** What is the name of your department? \_\_\_\_\_

**(15)** How many years have you been in your department? \_\_\_\_\_

**(16)** Please provide your job title: \_\_\_\_\_

**(17)** Please provide your job responsibilities:

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**Thank you again for your valuable participation!**

## PRE-TEST SURVEY ITEM SOURCE

### SECTION 1: GENERATION OF MARKET INTELLIGENCE

#### (1) Our logistics personnel attempt to collect and evaluate important information about our business environment by...

|   | Never | Very<br>Frequently | Source  |
|---|-------|--------------------|---|
| a) polling customers.   | 1     | 7                  | Adapted from Jaworski and Kohli (1993)          |
| b) visiting customers' sites to better understand their needs.  | 1     | 7                  | Adapted from Jaworski and Kohli (1993)          |
| c) being involved in sales activities.  | 1     | 7                  | Newly developed from qualitative interviews     |
| d) being involved in helping to resolve customer problems.  | 1     | 7                  | Newly developed from qualitative interviews     |
| e) accompanying our employees who deliver logistics service to observe how things work.   | 1     | 7                  | Newly developed from qualitative interviews     |
| f) talking with trade partners.   | 1     | 7                  | Adapted from Jaworski and Kohli (1993)          |
| g) visiting facilities of the leaders in their industry.  | 1     | 7                  | Newly developed                                 |
| h) visiting suppliers to learn more about various aspects of their business (e.g., logistics processes, industry practices, clientele).                                       | 1     | 7                  | Adapted from Matsuno, Mentzer, and Rentz (2000) |
| i) reading industry and trade magazines.  | 1     | 7                  | Newly developed from qualitative interviews     |
| j) attending events that allow networking, such as business colleges, research bodies, industry associations, trade shows, etc.   | 1     | 7                  | Newly developed from qualitative interviews     |
| k) reading reports from the government and regulatory bodies, for example, the Department of Transportation, Federal Transport Administration, Federal Trade Commission, etc. | 1     | 7                  | Adapted from Matsuno, Mentzer, and Rentz (2000) |

## SECTION 2: DISSEMINATION OF MARKET INTELLIGENCE

**(2) When one of our logistics personnel becomes aware of trends and developments in our business environment, he or she...**

|  | <b>Strongly<br/>Disagree</b> | <b>Strongly<br/>Agree</b> | <b>Source</b>  |
|--|------------------------------|---------------------------|--|
| a) quickly shares it among our logistics personnel.  | 1                            | 7                         | Adapted from Matsuno, Mentzer, and Rentz (2000)                          |
| b) quickly shares it with other functional departments.  | 1                            | 7                         | Adapted from Matsuno, Mentzer, and Rentz (2000)                          |
| c) quickly shares it with senior management.   | 1                            | 7                         | Adapted from Matsuno, Mentzer, and Rentz (2000)                          |
| d) shares it with <u>only appropriate</u> other logistics personnel (as opposed to distributing to all logistics personnel).       | 1                            | 7                         | Newly developed from qualitative interviews and Baker and Sinkula (1999) |
| e) shares it with <u>only appropriate</u> other functional departments (as opposed to distributing to all functional departments). | 1                            | 7                         | Newly developed from qualitative interviews and Baker and Sinkula (1999) |
| f) shares it with <u>only appropriate</u> senior managers (as opposed to all senior managers).                                     | 1                            | 7                         | Newly developed from qualitative interviews and Baker and Sinkula (1999) |
| g) shares a lot of the information through informal means (hall talk, one-on-one discussions etc.).                                | 1                            | 7                         | Adapted from Jaworski and Kohli (1993)                                   |
| h) shares a lot of the information through formal means (inter-departmental meetings, presentations, etc.).                        | 1                            | 7                         | Adapted from Jaworski and Kohli (1993)                                   |

## SECTION 3: SHARED INTERPRETATION OF MARKET INTELLIGENCE

**(3) When our logistics personnel receive information about an important change in our business environment, we...**

|  | <b>Strongly<br/>Disagree</b> | <b>Strongly<br/>Agree</b> | <b>Source</b>  |
|--|------------------------------|---------------------------|--|
| a) quickly resolve disagreements about what it means.  | 1                            | 7                         | Newly developed from qualitative interviews and Day (1994)               |
| b) agree on the significance of the information.   | 1                            | 7                         | Newly developed from qualitative interviews and Huber (1991)             |
| c) agree on how the information should be used.  | 1                            | 7                         | Adapted from Brockman and Morgan (2003)                                  |
| d) encourage individuals to challenge others' opinions regarding the meaning of the information. | 1                            | 7                         | Newly developed from qualitative interviews and Argyris and Schon (1978) |
| e) are receptive to others' opinions about the information.                                      | 1                            | 7                         | Newly developed from qualitative interviews and Huber (1991)             |
| f) would share a similar understanding of the role the   | 1                            | 7                         | Adapted from Brockman and  |

acquired information would play in our logistics business decisions.

Morgan (2003)

#### SECTION 4: RESPONSE TO MARKET INTELLIGENCE

**(4) Please indicate your level of agreement or disagreement with the following statements.**

|   | <b>Strongly Disagree</b> | <b>Strongly Agree</b> | <b>Source</b>                                   |
|---|--------------------------|-----------------------|---|
| a) All of our logistics personnel participate in planning responses to changes in our business environment.   | 1                        | 7                     | Adapted from Jaworski and Kohli (1993)          |
| b) Our logistics personnel understand how our responses to changes in the business environment impact logistics.  | 1                        | 7                     | Newly developed from qualitative interviews     |
| c) Our logistics personnel understand how our responses to changes in the business environment impact other functional departments.   | 1                        | 7                     | Newly developed from qualitative interviews     |
| d) Our logistics personnel understand how our responses to changes in the business environment impact the corporation as a whole.   | 1                        | 7                     | Newly developed from qualitative interviews     |
| e) Our logistics personnel carry out responses to changes in our business environment as a cohesive unit.   | 1                        | 7                     | Newly developed from qualitative interviews     |
| f) Our logistics personnel are slow to start business with new suppliers even though we think they are better than existing ones.   | 1                        | 7                     | Adapted from Matsuno, Mentzer, and Rentz (2000) |
| g) We are quick to respond when we find out that customers are unhappy with our logistics service offerings.  | 1                        | 7                     | Adapted from Jaworski and Kohli (1993)          |
| h) If a special interest group (e.g., consumer group, environmental group) were to publicly accuse us of harmful logistics business practices, we would take corrective action immediately. | 1                        | 7                     | Adapted from Matsuno, Mentzer, and Rentz (2000) |
| i) We quickly respond when one of our competitors launches a campaign based on logistics service offerings targeted at our customers.   | 1                        | 7                     | Adapted from Jaworski and Kohli (1993)          |

\*All Logistics Performance measures are adapted from Bobbitt (2004).

\*All Organizational Performance measures are adapted from Matsuno, Mentzer, and Rentz (2000).

## INITIAL PRE-TEST SURVEY EMAIL

From: Brian Fugate [[bfugate1@utk.edu](mailto:bfugate1@utk.edu)]  
To: First and Last Name [[X-Mailer@company.com](mailto:X-Mailer@company.com)]  
Subject: University of Tennessee Logistics Survey

Dear [Gender, Last name]:

Thank you for agreeing to participate in the study on how logistics personnel recognize and react to information about the business environment. The data obtained as a result of this survey will provide business managers and students valuable information on how logistics can play a more pivotal role in providing a competitive advantage for firms.

**By clicking on the following Internet address, you will be transferred to the survey:** [www.logisticssurvey.com](http://www.logisticssurvey.com). Your answers are completely confidential. The survey should take about 12 minutes.

If you have any questions about this study, I would be happy to talk with you. My telephone number is 865-254-1618 and my email is [bfugate1@utk.edu](mailto:bfugate1@utk.edu).

Thank you for your participation!

Sincerely,

Brian Fugate, Ph.D. Candidate  
Dr. John T. Mentzer, Bruce Chair of Excellence in Business

University of Tennessee  
Department of Marketing & Logistics  
310 Stokely Management Center  
Knoxville, TN 37996-0530  
(865) 974-5311  
(865) 974-1932 fax

## **PRE-TEST REMINDER EMAIL 1**

From: Brian Fugate [[bfugate1@utk.edu](mailto:bfugate1@utk.edu)]  
To: First and Last Name [[X-Mailer@company.com](mailto:X-Mailer@company.com)]  
Subject: University of Tennessee Logistics Survey

Dear [Gender, Last name]:

We recently sent you an email with an Internet address for a survey designed to understand the how logistics personnel recognize and react to information about the business environment.

If you have already completed the survey, please accept our sincere thanks. If you have not, we would greatly appreciate your participation.

**By clicking on the following Internet address, you will be transferred to the survey:** [www.logisticssurvey.com](http://www.logisticssurvey.com). Your answers are completely confidential. The survey should take about 12 minutes. Your input is extremely important in aiding our understanding of strategic issues related to the logistics function.

Should you have any questions or concerns, I would be happy to talk with you. My telephone number is 865-254-1618 and my email is [bfugate1@utk.edu](mailto:bfugate1@utk.edu).

Thank you for your participation!

Sincerely,

Brian Fugate, Ph.D. Candidate  
Dr. John T. Mentzer, Bruce Chair of Excellence in Business

University of Tennessee  
Department of Marketing & Logistics  
310 Stokely Management Center  
Knoxville, TN 37996-0530  
(865) 974-5311  
(865) 974-1932 fax

## PRE-TEST REMINDER EMAIL 2

From: Brian Fugate [[bfugate1@utk.edu](mailto:bfugate1@utk.edu)]  
To: First and Last Name [[X-Mailer@company.com](mailto:X-Mailer@company.com)]  
Subject: University of Tennessee Logistics Survey

Dear [Gender, Last name]:

About [days or weeks] ago, Dr. Tom Mentzer and I sent an email to you seeking your opinions on how logistics personnel recognize and react to information about the business environment. Since we have not yet received your completed survey, we urge you to take a few moments to do so now.

**By clicking on the following Internet address, you will be transferred to the survey:**  
**[www.logisticssurvey.com](http://www.logisticssurvey.com).**

This study is being conducted so that business managers like you can help identify how logistics can play a more pivotal role in providing a competitive advantage for firms. We are emailing you again because the study's usefulness depends on a survey completion from each respondent. In order for the information from the study to be truly representative, it is essential that each person in the sample complete his/her survey.

Your participation in the survey will require only about 12 minutes. Should you have any questions or concerns, I would be happy to talk with you. My telephone number is 865-254-1618 and my email is [bfugate1@utk.edu](mailto:bfugate1@utk.edu).

Thank you for your participation! Please complete the survey by **[date to be determined]**.

Sincerely,

Brian Fugate, Ph.D. Candidate  
Dr. John T. Mentzer, Bruce Chair of Excellence in Business

University of Tennessee  
Department of Marketing & Logistics  
310 Stokely Management Center  
Knoxville, TN 37996-0530  
(865) 974-5311  
(865) 974-1932 fax

## **APPENDIX B: FINAL TEST RESULTS**

## **PROFILE OF RESPONDING COMPANIES**

| <b>Annual Sales Volume</b> | <b>Pre-test</b> | <b>Final Test</b> | <b>Industry</b>    | <b>Pre-test</b> | <b>Final Test</b> |
|----------------------------|-----------------|-------------------|--------------------|-----------------|-------------------|
| < \$1 million              | 0%              | 0%                | Automotive         | 7%              | 4%                |
| \$1-50 million             | 8%              | 8%                | Medical/pharm.     | 8%              | 10%               |
| \$51-250 million           | 10%             | 11%               | Electronics        | 13%             | 15%               |
| \$251-500 million          | 18%             | 18%               | Industrial         | 15%             | 12%               |
| \$501 million-\$1 billion  | 29%             | 26%               | Consumer           | 26%             | 29%               |
| > \$1 billion              | 34%             | 37%               | Chemicals/plastics | 13%             | 10%               |
|                            |                 |                   | Appliances         | 0%              | 1%                |
|                            |                 |                   | Apparel/textiles   | 7%              | 4%                |
|                            |                 |                   | Agriculture        | 2%              | 3%                |
|                            |                 |                   | Other              | 10%             | 12%               |

## **MEASURES**

### **Logistics Market Intelligence Generation** (range: Never - Very Frequently)

**Our logistics personnel attempt to collect and evaluate important information about our business environment by...**

#### Item

|                 |  |
|-----------------|--|
| V1              | polling customers. {adapted from Jaworski & Kohli 1993}  |
| V2              | visiting customers' sites to better understand their needs. {adapted from Jaworski & Kohli 1993}   |
| V3              | being involved in sales activities. {developed from interviews}  |
| V4 <sup>a</sup> | being involved in helping to resolve customer problems. {developed from interviews}  |
| V5 <sup>a</sup> | accompanying our employees who deliver logistics service to observe how things work. {developed from interviews}   |
| V6              | visiting facilities of the leaders in their industry. {developed from interviews}  |
| V7              | visiting suppliers to learn more about various aspects of their business (e.g., logistics processes, industry practices, clientele). {adapted from Matsuno, Mentzer & Rentz 2000}  |
| V8              | attending events that allow networking, such as business colleges, research bodies, industry associations, trade shows, etc. {developed from interviews}   |
| V9              | reading reports from the government and regulatory bodies, for example, the Department of Transportation, Federal Transport Administration, Federal Trade Commission, etc. {adapted from Matsuno, Mentzer, and Rentz 2000} |

**Logistics Market Intelligence Dissemination** (range: Strongly Disagree - Strongly Agree)

**When one of our logistics personnel becomes aware of trends and developments in our business environment, he or she...**

| <u>Item</u>      |  |
|------------------|--|
| V10              | quickly shares it with other logistics personnel. {adapted from Matsuno, Mentzer, & Rentz 2000}  |
| V11              | quickly shares it with other functional departments. {adapted from Matsuno, Mentzer, and Rentz 2000}   |
| V12 <sup>a</sup> | quickly shares it with senior management. {adapted from Matsuno, Mentzer, & Rentz 2000}  |
| V13              | shares a lot of the information through informal means {developed from interviews and Baker & Sinkula 1999}  |
| V14 <sup>a</sup> | shares a lot of the information through formal means (inter-departmental meetings, presentations, etc.). {adapted from Jaworski & Kohli 1993}  |
| V15              | shares it with <u>only appropriate</u> other logistics personnel (as opposed to distributing to all logistics personnel). {developed from interviews and Baker & Sinkula 1999}       |
| V16              | shares it with <u>only appropriate</u> other functional departments (as opposed to distributing to all functional departments). {developed from interviews and Baker & Sinkula 1999} |
| V17 <sup>a</sup> | shares it with <u>only appropriate</u> senior managers (as opposed to all senior managers) {developed from interviews and Baker & Sinkula 1999}                                      |

**Logistics Market Intelligence Shared Interpretation** (range: Strongly Disagree - Strongly Agree)

**When one of our logistics personnel receive information about an important change in our business environment, we...**

| <u>Item</u> |  |
|-------------|--|
| V18         | quickly resolve disagreements about what it means. {developed from interviews and Day 1994}  |
| V19         | agree on how the information should be used. {adapted from Brockmar and Morgan 2003}   |
| V20         | encourage individuals to challenge others' opinions regarding the meaning of the information.  |
| V21         | are receptive to others' opinions about the information. {developed from interviews and Argyris and Schon 1978}  |
| V22         | would share a similar understanding of the role the acquired information would play in our logistics business decisions. {adapted from Brockmar and Morgan 2003} |

**Logistics Market Intelligence Responsiveness** (range: Strongly Disagree - Strongly Agree)

**Item**

- 
- V23<sup>a</sup> Our logistics personnel understand how our responses to changes in the business environment impact logistics. {developed from interviews}
- 
- V24 Our logistics personnel understand how our responses to changes in the business environment impact other functional departments. {developed from interviews}
- 
- V25 Our logistics personnel understand how our responses to changes in the business environment impact the corporation as a whole. {developed from interviews}
- 
- V26 Our logistics personnel carry out responses to changes in our business environment as a cohesive unit. {developed from interviews}
- 
- V27 We are quick to respond when we find out that customers are unhappy with our logistics service offerings. {adapted from Jaworski and Kohli 1993}
- 
- V28 We quickly respond when one of our competitors launches a campaign based on logistics service offerings targeted at our customers. {adapted from Jaworski and Kohli 1993}
- 
- V29<sup>a</sup> All of our logistics personnel participate in planning responses to changes in our business environment. {adapted from Jaworski and Kohli 1993}
- 

**Logistics Performance** (range: Strongly Disagree - Strongly Agree)

**Item**

- 
- V30 Our overall logistics performance is well above industry average. {newly developed}
- 
- V31 In general, our logistics performance is excellent. {newly developed}
- 
- V32 We are outstanding at performing our logistics activities. {newly developed}
-

**Logistics Differentiation** (range: Far Below Competitors – Far Above Competitors)

**For the following items, please rate your business unit's performance on logistics activities in comparison to your major competitors. If you are associated with a company that does not consist of business units or divisions, please answer the following based on your company.**

| <u>Item</u>      | {all items adapted from Bobbitt 2004 and Smith 2000} |
|------------------|--|
| V33              | Damage Free Deliveries.                              |
| V34 <sup>a</sup> | Finished Goods Inventory.                            |
| V35              | Forecasting Accuracy.                                |
| V36              | Line Item Fill Rate.                                 |
| V37              | Time Between Order Receipt and Delivery.             |
| V38 <sup>a</sup> | Time on Backorder.                                   |
| V39              | Total Inventory Turns.                               |
| V40              | On-Time Delivery.                                    |

**Logistics Efficiency** (range: Poor – Excellent)

**For the following items, please rate your business unit's performance on logistics activities for the previous fiscal year.**

| <u>Item</u>      | {all items adapted from Bobbitt 2004 and Smith 2000}  |
|------------------|---|
| V41              | Percent of Orders Shipped to Customers from the Primary Location Designated to Serve those Customers. |
| V42              | Line Item Fill Rate (percentage of order items the picking operation actually found).                 |
| V43              | Percent of Orders Shipped on Time.  |
| V44              | Percent of Shipments Requiring Expediting.  |
| V45 <sup>a</sup> | Inventory Turns per Year.   |
| V46              | Average Order Cycle Time (time in days between order receipt and order delivery).                     |

**Logistics Effectiveness** (range: Much Worse – Much Better)

**For the following items, please rate your business unit's actual performance compared to budgeted performance, based on the previous fiscal year results.**

| <u>Item</u>      | {all items adapted from Bobbitt 2004 and Smith 2000} |
|------------------|--|
| V47              | Sales (Dollars).                                     |
| V48              | Transportation Costs                                 |
| V49 <sup>a</sup> | Warehousing Costs                                    |
| V50              | Inventory Costs.                                     |
| V51              | Total Logistics Costs.                               |

**Organizational Performance** (range: Far Below Competitors – Far Above Competitors)

**In your judgment, how did your BUSINESS UNIT perform relative to its major competitor in the previous fiscal year with respect to each criteria? If you are associated with a company that does not consist of business units or divisions, please answer the following based on your company.**

Item {items adopted from Baker and Sinkula 1999 and Matsuno, Mentzer, and Rentz 2003}

|                  |  |
|------------------|--|
| V52              | Overall performance.                                       |
| V53              | Market share growth in our primary market.                 |
| V54              | Sales growth.  |
| V55              | Percentage of new product sales generated by new products. |
| V56 <sup>a</sup> | Return on sales.   |
| V57 <sup>a</sup> | Return on assets.  |
| V58              | Return on investments.                                     |

**Global Reach** (range: Strongly Agree - Strongly Disagree)

Item {items adopted from Fawcett, Calantone, and Smith 1996}

|     |   |
|-----|---|
| V59 | Your business unit locates specific production activities in countries that provide a comparative advantage.  |
| V60 | Production facilities are placed in foreign countries to develop a positive image as a local player.          |
| V61 | Top management emphasizes global manufacturing strategy within the overall corporate strategy.                |
| V62 | Your global manufacturing approach has been formalized and incorporated into the firm's competitive strategy. |

<sup>a</sup>Indicates an item that was removed during scale purification.

## CONVERGENT VALIDITY AND RELIABILITY

| Item ID <sup>a</sup> | Construct | Standardized Estimate | Statistical Significance | Average Variance Extracted | Cronbach's Alpha |      |      |
|----------------------|-----------|-----------------------|--------------------------|----------------------------|------------------|------|------|
| V1                   | LMIG      | 0.86                  | <i>p</i> < .001          | 0.73                       | 0.95             |      |      |
| V2                   | LMIG      | 0.75                  | <i>p</i> < .001          |                            |                  |      |      |
| V3                   | LMIG      | 0.87                  | <i>p</i> < .001          |                            |                  |      |      |
| V6                   | LMIG      | 0.90                  | <i>p</i> < .001          |                            |                  |      |      |
| V7                   | LMIG      | 0.91                  | <i>p</i> < .001          |                            |                  |      |      |
| V8                   | LMIG      | 0.86                  | <i>p</i> < .001          |                            |                  |      |      |
| V9                   | LMIG      | 0.83                  | <i>p</i> < .001          |                            |                  |      |      |
| V10                  | LMID      | 0.91                  | <i>p</i> < .001          |                            |                  | 0.73 | 0.90 |
| V11                  | LMID      | 0.94                  | <i>p</i> < .001          |                            |                  |      |      |
| V13                  | LMID      | 0.71                  | <i>p</i> < .001          |                            |                  |      |      |
| V15                  | LMID      | 0.92                  | <i>p</i> < .001          |                            |                  |      |      |
| V16                  | LMID      | 0.76                  | <i>p</i> < .001          |                            |                  |      |      |
| V18                  | LMISI     | 0.87                  | <i>p</i> < .001          | 0.73                       | 0.93             |      |      |
| V19                  | LMISI     | 0.82                  | <i>p</i> < .001          |                            |                  |      |      |
| V20                  | LMISI     | 0.89                  | <i>p</i> < .001          |                            |                  |      |      |
| V21                  | LMISI     | 0.85                  | <i>p</i> < .001          |                            |                  |      |      |
| V22                  | LMISI     | 0.87                  | <i>p</i> < .001          |                            |                  |      |      |
| V24                  | LMIR      | 0.85                  | <i>p</i> < .001          |                            |                  | 0.81 | 0.95 |
| V25                  | LMIR      | 0.89                  | <i>p</i> < .001          |                            |                  |      |      |
| V26                  | LMIR      | 0.92                  | <i>p</i> < .001          |                            |                  |      |      |
| V27                  | LMIR      | 0.88                  | <i>p</i> < .001          |                            |                  |      |      |
| V28                  | LMIR      | 0.93                  | <i>p</i> < .001          |                            |                  |      |      |
| V30                  | LPERF     | 0.90                  | <i>p</i> < .001          | 0.86                       | 0.94             |      |      |
| V31                  | LPERF     | 0.93                  | <i>p</i> < .001          |                            |                  |      |      |
| V32                  | LPERF     | 0.95                  | <i>p</i> < .001          |                            |                  |      |      |
| V33                  | LDIF      | 0.86                  | <i>p</i> < .001          | 0.65                       | 0.92             |      |      |
| V35                  | LDIF      | 0.79                  | <i>p</i> < .001          |                            |                  |      |      |
| V36                  | LDIF      | 0.78                  | <i>p</i> < .001          |                            |                  |      |      |
| V37                  | LDIF      | 0.86                  | <i>p</i> < .001          |                            |                  |      |      |
| V39                  | LDIF      | 0.79                  | <i>p</i> < .001          |                            |                  |      |      |
| V40                  | LDIF      | 0.77                  | <i>p</i> < .001          |                            |                  |      |      |
| V41                  | LEFF      | 0.86                  | <i>p</i> < .001          |                            |                  | 0.78 | 0.94 |
| V42                  | LEFF      | 0.89                  | <i>p</i> < .001          |                            |                  |      |      |
| V43                  | LEFF      | 0.92                  | <i>p</i> < .001          |                            |                  |      |      |
| V44                  | LEFF      | 0.89                  | <i>p</i> < .001          |                            |                  |      |      |
| V46                  | LEFF      | 0.86                  | <i>p</i> < .001          |                            |                  |      |      |

| <b>Item ID</b> | <b>Construct</b> | <b>Standardized Estimate</b> | <b>Statistical Significance</b> | <b>Average Variance Extracted</b> | <b>Cronbach's Alpha</b> |
|----------------|------------------|------------------------------|---------------------------------|-----------------------------------|-------------------------|
| V47            | LEFV             | 0.81                         | $p < .001$                      | 0.68                              | 0.89                    |
| V48            | LEFV             | 0.73                         | $p < .001$                      |                                   |                         |
| V50            | LEFV             | 0.89                         | $p < .001$                      |                                   |                         |
| V51            | LEFV             | 0.87                         | $p < .001$                      |                                   |                         |
| V52            | OPERF            | 0.91                         | $p < .001$                      | 0.82                              | 0.95                    |
| V53            | OPERF            | 0.89                         | $p < .001$                      |                                   |                         |
| V54            | OPERF            | 0.94                         | $p < .001$                      |                                   |                         |
| V55            | OPERF            | 0.83                         | $p < .001$                      |                                   |                         |
| V58            | OPERF            | 0.94                         | $p < .001$                      |                                   |                         |

<sup>a</sup> Corresponds to item number in Appendix B.

#### TEST OF HYPOTHESIZED RELATIONSHIPS

| <b>Hypothesis</b> | <b>Effect of</b> | <b>On</b> | <b>Statistical Significance</b> | <b>Standardized Estimate</b> |
|-------------------|------------------|-----------|---------------------------------|------------------------------|
| H1                | LMIG             | LMID      | $p < .001$                      | 0.46                         |
| H2                | LMID             | LMISI     | $p < .001$                      | 0.43                         |
| H3                | LMISI            | LMIR      | $p < .001$                      | 0.38                         |
| H4                | LMIR             | LPERF     | $p < .001$                      | 0.36                         |
|                   | LDIFF            | LPERF     | $p < .001$                      | 0.54                         |
|                   | LEFF             | LPERF     | $p < .001$                      | 0.23                         |
|                   | LEFV             | LPERF     | $p < .001$                      | 0.17                         |
| H5                | LPERF            | FPERF     | $p < .001$                      | 0.45                         |

**DISCRIMINANT VALIDITY**

| <b>Constructs</b> | <b>LMIG</b> | <b>LMID</b> | <b>LMISI</b> | <b>LMIR</b> | <b>LPERF</b> | <b>LDIF</b> | <b>LEFF</b> | <b>LEFV</b> | <b>OPERF</b> |
|-------------------|-------------|-------------|--------------|-------------|--------------|-------------|-------------|-------------|--------------|
| LMIG              | <b>0.73</b> | 0.21        | 0.08         | 0.10        | 0.09         | 0.06        | 0.05        | 0.08        | 0.09         |
| LMID              | 0.46        | <b>0.73</b> | 0.18         | 0.04        | 0.08         | 0.07        | 0.04        | 0.02        | 0.10         |
| LMISI             | 0.29        | 0.43        | <b>0.73</b>  | 0.14        | 0.18         | 0.13        | 0.14        | 0.04        | 0.09         |
| LMIR              | 0.31        | 0.21        | 0.37         | <b>0.81</b> | 0.45         | 0.24        | 0.19        | 0.07        | 0.18         |
| LPERF             | 0.30        | 0.28        | 0.43         | 0.67        | <b>0.86</b>  | 0.59        | 0.37        | 0.18        | 0.22         |
| LDIF              | 0.24        | 0.26        | 0.36         | 0.49        | 0.77         | <b>0.65</b> | 0.22        | 0.09        | 0.23         |
| LEFF              | 0.22        | 0.19        | 0.37         | 0.44        | 0.61         | 0.47        | <b>0.78</b> | 0.07        | 0.09         |
| LEFV              | 0.29        | 0.13        | 0.21         | 0.26        | 0.43         | 0.30        | 0.27        | <b>0.68</b> | 0.06         |
| OPERF             | 0.30        | 0.32        | 0.30         | 0.43        | 0.47         | 0.48        | 0.30        | 0.25        | <b>0.82</b>  |

Notes: Diagonal entries are average variances extracted, entries below the diagonal are correlations, and entries above the diagonal represent the squared correlations.

## VITA

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Brian has been actively involved as an assistant director of the Sales Forecasting Management Forum at the University of Tennessee. He has presented at Council of Supply Chain Management Professionals, American Marketing Association, Academy of Marketing Science, and Decision Sciences Institute conferences and has published in Journal of Business Logistics and Supply Chain Management Review. Prior to pursuing the Ph.D., Brian worked in Supply Chain Management at John Deere after working as an industrial engineer at Allied Signal and Delta Airlines. He has presented research at Decision Sciences Institute and Academy of Marketing Science conferences.

In August of 2006, Brian completed the requirements for the Ph.D. in Business Administration with a major in Logistics and minor in Marketing at the University of Tennessee. He is presently employed as an Assistant Professor of Logistics at Lehigh University in Bethlehem, Pennsylvania.