

SALES FORCE MARKET INFORMATION: ANTECEDENTS,  
PROCESSES AND IMPACT ON  
SALES PERFORMANCE

By

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## NOMENCLATURE AND SYMBOLS

$\alpha$	Coefficient alpha, a measure of scale reliability
IT	Information Technology
SFMIGP	Sales Force Market Information Generation Processes
MITP	Market Information Transfer Processes
USFMI	Use of Sales Force Market Information
PISFIT	Perceived Importance of Sales Force Information Technology
FSFIGP	Formalization of Sales Force Market Information Generation Processes
SUP	Sales Performance
CI	Competitive Intelligence
MT	Market Turbulence
MU	Market Uncertainty
PIQ	Perceived Information Quality
$p$	Level of significance in statistical tests
F	The F-statistic from statistical tests

## CHAPTER I

### INTRODUCTION

This dissertation investigates the effects of the market information on organizational sales performance. In particular, the dissertation examines the collection, dissemination and use of marketing information by the sales organization and the relationships of these three variables with sales performance. Additionally, the dissertation investigates the influence of two variables, perceived importance of sales force information technology and formalization of sales force market information generation processes on sales force market information generation processes. The dissertation proposes a conceptual model of relationships of variables in the study and tests the relationships using data collected from a national sample of managers of sales organizations.

#### Research Questions

The research questions addressed in this dissertation are:

1. Do sales organizations have the processes in place to enable market information generation and transfer by the members of their sales force?
2. Are these processes related to sales performance?

## Contribution to the Literature

The primary contribution of this dissertation is the investigation of the role of the sales force in generating and disseminating market information leading to sales organization performance. Despite the wealth of research on market information and market information processes, little research has investigated the relationship of the sales force market information processes sales organization performance. Additionally, this dissertation contributes through the investigation of the impact of two antecedent variables, formalization of market information generation processes and perceived importance of sales force information technology. These variables have not been investigated regarding their relationship with the other variables in the conceptual model. The study has managerial contributions as well by providing information that can guide managers as they make decisions involving millions of dollars regarding the role of their sales people in compiling and sharing market information within their respective sales organization.

## Organization of the Dissertation

This dissertation is organized into five chapters. This chapter provided an introduction and brief overview of the research in the dissertation, the foundations of the topic under investigation, the research questions, and the contribution to the literature. Chapter II is a review of the literature on sales performance, market information generation processes, market information transfer processes, market information use, perceived importance of sales force information technology, and formalization of sales

force market information generation processes and hypotheses of the relationships between these constructs. Chapter III presents the research methodology used, including the methods used for data collection and analysis. A thorough presentation of the results of the data analysis is provided in Chapter IV. A discussion of the results of the analyses, theoretical and managerial implications of the findings, limitations of the study, and additional research needed are all presented in Chapter V. Additional information, including detailed tables of data and the research survey instrument, is included in appendices.

## CHAPTER II

### LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

#### Introduction

The purpose of this chapter is to provide an overview of issues pertaining to sales performance and a review of the literature regarding market information generation processes, market information transfer processes, market information use, formalization of market information generation processes, and perceived importance of sales force information technology. There are four sections to this chapter. The first section presents an overview of the constructs and the relationships between these constructs.

The second section presents a review of the literature on the constructs in the conceptual model. It first examines the dependent variable “sales performance.” Next, the section presents a review of the literature on three market information process constructs — market information generation processes, market information transfer processes and market information use. This is followed by a review of the two antecedent variables, formalization of sales force market information generation and perceived importance of sales force market information generation.

In the fourth section of the chapter, hypotheses are presented on the relationships between the variables in the conceptual model. The final section briefly summarizes the chapter and leads into Chapter III.

Figure 1 provides a diagram of the conceptual model of the study and illustrates the relationships of the variables investigated in the study. The dependent variable, sales performance, is defined as the extent to which the organization achieves sales relative to some performance objective. The conceptual model includes three market information processes variables. Sales force market information generation processes refer to acquisition of customer, competitor, and other market information by members of the sales organization (Jaworski and Kohli 1993; Moorman 1995). Market information transfer processes are the processes through which market information generated by the sales force is transferred within the organization (Jaworski and Kohli 1993; Moorman 1995). Market information use, depicted in the model as a moderating variable, is “the extent to which the receiver uses the intelligence disseminated by the sender to understand his or her work environment and make and implement decisions” (Maltz and Kohli 1996, p. 59).

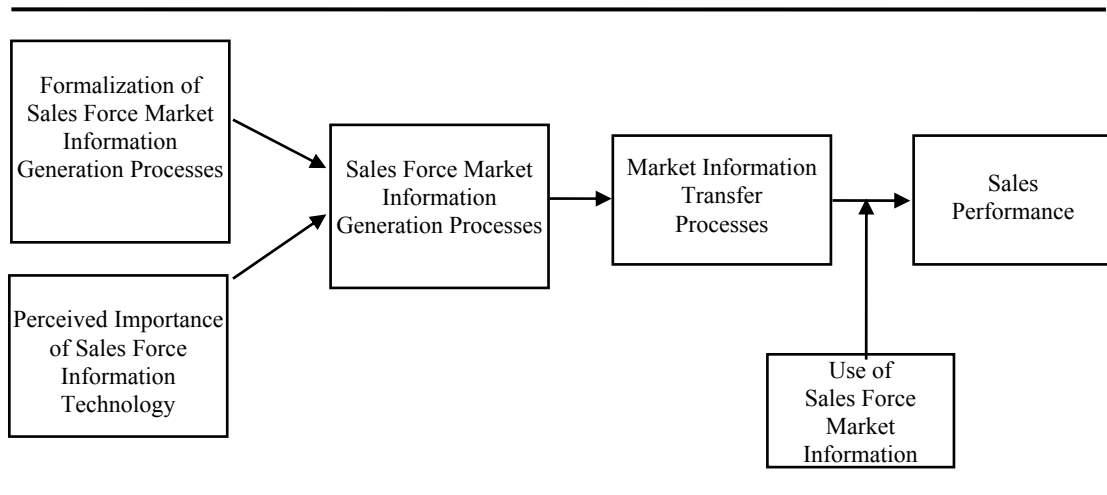
Two antecedent variables are investigated. Formalization of sales force market information generation processes refers to rules and procedures established by the organization that specifically govern the market information generation activities of the organization’s sales force. Perceived importance of sales force information technology refers to the respondent’s attitude toward use and value of information technology that can be used by sales organizations. Sales force information technologies include technologies such as cell phones, portable computers, PDA’s, Sales Force Automation



(SFA) and Customer Relationship Management (CRM) software and hardware, global positioning technologies, and other technology software and hardware that might be used by sales organizations. Both formalization and perceived importance of use of sales force information technology are proposed to influence the generation of market information by the sales force.

FIGURE 1

MODEL OF PROPOSED RELATIONSHIPS



In the following section, these variables are discussed in detail. Included in this discussion is an investigation of these variables, research findings of studies encompassing these variables, as well as support for and hypotheses for the relationships of these variables depicted in the model.

## Review of the Literature

### Sales Performance

In this study sales performance is the dependent variable in the model for this dissertation. Sales performance is defined as the extent to which the organization achieves sales relative to some performance objective. Sales performance is chosen for this dissertation because of its bottom line implications, bringing an immediate managerial relevance to this study. Often when bottom line performance measures are used in sales research, the researches are investigating one company (e.g. Engle and Barnes 2000), as acquiring sales and profit information across a large group of respondent companies can prove difficult. Although bottom line performance measures as dependent variables in sales literature is limited, although research in new product success often examines the sales performance of specific new products (Ayers, Dahlstrom and Skinner 1997; Moorman 1995; Rochford and Wotruba 1996). For this dissertation, sales performance outcomes of market share, unit sales and profit margin are investigated. As will be discussed further in Chapter 3, sales performance is measured relative to stated objectives and key competitors, thereby enabling comparison of the measures across companies.

### Market information and market information processes

Market information refers to information about customers, competitors, and other relevant market environmental factors that might affect a firm's marketing activities within the market or might affect the outcome of a firm's marketing activities within a

market. Market information about customers may involve information about how the customers identify needs, how they develop buying preferences, customer buying processes, how customers use products and how customers dispose of products. According to Kohli and Jaworski (1990), market information not only includes customers' verbalized needs and preferences but also includes "an analysis of exogenous factors that influence those needs and preferences" (p.4). This implies that market information processes would include monitoring the environmental conditions in customer industries.

Market information includes information about competitor activities. These activities would include marketing activities such as actions related to products, pricing, and promotion efforts. Competitors' human resource activities, such as the hiring of additional sales people or individuals with specialized talents, are also important facets of market information. Other specific areas of market information would include information about customer and competitor manufacturing and operations, supply chains, and financial conditions.

Moorman (1995) defined market information as "data concerned with a firm's current and potential stakeholders." She noted that this definition does not limit one to marketing information for the marketing department and enables the consideration of information that cuts across functional boundaries in a firm.

How firms process market information has been an important focus in the literature, and the literature has been consistent in identifying these activities as a series of processes (Moorman 1995, Kohli and Jaworski 1990, Sinkula 1994). While the number of steps or components in the market information process may vary, the

literature generally focuses on three components: market information generation processes, market information dissemination, and market information use (Kohli and Jaworski 1990; Baker and Sinkula 1999). Market information generation refers to the acquisition and collection of information about organizational stakeholders (Moorman 1995). Market information transfer processes is the process by which the information is shared and diffused horizontally and vertically throughout the organization (Sinkula, Baker, and Noordewier 1997). Market information use is the direct and indirect use of the information in decision making and relevant strategy actions (Moorman 1995; Maltz and Kohli 1996).

#### Sales Force Market Information Generation Processes

Market information generation is the acquisition and collection of information about organizational stakeholders (Moorman 1995). This study differs from others in that the market information generation processes under investigation is limited to the sales organization. Sales force market information generation is the acquisition and collection of information, by sales people, of customers, competitors, and other relevant actors and forces in the sales peoples markets. Because sales people are in regular direct contact with customers and their markets, they have a unique opportunity to collect market information.

Calantone and Di Benedetto (1988) investigated market information generation and its role as an antecedent in firms' new product development activities. They pointed out the important role that relevant market information has in improving the overall performance of marketing activities. Market information was found to have a direct

positive effect on marketing activities. In their study, market information was measured using a simple two-item measure, which simply asked respondents to rate the extent to which the information gathered was superior. A weakness in this study stems from the measurement of marketing activities. The five-item scale used to measure marketing activities had more to do with information gathering (e.g., conducting consumer research) than the actual conduct of marketing activities such as promotion and pricing. Regardless, the study still provides important support for the role of market information in new product success.

In a study specifically investigating the role of the sales organization, Lambert, Marmorstein and Sharma (1990) considered the ability of the sales organization to provide quality market information. They note that the sales organizations' constant contact with customers enable better understanding of customers' needs and preferences, and can also assess customers' attitudes and beliefs. The study found that sales people could provide accurate information about customers. While this research was limited to one company, it does support the general contention that the sales organization can be an important source of quality market information.

Beltramini (1988) also investigated sales person information generation. The study was built around the premise that sales people must deal with tremendous amounts of information originating from customers, markets, and from the home office. However, because sales people are generally not encouraged to provide market information, valuable information about the market may be overlooked. One important finding of this research is that sales people have a desire to have more involvement in

product development and want to be able to share their knowledge of customers and the market with relevant people at the home office.

Gordon, Schoenbachler, Kaminski, and Brouchous (1997) also considered the role of the sales organization. Noting that the sales force's role regarding new products typically involves testing customer reaction to new products before market introduction, the team set out to examine how the sales force plays a role at earlier stages of new product development. Their study explored the extent to which the sales force can collect information that can be helpful to the generation of new product opportunities. The study had mixed results. First, nearly 60% of the sales forces in the study sample assigned their sales people limited or no responsibility for generating market information regarding customers' new product needs. Findings indicate that the sales forces tend to generate more short term focused information regarding customer product needs, and a vast majority tend to collect and disseminate the information informally, leading to minor product improvements rather than new-to-the-world products.

Recent research by Troy, Szymanski, and Varadarajan (2001) considered how market information affects new product idea generation. Study findings support the relationship of the amount of market information and number of new product ideas. This study supports the idea that firms benefit by generating greater amounts of market information.

Moorman (1995) examined market information processes and new product performance. In this study, she also examined organizational variables, looking at the role of organizational culture variables as antecedents to information processes. The study did not find a direct relationship between information generation and new product

performance as hypothesized, but did find support for organizational utilization of the information having a positive impact on new product performance. The lack of support for the direct relationship between market information generation and new product performance indicates possible mediating or moderating influences on the relationship.

Sinkula, Baker, and Noordewier (1997) suggested that market information generation has a role in organizational actions, specifically marketing program dynamism. Marketing program dynamism was defined as the frequency in which modifications are made to marketing programs. They hypothesized that any relationship of market information generation and dynamism would be mediated by the dissemination of the information, arguing that without information being “efficiently disseminated to decision makers, there is no opportunity to employ it.” The mediating role of information dissemination was supported. The findings support the important role of market information generation. The authors call for further research in the process of information generation, information transfer processes and interpretation as they affect a firm’s performance.

Information generation has been shown to have a strong link to new product success. In a study of new product launch success, Di Benedetto (1999) suggests that information in the form of customer feedback is a precursor to successful launches. Baker and Sinkula (1999) found a significant correlation of information generation and new product success. In a study of global industrial firms, Wren, Souder, and Berkowitz (2000) found market information generation to be the most important variable across countries in determining new product success.

Slater and Narver (2000) identified four different information generation strategies employed by organizations, market-focused, collaborative, experimentation, and repetitive experience. The first is most consistent with the definition of market information generation used in this dissertation. They defined market-focused information generation as a strategy that “focuses on acquiring information about customers’ expressed and latent needs, and competitors’ capabilities and strategies.” Findings indicate that market information generation is positively associated with sales growth. However, the study’s hypotheses that market information generation is positively associated with product quality and new product success were rejected. The only form of information generation positively associated to new product success was information generated through experimentation, a form of information generation that includes activities such as test marketing of new products.

#### Sales Force Market Information Transfer Processes

Broadly, the dissemination of information in an organization refers to actions taken which result in information and knowledge possessed by one entity in the organization to be shared with others in the organization (Day 1994; Kohli and Jaworski 1990). Kohli and Jaworski (1990) elevated the interest of the marketing community on market information transfer processes when they included it as a component in their model of market orientation. Based on interviews with managers, they noted “for an organization to adapt to market needs, market information must be communicated, disseminated, and perhaps even sold to relevant departments and individuals in the organization” (Kohli and Jaworski 1990, p.5).



In this dissertation, market information transfer processes, following Moorman (1995), and Kohli and Jaworski (1990), are the processes through which market information is transferred to others within an organization. The dissemination of market information has received substantial attention in the literature, as it is viewed as an important component of both organizational learning (Huber 1991; Day 1994; Hurley and Hult 1998; Slater and Narver 1995; Nevis, DiBella and Gould 1995) and market orientation (Kohli and Jaworski 1990; Jaworski and Kohli 1993; Kohli, Jaworski, and Kumar 1993; Baker and Sinkula 1999).

In new product research, market information transfer processes has been studied as an antecedent to new product success. For example, Moorman (1995), examining the role of organizational culture on new product performance, proposed that information transmission (market information transfer processes) has a positive relationship with new product performance. Moorman argued that, consistent with organizational learning theories, information transmission is likely to lead to improved new product performance due to increased shared vision among organizational members. This is echoed by Kohli and Jaworski (1990), who stated “effective dissemination of market intelligence is important because it provides a shared basis for concerted actions by different departments.” Market information dissemination has been linked to new product performance indirectly through research on effects of a market orientation. Researchers using the Kohli and Jaworski (1990) conceptualization of market orientation have suggested a positive relationship of market information transfer processes with new product performance.

Dissemination is not a one-way process and occurs in all directions within an organization (Kohli and Jaworski 1990; Moorman 1995). Just as the sales force may disseminate information to other areas of the organization, it also may receive information from other areas. For example, Moorman (1998) investigated the flow of information into a market. Other studies have examined the flow of information to the sales organization. This dissertation will examine the transfer processes of market information within the sales organization, and is primarily concerned with the processes involved when the sales force generated market information is disseminated.

Dissemination of market information can be formal or informal (Daft and Lengel 1984; Kohli and Jaworski 1990; Maltz and Kohli 1996; Moorman 1995). Formal transfer processes refers to any type of organized or structured dissemination, including policies, training sessions, research presentations, internal reports, memoranda, and cross-functional teams (Moorman 1995). Informal transfer processes refers to those occasions when information is shared through casual interactions between individuals within an organization (Moorman 1995). Maltz and Kohli's (1996) findings suggest that both formal transfer processes and informal transfer processes play a part in the dissemination of information.

Moorman (1995) considered the role of market information processes on measures of new product performance. The study hypothesized that market information generation and market information transfer processes, along with market information use, would each positively influence new product performance and new product timeliness. However, neither market information generation nor market information transfer processes were found to have an impact on new product performance or new

product timeliness. In discussion of the findings, Moorman posits that the effect of market information generation and dissemination may be mediated by market information use. Baker and Sinkula (1999) found a significant correlation of information dissemination with new product success. Ayers, Dahlstrom, and Skinner (1997) linked information exchange between R&D and marketing with new product success. The previous discussion and conflicting results from previous studies indicates a need for additional research on the market information transfer.

Market Information generated by the sales organization can be used by the sales organization to enhance its functional effectiveness and improve levels of performance. Researchers have suggested that information generated by a sales organization may stay within the sales organization as a result of poor organizational structure (Gordon, Schoenbachler, Kaminski, and Brouchous 1997), information transfer costs (von Hippel 1998), and in some cases, a lack of regard for the sales organization by other functions in the organization (Workman 1993).

#### Use of Sales Force Market Information

There are some conflicting findings regarding the relationship of Information transfer processes with new product success. Moorman's (1995) proposed relationship between market information transfer processes and new product performance was positive, but not statistically significant. In post-hoc analysis and discussion she proposed that utilization processes might influence the relationship between information transmission and new product performance.

Market information use, a construct used by Maltz and Kohli (1996), is defined as “the extent to which the receiver uses the information disseminated by the sender to understand his or her work environment and make and implement decisions.” (1996, p. 59). Related constructs used in the literature include market information utilization, information utilization and knowledge utilization (Moorman 1995).

There exists a rich literature on the utilization of information and knowledge in organizations (AMA 1988; Deshpande 1982; Dunn 1986; Glaser, Abelson, and Garrison 1983; Larson 1985; Menon and Varadarajan 1992; Myers, Massy, and Greyson 1980; Perkins and Rao 1990; Zaltman 1986). In marketing, much of the literature has focused on the utilization of market research (Deshpande 1982; Moorman, Zaltman, and Deshpande 1992, Moorman, Deshpande, and Zaltman 1993), the antecedents of and factors influencing information use (Low and Mohr 2001; Menon and Varadarajan 1992), and information use as a mediating or moderating variable (Kohli and Jaworski 1990; Maltz and Kohli 1996; Moorman 1995; Sinkula 1994; Troy, Szymanski, and Varadarajan 2001).

Market information use in an organization can be either conceptual or instrumental (Caplan, Morrison, and Stambaugh 1975), although other researchers have conceptualized other categorizations of information use. Menon and Varadarajan (1992) conceptualized and measured three types of use, action-oriented, knowledge-enhancing, and affective. Since the conceptual and instrumental typology has been the typology employed in much of the marketing and social science literature it will be used for this dissertation.

Conceptual use is indirect and provides for general enlightenment by developing the managerial knowledge base (Beyer and Trice 1982; Menon and Varadarajan 1992). Thus, when managers and other decision-makers in an organization are presented with market information in one form or another, the information becomes part of their general knowledge and understanding of the environment. Frankwick, Ward, Hutt, and Reingen (1994) explored these “thought worlds” influence on marketing managers’ strategy decisions. Through conceptual use of market information, managers’ and other decision makers’ perspectives on their organizational external environment may change. These changes may be subtle and may not even be recognized, but can influence later decisions and actions taken (Menon and Varadarajan 1992).

Instrumental use of market information involves more direct application of the market information in decisions and strategy-related actions (Moorman 1995). According to Menon and Varadarajan (1992), much of the research on information utilization in marketing refers to instrumental use. For example, Kohli and Jaworski (1990, p. 6), when developing the market orientation construct used the term responsiveness to refer to instrumental information use, defined responsiveness as “the action taken in response to information that has been generated and disseminated.” Instrumental use of market information involves direct application of the information in the making, implementation of, and evaluation of marketing decisions (Moorman 1995). A decision by the product development team to alter the design of a potential new product given market information generated by the sales force would be an instrumental use. The decision to introduce a new product based on market information generated by the sales force would be an instrumental use of the information. An instrumental use

occurs also when the organization uses market information in the evaluation to determine performance outcomes of a new product introduction (Zaltman and Moorman 1988)

Moorman (1995) investigated both conceptual and instrumental use of market information and their impact on new products. Both conceptual use and instrumental use were found to be positively related to new product performance, and new product timeliness. Conceptual use, but not instrumental use, was found to be related to new product creativity.

Maltz and Kohli (1996) examined factors affecting market information use. Unlike Moorman (1995), Maltz and Kohli did not distinguish between conceptual and instrumental use when measuring market information use. Their study specifically looked at the influence of dissemination processes and information quality on the use of market information. Both dissemination formality and perceived information quality were found to have a positive effect on market information use. Dissemination frequency was also examined, but was not found to influence market information use. These findings are important, as they demonstrate that simply disseminating market information does not result in market information use. Given these findings, this dissertation will not differentiate between conceptual and instrumental use of market information.

#### Organizational Antecedents of Sales Force Market Information Generation

In their study of the role of the sales force in generating customer new product ideas, Gordon, Schoenbachler, Kaminski, and Brouchous (1997) examined the

dissemination of market information. They found that most communication was performed on an unstructured basis, with only 20% using a written, specific format. Further, a majority, 61.5%, of the sales forces report the information generated directly to the sales manager, with only 10.5% reporting directly to functions specifically responsible for new product development. The authors conclude that the informality and the use of intermediaries in the dissemination of the information limit both the efficiency and effectiveness of the sales force's role in generating and disseminating information. Their recommendations include providing sales forces specific direction regarding the generation of market information, the establishment of formal procedures and increasing the use of information technology tools to facilitate the generation and dissemination activities.

#### Formalization of Sales Force Market Information Generation Processes

Formalization has been defined in the literature as the degree to which rules define roles, authority relations, communications, norms and sanctions, and procedures in an organization (Deshpande and Zaltman 1982; Hall, Haas and Johnson 1967), and the extent to which these rules and procedures must be followed (Damanpour 1991). It is the degree to which rules or standard operating procedures are used to govern the interaction between individuals, as well as written directives designed to guide employee action toward the accomplishment of objectives (Ayers, Dahlstrom, and Skinner 1997; Ruekert and Walker 1987). Troy, Szymanski, and Varadarajan (2001), building on Damanpour (1991) noted that formalization is the degree to which the rules and procedures must be followed in an organization.

Formalization can vary significantly across organizations. Organizations with low formalization lack rules and procedures, and the employees have greater levels of flexibility in carrying out their roles. Organizations with high levels of formalization have specific rules and procedures (Low and Mohr 2001). In the selling environment, sales people working in an organization with low levels of formalization will have greater flexibility in managing sales territories. At the other extreme, sales people working in an organizational environment of high formalization may have strict guidelines governing all of the various tasks, activities, and responsibilities of the job.

In organizations that have high levels of formalization of sales force market information generation sales people may be instructed, for example, to gather information about competitors' products, activities, successes, failures, and problems. Furthermore, there may be specific procedures regarding how the information should be organized and reported back to the sales organization.

Members of a sales organization are in a unique position to gather market information. As boundary spanners of the organization, their activities bring them in direct contact with parties in the organizations' external environment. In the business-to-business markets, sales people may have contact with many different individuals in the customer organization, ranging from the CEO to the members of the buying center and even down to the part-time employee selling coffee in the company cafeteria. In addition to direct contact with customers, sales people have direct contact with competitors, channel members, and often even customers of their customers. Sales people also have frequent contact with members of non-competitors who sell to the same customers.



Simply because a wealth of market information is available from a variety of sources does not mean that the sales person will collect information relevant to the organization. Sales people have a primary responsibility of selling the organization's products and managing relationships with their customers. Often, compensation and reward systems are based on an individual's sales levels, and there is little motivation for sales people to engage in activities that do not have a direct impact on their sales. Members of the sales force may ignore information that is not relevant to their primary responsibilities or, when sales people do gather market information, they may not see any need to share the information with others in the organization. Walker, Churchill, and Ford (1972) suggested that sales people may perceive that time spent gathering market information is unproductive and in conflict with selling responsibilities. Of course, as noted by Marshall, Moncrief and Lassk (1999), selling and sales person responsibilities have seen tremendous change since then.

Organizations, which desire market information from the sales force, may seek to improve information through increased formalization. Formalization of sales force market information generation processes is the degree to which rules and procedures have been established to direct the information generation by the sales force. It may involve specifying types or categories of market information. Formalization may also involve using call reports or other reporting formats to assist the sales person in organizing and reporting any market information acquired. Formalizing sales force market information generation would lead to greater efficiency in the information generation process (Ruekert, Walker, and Roering 1985). Through formalization, sales

people would better know what kinds of information to gather and the categories of information would be consistent across the sales organization.

Formalization of sales force market information processes may be both task and role related. Formalized procedures may regulate the tasks the sales people perform or may alter the role responsibilities of the sales person (Ayers, Dahlstrom, and Skinner 1997). Studies have identified the numerous tasks sales people may perform in carrying out their duties (Marshall, Moncrief, and Lassk 1999). Formalization of sales force market information generation processes may specify the tasks required for the sales person. From a role perspective, members of an organization's sales force likely see themselves as having a specific role in the organization, and the acquisition of market information may not be one of the role responsibilities perceived by these sales people. One can imagine a sales person from an organization saying, "We don't do those kinds of things. It is not part of our job. We sell. We aren't market researchers." Evidence from the literature supports this. Gordon, Schoenbachler, Kaminski and Brouchous (1997) noted that while the sales organization may be an excellent source of market information, organizational barriers impede efforts to utilize effectively this potentially rich information source. In their study, they found that only 20% of sales managers reported their sales force received formal training on market information generation related to new product development.

Little research has been done examining the formalization of market information generation. More often, the research on formalization tends to examine the impact of organizational formalization on intra-organizational activities. Maltz and Kohli (1996) examined the role of dissemination formality on perceptions of information quality and

market information use by non-marketing managers. They found an inverted U-shaped relationship between dissemination formality and perceived information quality, concluding that a balanced mix between formal and informal dissemination was optimal. The authors also found a positive effect of dissemination formality on market information use.

Evans and Schlacter (1985) reported a wide variance in the formality of sales managers' approaches to gathering market information. Although they only used a one-item measure for formality, their study suggests there is not any consistency across sales organizations in formalizing market information generation activities. Additionally, commission and incentive structures do not provide any incentive for sales people to expend time and effort gathering and reporting market information (Gordon Schoenbachler, Kaminski, and Brouchous 1997). The general findings of research in this indicates a need for additional research investigating the role of formalization of sales force market information generation processes on market information processes and on organization performance.

### Perceived Importance of Sales Force Information Technology

This section of the dissertation examines a firm's perceived importance of the use and acceptance of Information Technology in sales organizations. The discussion is divided into three parts. First, information technology is defined and its role in organizations is discussed. Then, the literature on the use of information technology by the sales force is presented. The third part defines the construct used in this dissertation.

Information Technology. The use by business organizations of information systems and technologies has grown such that the use of computers or related information technology is the expected norm today. Dewitt and Jones (2001), in a comprehensive review of literature on the role of information technology, describe *information systems* to include many different varieties of software platforms and databases. *Information technologies* are described as “a broad array of communication media and devices which link information systems and people including voice mail, e-mail, voice conferencing, video conferencing, the internet, groupware and corporate intranets, car phones, fax machines, personal digital assistants, and so on” (Dewitt and Jones 2001, p. 314). Dewitt and Jones proceeded to state that “information systems and information technologies are often inextricably linked” such that it has become common to refer to them both together as information technology. Following Dewitt and Jones, in this dissertation, information technology refers to both information systems and information technologies. Henceforth, information technology is abbreviated with the capital letters “IT”.

Dewitt and Jones (2001), in a review of the literature on how IT affects organizations, identified five organizational outcomes associated with the application of IT, particularly in light of information efficiencies and information synergies. They define the information efficiencies as “the cost and time savings that result when IT allows individual employees to perform their current tasks at a higher level, assume additional tasks, and expand their roles in the organization due to advances in the ability to gather and analyze data” (p.316). Information synergies are defined as “the performance gains that result when IT allows two or more individuals or subunits to pool

their resources and cooperates and collaborate across role or subunit boundaries” (p. 316) The following five paragraphs summarize Dewitt and Jones discussion of the five outcomes and the outcomes’ relationships with information efficiencies and information synergies.

IT links and enables employees. Through its ability to increase the overall amount of communication in an organization, IT links and enables employees, which enhances information efficiencies and information synergies. IT aids cross-functional work flows, can make critical information more accessible and transparent to employees, and improves the effectiveness in the completion of divergent thinking tasks. Citing Barabba and Zaltman (1990), Dewitt and Jones note how GM used IT to centralize market information to link employees and aid the company during new product development and product launches.

IT facilitates codification of the organization’s knowledge base. Because human memory has its limitations, the use of IT promotes an organization’s ability to capture and store the knowledge of its employees. Simply, IT enables the employees of organizations to organize and store information gained through their work activities, and eases the communication and retrieval of the information across functional boundaries.

IT increases boundary spanning. Boundary spanning in this sense refers to individuals in organizations accessing knowledge, which resides in other functional units. IT enables communication across these organizational boundaries. Further, IT facilitates external environment boundary spanning. Through the IT tools available (e.g. cell phones, personal digital assistants, portable computers, etc.), employees have access to various sources of information and can increase their participation in information

networks. Boundary spanning increases as more employees use the IT tools to enable them to carry out their function regardless of location.

IT promotes organizational efficiencies. Communication is accomplished more easily and less expensively with little restriction by time and geographic location, can be performed more quickly, and can accurately reach larger numbers of individuals. Other efficiencies include time and cost savings in the recording and indexing of communication and information; the control of access to communication and information; increased speed accessing organizational information; and, reliably and inexpensively record and retrieve information on organizational transactions. Other authors have shown that IT reduces information costs (Pickering and King 1995), increases the speed of data moving and reduces cost of communication (Henderson and Venkatraman 1994), and reduces the cost of organizational information processing (Argyres 1999).

IT promotes organizational innovation. Dewitt and Jones concluded the “role of IT in promoting innovation is very underrepresented in the literature because of a focus on its efficiency-enhancing properties” (p. 326). They suggest that IT is an important means of facilitating the innovation process, as it moderates the problem-solving process through the storage, transmittal, and communication of related information and ideas. Through IT, employees have a larger and richer knowledge base on which to draw when engaged in problem-solving activities. More importantly, IT can increase the speed in which the knowledge is distributed through the organization, bringing relevant knowledge to employees when they need it. IT supports the movement towards parallel

product development by enabling ongoing electronic interaction of the various functions that were formerly sequentially dependent on one another.

Information Technology and the Sales Organization. Marshall, Moncrief, and Lassk (1999) noted the “single greatest change in selling has been the increase in availability and use of advanced technology in the day-to-day jobs of sales people” (p.88). The marketing department and the sales functions in organizations, although among the last to do so, have embraced IT as a means to improve efficiencies and performance (Rivers and Dart 1999). While academic research is slim on the use of IT by sales organizations, the trade literature, in magazines such as *Sales and Marketing Management* and *Inc.*, is rich with stories and information. IT use by the sales organization is often referred to as Sales Force Automation (SFA), which has been defined as “converting manual sales activities to electronic processes through the use of various combinations of hardware and software applications,” (Rivers and Dart 1999) and “the use of computer hardware, software, and telecommunication devices by sales people in their selling and/or administrative activities” (Morgan and Inks 2001, p. 463). Others have defined SFA more narrowly, describing SFA as “centralized database systems that can be accessed through a modem by remote laptop computers using special SFA software” (Parthasarathy and Sohi 1997, p. 196).

The research that has been done on IT and sales organizations have investigated the use of IT by sales organizations, the consequences of IT use by sales organizations, and exploration of the antecedents and other organizational factors associated with the adoption of IT by the sales organization. To no surprise, there has been a growing complexity to the technologies investigated and the studies themselves. For example,

earlier studies have limited their investigations to sales persons use of microcomputer systems to handle leads (Collins 1985), cellular telephones use by a national sales force (Swenson and Parrella 1992), and justifying the use of laptop computers (Goslar 1987; Johnson and Whitehorn 1997; Moncrief, Lamb, and Mackay 1991), while later studies have investigated integration of IT into the sales process (Erffmeyer and Johnson 2001), factors associated with sales force acceptance of SFA (Morgan and Inks 2001) and a cross-national analysis of sales related IT usage, effectiveness and cost-benefits (Engle and Barnes 2000). The literature on sales force IT is discussed next.

Marshall, Moncrief, and Lask (1999), in an update on sales activities, classified newly identified activities (activities that were not reported in an earlier research study) according to whether or not they were technologically based. About one-half of the activities were technologically based, and were classified as to whether they fell into one or more of five major categories—communications, sales, relationships, team building/team selling, and database management. Unfortunately, the study did not investigate or categorize the extent to which the 146 previously identified sales activities (Moncrief 1986) are now technologically based.

Johnson and Whitehorn (1997) investigated the justifications for use of portable computers by the sales force of a large insurance company. Their paper reports on an experiment carried out by the insurance company to determine the benefits of outfitting sales people with portable computers. Their results were inconclusive, showing that only the sales people performing better without the portable computer improved their performance with a portable computer.



Engle and Barnes (2000) conducted a three-country study of one company's usage, beliefs, and outcomes of sales related IT. Using factor analysis they identified five usage grouping: Planning and territory management; Administration and external information exchange; within company communication; active sales tool; and passive sales tool. While they found significant differences in the beliefs and usage of the technology between the different countries, they did find that both management and the sales people believed the technology to be useful. More importantly, they found that use of sales related IT leads to higher sales performance. However, their cost-benefit analysis indicates that the sales increases may not be enough to justify the costs of implementing and maintaining the sales force automation technology.

Keillor, Bashaw, and Pettijohn (1997) investigated the role of sales person experience and productivity on sales persons' attitudes towards computers. Not surprisingly, they found that less experienced sales people are more receptive to using computer technology in the sales process. As they did not control for age of sales person, they suggest this is the result of younger sales people having greater exposure to technology applications. Another finding of the study was that among the experienced sales representatives, the better sales representatives have a more positive attitude towards the use of computer technology. Interestingly, the less experienced sales people with low acceptance of technology were the lowest performing sales people. This study's weaknesses include use of single-item measures and a lack of data to help explain the relationships identified.

Parthasarathy and Sohi (1997) also investigated the adoption of technology by sales people. They introduce the idea that adoption of technology by the sales force is

complicated by “dual adoption”—where different sets of factors influence the adoption of technology by the sales organization and by individuals in the sales organization. In addition, for many technologies this is a two-stage process where the organization must first adopt the technology then individual sales people must adopt the technology. Parthasarathy and Sohi propose eight factors influencing organizational adoption of technology. These are industry competition, demand uncertainty, intra-industry communication links, inter-industry communication links, organization size, organization complexity, and previous company experience. Of these, only centralization has a negative influence on adoption. They propose six factors influencing individual adoption once the organization has adopted the technology. The individual factors are non-monetary costs, interpersonal links, previous company experience, personal factors, education, and age. Non-monetary costs and age have a negative influence on individual use.

Rivers and Dart (1999), in an empirical study involving sales organizations of mid-sized manufacturers, investigated the acquisition and use of sales related IT. A major contribution of this paper are scales developed and tested to measure the acquisition and use of SFA technology, benefits resulting from the use of using SFA technology, and factors influencing purchase of SFA technology. Key findings of the study, as concluded by the authors are “relatively few correlates relating to the firm’s acquisition of SFA systems were demonstrated in this study and fewer still appear to predict whether or not the organization will realize any returns on such investments. Further, there is no apparent relationship between the extent of SFA acquisition and the benefits generated (p.67).” Another finding of the study was that larger firms were more

likely to adopt SFA information technologies, but that “neither the size of the firm nor the size of the sales force appears to influence achieved SFA benefits (p. 67). Rivers and Dart did find a significant relationship between the “predisposition” toward SFA and both the investment and level of sophistication of the technology adopted.

In a conceptual paper, Shoemaker (2001) discusses the use of sales force information technology to enable relationships with customers. The paper develops a framework for examining the market relating capability of three areas of technology software, Customer Relation Management, Enterprise Resource Planning, and Knowledge Management, and provides examples of the adoption and use of these technologies for relationship management and development. The author provides substantial discussion of future research for each of the three of the framework.

Erffmeyer and Johnson (2001) investigated the adoption SFA information technologies. They defined SFA technologies broadly as “adding technology in the form of cell phones, faxes, portable computers, databases, the Internet, and electronic data interchange (EDI) systems to the sales process” (p. 168). Using personal interviews with managers responsible for SFA efforts, they researched the expectations, which motivate SFA decisions, the implementation of SFA technology, and the actual outcomes of the technology implementation. A majority of firms reported that increasing efficiency was the primary goal of automating the sales process, with management and the sales representatives the primary driving forces. Only 51% of respondents indicated improved efficiencies of their sales force as an outcome, although 80% noted improved access by the sales force to information and 65% noted improved

communication with customers. Surprisingly, 50% of the companies did not attempt to evaluate the outcomes of their SFA implementation.

Morgan and Inks (2001) conducted a study of sales force acceptance of sales force IT. They developed and investigated a model of four factors leading to sales force acceptance of the technology. The dependent variable, acceptance of SFA technology, was based on the scale developed by Rivers and Dart (1999). The findings indicate that sales people are more accepting of IT when they are assured of adequate training to learn how to use the new system through some type of formalized organization-sponsored training. Further, the sales people must believe that the benefits of training outweigh the cost of not being out in the field. Second, when sales people believe that they have influence in the implementation process, they are more accepting of the IT implementation. The third factor related to acceptance of IT by the sales force is the accuracy of sales force expectations of the benefits provided to them by the IT. When sales people perceive they know what to expect in terms of inputs and outcomes, they will have a greater acceptance.

In a recent study, Widmier, Jackson and Brown (2002) examined the use of sales force information technology by sales people and sales organizations. Using sales people as respondents, the study found increasing use of technology by sales organizations, with the use of technology most often initiated by the sales organization. Among the most frequent uses of the sales technology was contact management (84.6%), proposal generation ((81.9%), expense (66.5%) and sales call reports (63.8%), and multimedia presentations (61.7%). The study did not report the use of technology to

provide non-customer dimensions of market information (e.g. competitor activities) nor did the study investigate any consequences of sales technology use.

Other recent research has indicated that not all implementations of sales force technologies have positive outcomes. Speier and Venkatesh (2002), in a study of sales people in two firms, found that in some instances the use of a sales force automation system can result in absenteeism and turnover among sales people, as well as reductions in organizational commitment and job satisfaction. However, the study lacks external validity, having only examined two sales organizations. Further, there is little discussion of the impact of the brand-specific technology or firm incompetence with technology as cause of the negative consequences of the IT use. The key contribution of the Speier and Venkatesh paper is that when researchers examining organization level outcomes (e.g. profit) of IT use should not overlook potential employee level negative outcomes.

Adding to studies that investigated the use of sales force technology among sale people and sales organizations (e.g., Widmier, Jackson and Brown 2002; Rivers and Dart 1999), Jones, Sundaram and Chin (2002) investigated the factors that lead sales people to adopt and use the technologies. Building on the *Technology Acceptance Model* (Davis, Bagozzi and Warshaw 1989; Mathieson and Peacock 2001), the authors propose and test a number of factors that lead to sales person intention to use a new technology system in a national sales force. By collecting data before and after the implementation of a sales technology system, the authors were able to test pre-launch factors as well as pos-launch factors on the actual adoption and use. Their findings indicate differences in the antecedents of actual adoption and the intentions to adopt. An important finding is the attitudes toward the system have substantial impact on both the

intention to use and actual adoption. This finding supports the findings of Rivers and Dart (1999), which found a positive relationship between sales organizations attitude toward sales force automation technology and the actual adoption by the organization.

Perceived Importance of Sales Force Information Technology. The literature on use and adoption of sales force information technology indicates both a growing use and adoption of various technologies by sales organizations. The literature does not suggest any general measures of sales force technology adoptions, as the studies investigating adoption either focuses on a specific technology or on usage of a broad list of technologies. In studies looking to link use of sales force technology with organization outcomes, the primary problem is the limitation of measuring specific categories of technologies that may or may not be in use across a sample of sales organizations. Yet the findings of studies linking attitudes towards sales organization technology with adoption and use (Rivers and Dart 1999; Jones, Sundaram and Chin 2002), suggest that a measure of attitude toward sales force technologies might be useful as a substitute for measuring actual adoption and use. For this dissertation, an attitudinal measure of sales organizations' perceived importance of sales force technology will be used.

## Hypotheses

The research in the IT indicates has shown use of IT facilitates information processes such as the generation of information and effectiveness of employees in carrying out tasks. Research in sales has shown similar performance improvements for sales organizations. The attitude toward these information technologies is strongly

linked to information technology acquisition and use in organizations. Hence, it is likely that the attitude of a sales organization regarding the importance of sales force information technology, with its strong relationship to technology adoption and use, leads to improved sales force market information generation processes, and hence H1:

H1: Perceived importance of sales force information technology is positively related to sales force market information generation processes.

The literature on formalization of organizational activities, including formalization of sales related activities suggests that some formalization can result in performance improvements. Through formalization, a sales organization can better focus on the processes and information specified in the rules and procedures. The sales organization is then likely engage in market information generation processes when formalized processes are established.

H2: The formalization of sales force market information generation processes is positively related to sales force market information generation processes.

Marketing information acquired by the members of an organization's sales force through the market information generation processes cannot benefit the sales organization or the firm's other activities if others remain ignorant of the information. Information generated by the sales people must be made available to other functional areas of the firm in order for the information to be used in the development of competitive advantage (Maltz and Kohli 1996) and to enable the organization to adapt to market needs (Kohli and Jaworski 1990). The mixed results of the effect of market information on new product sales performance, along with the results of the Baker and

Sinkula (1999) study that found information dissemination to have a greater correlation with new product sales performance than does information generation on the new product sales performance, suggests that market information may have a position effect on sales performance but it may be mediated by market information transfer processes. Hence hypotheses three, four and five:

H3: Sales force market information generation processes are positively related to sales force market information transfer processes.

H4: Sales force market information transfer processes are positively related to sales performance.

H5: Sales force market information transfer processes mediate the relationship between sales force market information generation processes and sales performance

The inconsistent findings in previous research regarding the relationships of the dissemination of market information, use of market information and new product success suggests the possible presence of a moderating relationship. There is no assurance that market information transfer processes result in managers actually using the information. Higher levels of information transfer will only positively influence sales performance when that information is used. That is, the use of market information will moderate the impact of Information transfer processes on organizational sales performance. Hypothesis six reflects this moderating effect:



H6: The greater the use of sales force market information, the greater the positive relationship between market information transfer processes and sales performance.

### Summary

This chapter presented the conceptual model for this dissertation and provided a review of the literature of the variables in the model. Six hypotheses were developed. The next chapter presents the research methods used to collect the data and to test these hypotheses.

## CHAPTER III

### METHODOLOGY

#### Introduction

The purpose of this chapter is to describe the research methods used in this dissertation to test the relationships hypothesized in the preceding chapter. The chapter begins with a discussion of the research method, sample, and sampling method chosen for this study. The chapter then presents the measures for the constructs and other measures used in the study, and follows with a discussion of the survey instrument. The third part of the chapter provides the plan of analysis.

#### Research Method and Design

The research design chosen for this study is the survey method. The purpose of the survey is to collect data in order to test the hypotheses developed and presented in chapter two of the dissertation. The survey method is used for a number of reasons. First, it affords the respondents anonymity, as completed survey instruments will be void of respondent identification. Second, the survey method provides an efficient use of limited time and resources. Third, it enables the respondent the flexibility to complete the survey as his/her time allows. The survey method has been used in a number of

studies measuring some of the same variables used in this study as well as for collecting data from organizations and key informants as defined in this study (e.g., Baker and Sinkula 1999; Gordon, Schoenbachler, Kaminski and Brouchous 1997; Slater and Narver 2000; Troy, Szymanski and Varadarajan 2001). Given the benefits of using the survey method and the support for the method documented by studies focusing on the target population, the survey method is an appropriate choice for this dissertation.

### Sample

As this research is concerned with antecedents and consequences of information generation by the sales force, the population for this study is sales organizations of business-to-business firms. According to Richardson, Swan and McInnis-Bowers (1994), if the objective is to generalize across groups, then a heterogeneous sample needs to be chosen. As one objective of this study is to generalize the findings across a wide range of sales organizations, a heterogeneous sample representing a wide range of industries, firms and products will be selected.

The key informants targeted are sales managers, or those in similar positions, who have responsibility for managing the sales organization in their respective company. Researchers often have used sales organizations as populations and sales managers as key informants (e.g., Anderson, Chu and Weitz 1987; Dubinsky, Mehta and Anderson 2001, Rich 1999). Sales managers as key informants were chosen for this study because they are in a position that provides them the knowledge, ability and authority to complete the survey instrument.

## Sampling Frame

To generate the sampling frame for the study, contact information for 1,500 sales managers and sales organizations was acquired from two commercial list sources. Companies were included in the list if the SIC category or other business description of the business indicated the firm was manufacturing related or involved in marketing and selling products in a business to business environment. The list information includes company name, company size, industry, sales manager name, telephone numbers and the mailing address, and in some cases, the URL for the company web site.

## Sampling Procedure and Data Collection

One thousand names were randomly selected from the sampling frame. The study used two approaches to collect data. The primary method used for collecting data was to mail a questionnaire to potential respondents. A second method used involved first telephoning potential respondents and asking them to participate in the study before sending a questionnaire. For both methods, potential respondents were randomly selected from the list of sale organizations provided in the sampling frame. Seven hundred fifty were selected for mailing in the first method, the other 250 for telephoning.

In the first method, a cover letter and questionnaire were mailed to 714 potential respondents, with prepaid return envelopes provided. The cover letter explained the purpose of the study and encouraged the respondents to complete and return the questionnaire. A follow-up postcard reminding respondents to complete the questionnaire was mailed about three weeks after the initial mailing. Seventeen mailed

questionnaires were returned for wrong addresses/contact information, and the researcher received two phone calls from people who politely explained that their firm did not have any type of sales organization. Assuming all of the other questionnaires reached their target, there were a net 695 potential respondents to the mail survey.

The primary problem found when using the phone method was the inability to reach respondents. A vast majority of the time the researcher was only able to reach the voicemail of the respondent. Despite the size of the list of potential contacts for contacting by telephone, only 48 were actually contacted by phone, and of them 26 qualified and agreed to complete the survey instrument. All qualified respondents were then mailed or faxed the survey instrument. In a four cases the respondent requested the questionnaire be sent as an email attachment. Respondents were able to return completed questionnaires by fax, mail or email. As a result of the small number of sales managers agreeing to complete the questionnaire, a vast majority of respondents originated from the mail method.

One hundred and eleven responses were received before the cut-off date (four have been received since then), eleven of which were sent via fax or email. Of the 100 returned via postal mail, eight envelopes were either empty or contained a blank questionnaire, leaving total useable mail responses of 92 and total responses of 103. The net response rate for the mail method was 13%. The gross response rate for the phone method was 23% and the net response (of those qualifying and agreeing to complete the questionnaire) was 42%. The overall response rate was 14%.

It is important that respondent anonymity and confidentiality were protected. To do this, the following steps were taken. When completed questionnaires included

respondent contact information, the contact information of respondents was separated from completed questionnaires and placed in a separate secure folder. Next, the questionnaires were coded with a reference number to indicate the order in which they were received and to enable reference to the specific questionnaire. The reference number was not associated with the respondent or respondent firm. Any other identifying marks on the completed questionnaire (e.g., faxed items often have a sending number printed at the top or bottom of the page) were removed. For completed surveys returned by mail, any firm-identifying material is segregated from the questionnaire itself and destroyed or placed in the secure folder. Questionnaires returned by other means were also segregated from their source. By following these procedures, all returned questionnaires were free of any respondent identifying information, thus ensuring respondent confidentiality and anonymity.

### Nonresponse Bias

In survey research it is rare for all survey forms to be returned. Those who receive a questionnaire but do not complete it or return it are referred to as non-respondents. Nonresponse error is the statistical difference between a survey that includes only those who responded and a perfect survey that would also include those who failed to respond (Zikmund 2000). The error, or bias, results when those not returning the survey might respond differently than those who do return the survey instrument. Nonresponse bias results in a data set that is not representative of the population being studied, with possible consequences of flawed data analysis and findings.

There are two primary sources of nonresponse bias—not-at-homes and refusals (Churchill 1999). Not-at-home refers to subjects who are not in home (in this dissertation, in the office at their place of work) when called. Callbacks are used to contact these subjects. When possible, an appointment is made for a specified contact time. Refusals refer to respondents who simply refuse to participate in the study. Reasons for refusal may range from “too busy” to “it is against company policy”. Often, no explanation is provided at all. A number of techniques were done in this dissertation to minimize refusals: Contacting potential respondents by phone qualifying the respondent before sending the questionnaire and asking for participation; use of a cover letter which fully explains the value and importance of the research to the field of sales management; a guarantee that all replies will be held in confidence; and a follow-up reminder card encouraging completion and return of the questionnaire.

One method used by researchers to estimate nonresponse bias involves the notion that late respondents are similar to those who do not respond at all. Nonresponse bias is estimated by measuring differences between early respondents and late respondents (Armstrong and Overton 1977). A second technique involves persuading a sample of non-respondents to answer a reduced set of questions so that their responses can be compared to the original respondents. Differences may indicate the levels of response bias.

In this study, the two sub-samples were examined independently for response bias. Late respondents—those returning the questionnaires after being reminded to do so — were compared to early respondents using t-tests. Table 1 presents the results of the tests for the early/late respondents, and results indicate that nonresponse is not likely

to be a problem. A second nonresponse bias test was conducted by selecting the respondents from the second sampling group (telephone) and comparing their response other respondents using t-tests. These two groups were examined for differing response means on the key variables in the conceptual model of the study. As can be seen in Table 2, there are no significant differences in the responses of the two groups. Hence, like the first set of t-tests, the analysis of respondents from the different sampling methods supports the premise that nonresponse error is not a problem in this study.

TABLE 1  
NONRESPONSE BIAS ESTIMATION:  
COMPARISON OF EARLY RESPONDENTS TO LATE RESPONDENTS

Variable	Mean		<i>p</i> -value
	<u>Early Respondents</u>	<u>Late Respondents</u>	
	<u>n = 92</u>	<u>n = 10</u>	
SFMIG	4.811	4.62	.567
MITP	4.82	4.65	.637
FSFIGP	4.24	3.83	.352
USFMI	4.58	4.08	.150
PISFIT	5.34	5.21	.681
SUP1	4.78	5.08	.444
SUP2	4.75	5.25	.249



TABLE 2  
NONRESPONSE BIAS ESTIMATION:  
COMPARISON OF MAIL RESPONDENTS TO PHONE RESPONDENTS

Variable	Mean		<i>p</i> -value
	<u>Mail Respondents</u>	<u>Phone Respondents</u>	
	<u>n = 90</u>	<u>n = 12</u>	
SFMIG	4.83	4.45	.285
MITP	4.83	4.53	.428
FSFIGP	4.24	3.77	.329
USFMI	4.58	4.00	.122
PISFIT	5.34	5.24	.782
SUP1	4.81	5.80	.976
SUP2	4.84	4.60	.616

### Measures

The measurement scales used in this dissertation for the primary constructs proposed in the model are measurement scales that have been used and verified in previous research. This section provides a discussion of each of the measures and includes information about the source scale as well as any adaptation of the scale employed for this study. Items for the scales used in this dissertation are presented in figures throughout the section.

In any research study there are other possible influences on the study's dependent variables. In this study, a number of control variables that may be

antecedents to sales performance have been included, including market turbulence, competitive intensity, technological turbulence (Jaworski and Kohli 1993), market uncertainty (John and Weitz 1989), and company size (total sales and size of sales force). Possible control variables for other constructs in the model include length of time information generation policies have been in place, investments in sales force information technology, perceived information quality, and company size.

A table is provided in the appendices which details the original scales items and the items used in this dissertation.

### Sales Performance

The dependent variable in the model is sales performance. In chapter two, sales performance was defined as the extent to which the organization achieves sales relative to some performance objective. This dissertation uses a measure adapted from scale used by Moorman (1995) and Baker and Sinkula (1999). Moorman's original measures focused on the performance of a new product relative to performance objectives. Item four is adapted directly from Sinkula and Baker (1999). The sales performance measures for this study are adapted to reflect general sales organization performance, although they are measures of overall firm performance.

FIGURE 2  
SALES PERFORMANCE ITEMS

---

Please rate the extent to which your sales organization has achieved the following outcomes for the past **12 months**:

1. Achieved market share relative to its stated objectives.
  2. Achieved unit sales volume relative to its stated objective.
  3. Achieved profit margin relative to its stated objective.
  4. Change in market share relative to key competitors.
  5. Unit sales volume relative to key competitors.
  6. Profit margin relative to key competitors.
- 

Sales Force Market Information Generation Processes

In chapter two, sales force market information generation is defined as the acquisition and collection of information about customers, competitors, and other stakeholders and actors in an organization's external environment. The construct is operationalized using a scale developed by Jaworski and Kohli (1993), a scale that has widely been used by academic researchers (e.g., Atuahene-Gima and Ko 2001; Baker and Sinkula 1999). The market information generation scale is used with minor adaptation. The changes essentially reflect the target population and key informant and do not affect the fundamental nature of the measure.

## Sales Force Market Information Transfer Processes

In chapter two, sales force market information transfer processes is defined as the processes through which market information is transferred to relevant functions within an organization. Various measures of Information transfer processes have been developed and used by marketing researchers (e.g. Moorman 1995; Maltz and Kohli 1996; Fisher, Maltz, and Jaworski 1997; Sinkula, Baker, and Noordewier 1997; Atuahene-Gima and Ko 2001). A widely accepted measure of Information transfer processes in the marketing literature is the measure developed by Jaworski and Kohli (1993). Given the empirical support of this measure and fit it provides for this study, this dissertation uses this scale, with an additional item from Moorman (1995) added as the eighth item, to operationalize sales force market information transfer processes. As with the information generation measure, the only changes to the measures simply reflect the target population. The eight items of the measure are presented in Figure 4.

FIGURE 3

SALES FORCE MARKET INFORMATION GENERATION PROCESSES ITEMS

---

1. Our sales people meet with customers at least once a year to find out what products or services they will need in the future.
  2. Our sales people do a lot of in-house market research.
  3. Our sales people are quick to detect changes in our customers' product preferences.
  4. Our sales people poll end users at least once a year to assess the quality of our products and services.
  5. Our sales people often talk with or survey those who can influence our end users' purchases (e.g., retailers, distributors).
  6. Our sales people also collect industry information through informal means (e.g., lunch with industry friends; talks with trade partners).
  7. Our sales people are quick to detect fundamental shifts in our industry (e.g., competition, technology, regulation).
  8. Our sales people periodically review the likely effect of changes in our business environment (e.g., regulation) on customers.
-

## FIGURE 4

### SALES FORCE MARKET INFORMATION TRANSFER PROCESSES

---

1. Our sales department participates in interdepartmental meetings at least once a quarter to discuss market trends and developments
  2. Sales personnel in our business unit spend time discussing customer's future needs with other functional departments.
  3. Our sales department periodically circulates documents (e.g. reports, newsletters) that provide information on our customers.
  4. When something important happens to a major customer or market, the whole business unit knows about it in a short period.
  5. Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.
  6. When one unit of our sales department finds out something about competitors, it is quick to alert other sales units.
  7. There is substantial communication between sales and manufacturing departments concerning market developments.
  8. We have processes for sharing information effectively within the sales organization.
-

### Use of Sales Force Market Information

In Chapter two, the use of sales force market information is defined as the extent to which the receiver uses the information disseminated by the sales force to understand his or her work environment, and to make and implement decisions. Moorman (1995) used a scale originally developed Deshpande, Farley and Webster (1993) on the individual manager use of information. Adapting the scale for use in this dissertation only required slight rewording of the measures to assure a focus on information received from the sales organization. Moorman reported a coefficient alpha of .81 for this measure which included ten items in her study. One item which referred to actually conducting marketing research was not used for this study because it is not related to use of information provided by others. The nine items used in the study are presented in Figure 5.

### Formalization of Sales Force Market Information Generation

In chapter two the formalization of sales force market information generation processes is defined as rules and procedures established by the organization that specifically governs the market information generation activities of members of the organization's sales force. The formalization scale used for this study is adapted from a formalization scale used by Ayers, Dahlstrom & Skinner (1997). Only slight wording changes are used to focus the formalization on sales force market information generation.

## FIGURE 5

### USE OF SALES FORCE MARKET INFORMATION

---

1. Market information provided by the sales force enriched my basic understanding of the market.
  2. The way I thought about the market would have been very different without the information provided by the sales force.
  3. I thought about the available market information provided by the sales force for a long time.
  4. The market information provided by the sales force reduced my uncertainty about our markets.
  5. The market information provided by the sales force helped me identify aspects of our markets that otherwise would have gone unnoticed.
  6. My ability to make decisions would have been diminished without market information from members of the sales organization.
  7. My decisions really did not require the market information provided by the sales force.
  8. I used market information provided by the sales force to make specific decisions for new product sales efforts.
  9. Without the market information from the sales organization, my decisions would have been very different. (Reverse Coded)
-



FIGURE 6  
FORMALIZATION OF SALES FORCE MARKET  
INFORMATION GENERATION PROCESSES

---

1. The responsibilities of salespeople regarding the collection of information about customers are clearly defined.
  2. The responsibilities of salespeople regarding the collection of information about competitor activities are clearly defined.
  3. Our salespeople know their role in collecting and reporting information about the market(s) they serve.
  4. Management has clearly outlined the salespeople's responsibilities for collecting information about our customers' product needs.
  5. The salespeople in this organization are pretty much on their own regarding what information they collect about their customers and markets. (Reverse Coded)
- 

Perceived Importance of Sales Force Information Technology

In chapter two the perceived importance of sales force information technology is defined as the respondent's attitude or predisposition toward sales force information technology. The construct is operationalized using a scale developed by Rivers and Dart (1999). There are ten items in the scale. Rivers and Dart reported a reliability estimate of  $\alpha = .87$ . While Rivers and Dart use a 5-point semantic differential scale, this dissertation uses a seven-point semantic differential scale. Items were slightly reworded

from the original scale to improve clarity of the items. Scale items are presented in Figure 7.

FIGURE 7

PERCEIVED IMPORTANCE OF SALES FORCE INFORMATION TECHNOLOGY

---

1. Required little investment.....	Required high investment
2. Has small impact on sales efficiencies...	Has large impact on sales efficiencies Has major organizational Impact
3. Has minor organizational impact.....	Required long-term commitment
4. Required short-term commitment.....	
5. Has little potential effect on profitability .....	Has large potential effect on profitability Is extremely important
6. Is of little importance.....	Is highly relevant to business
7. Is of little relevance to business.....	Is well worth the trouble
8. Is more trouble than it is worth.....	Helps get things done quicker
9. Takes longer getting things done.....	Is essential for competitive reasons
10. Is not necessary for competitive reasons	

---

Demographic Measures

Items are included in the survey to collect demographic information about both the respondent and the respondent firm. Company items include size of field sales force,

company sales volume, company industry, average annual cost to support one sales representative, and form of sales person compensation. Respondent demographic items include job title, number of years in selling, number of years in current position, number of years in sales management, and gender. This data is used primarily for classification purposes, and secondarily, as possible control variables in the statistical analysis.

### Other Measures

In addition to the previously listed variables, other variables will be measured as control variables. The variables included are market turbulence, competitive intensity, market uncertainty, and information quality. Market turbulence refers to “the rate of change in the composition of customers and their preferences” (Jaworski and Kohli 1993 p. 57). According to Jaworski and Kohli, markets that are more turbulent are likely to result in continual modifications of products, resulting in higher levels of generation and dissemination of market information. In this dissertation, Jaworski and Kohli’s five-item (initially six items, but they subsequently eliminated one item) measure of market turbulence is used.

Competitive intensity has been found to reduce new product performance (Cooper 1984; Narver and Slater 1990). Recent studies including competitive intensity include Ayers, Dahlstrom, and Skinner (1997), Gatignon and Xuereb (1997), and Moorman (1995). Following other researchers (e.g. Moorman 1995), this dissertation uses Jaworski and Kohli’s (1993) six-item measure of competitive intensity. Figure 8 lists the items for market turbulence and Figure 9 lists the items for competitive intensity.

## FIGURE 8

### MARKET TURBULENCE

---

1. In our kind of business, customers' product preferences change quite a bit over time.
  2. Our customers tend to look for new products all the time.
  3. We are witnessing demand for our products and services from customers who never bought them before.
  4. New customers tend to have product-related needs that are different from those of or existing customers.
  5. We cater to many of the same customers that we used to in the past. (Reverse scored)
- 

## FIGURE 9

### COMPETITIVE INTENSITY

---

1. Competition in our industry is cutthroat.
  2. There are many "promotion wars" in our industry.
  3. Anything that one competitor can offer, others can match readily.
  4. Price competition is a hallmark of our industry.
  5. One hears of a new competitive move almost every day.
  6. Our competitors are relatively weak. (Reverse scored)
-

Market Uncertainty is a measure designed to measure “uncertainty in a firm’s environment by assessing stability in sales and forecasting accuracy” (John and Weitz 1989, p.7). A seven-point semantic differential was used. The items as used in this dissertation are essentially the same as used in the original study and are presented in Figure 10. John and Weitz reported a reliability coefficient estimate of  $\alpha = .65$

FIGURE 10  
MARKET UNCERTAINTY

---

1. Stable industry volume.....	Volatile industry volume
2. Sales forecasts are quite accurate.....	Sales forecasts are quite inaccurate
3. Sales forecasts are predicable.....	Sales forecasts are unpredictable

---

Perceived information quality refers to the “extent to which a person perceives the market intelligence received from a sender as being accurate, relevant, clear, and timely” (Maltz and Kohli 1996). In this study, the perceived information quality specifically refers to the market information received by the sales manager from members of the sales organization. The original Maltz and Kohli scale consisted of 13 items and covered the four dimensions of accuracy, relevance, clarity and timeliness. The alpha reported on the scale in their study was  $\alpha = .86$ . The scale adapted for use in this dissertation uses six items covering the first two dimensions, accuracy and relevance. The clarity and timeliness items from the original scale were not adaptable to

the present study investigating the perceived quality of information received from a large number of senders. Figure 11 provides the items used in this study. The first three items refer to the accuracy of information and the latter three the relevance of the information.

FIGURE 11

PERCEIVED INFORMATION QUALITY

- 
1. The market information provided to me by the sales force lacked objectivity.  
(Reverse scored)
  2. The sales force provided valid estimates of the market potential for our products.
  3. The market information provided by the sales force was accurate.
  4. The sales force communicated important details about customer needs.
  5. The sales force provided the data necessary to estimate the size of the market for our products.
  6. The sales force sent me relevant information.
- 

Survey Instrument

The survey instrument used in the dissertation is four pages long and has 112 total items requiring a response, including the demographic information requested. Pretests were conducted using sales managers who were willing to complete the questionnaire and provide feedback about their experiences as well as about any

questions or concerns they had while completing the instrument. The results of the pretest indicated that the questionnaire was performing as designed. Only minor revision to the instrument was required.

A cover letter was written to accompany the survey questionnaire. Copies of the letter and the survey questionnaire are included in the appendix of this dissertation.

### Analysis of the Data

The analysis of the data involves a number of sequential steps. First, the completed survey instruments returned by respondents were examined to ensure that they are complete and consistent. Examination involves a visual inspection of responses to check for missing data, duplicate responses, patterned responses and other problems with the completed questionnaires. Second, the completed survey instruments are coded for data entry. Coding involves the identifying and classification of each survey response with a numerical score or other character to facilitate transfer of the data to a computer database. In addition to coding all of the response items in the questionnaire, coding was included for the date the completed questionnaire was returned by using the cancellation date on the return envelope. Also, each questionnaire returned is numbered – this index number enables the research analyst to double-check that the information in the database matches the actual responses on the questionnaires. The questionnaire data was then entered into a database using this coding. Once in the computer database, the data was analyzed using Microsoft Excel<sup>®</sup> and SPSS<sup>®</sup> 12.0. Microsoft Excel<sup>®</sup> is primarily used building the database and basic examination of the data. SPSS<sup>®</sup> is the

primary statistical software tool used in the data analysis and is used for data examination, exploratory factor analysis and regression analysis.

### Regression Analysis

Regression analysis is used to test the hypotheses proposed in chapter two of the dissertation. All of the variables in the model are metric measures, and regression analysis is an appropriate statistical technique to analyze the relationship between a single dependent variable and several independent variables (Hair, Anderson, Tatham and Black 1998). Regression analysis also allows for the introduction of control variables into the model.

Regression analysis is also an appropriate tool to analyze the effects of the moderator variable proposed in the model (Sharma, Durand and Gur-Arie 1981). To test the moderation hypothesized in hypothesis two, moderated regression is used. The procedures follow the recommendations of Baron and Kenny (1986), Sharma, Durand and Gur-Arie (1981) and Aiken and West (1991).

### Summary

This chapter discussed the research plan and methods used to gather the data for testing the hypotheses proposed in chapter II. Measurement scales for the primary, the control variables were discussed, and the specific measurement scale items were provided. The chapter also briefly described the statistical analysis to be used to test the hypotheses.



The next chapter, Chapter IV, provides a detailed discussion of the analysis of the data, including data examination for the assessment of the data on issues such as missing data, outliers, normality, and homoscedasticity. Data examination ensures that the data meets the statistical assumptions underlying the use of the statistical analysis techniques used for testing the hypotheses. The remainder of Chapter IV provides the statistical analysis used to test the hypotheses proposed in chapter II. Following Chapter IV, Chapter V provides a discussion of the study and the results of the analysis.

## CHAPTER IV

### RESEARCH FINDINGS

This chapter presents the empirical results of the analysis used to test the proposed hypotheses presented in the conceptual model. The first section provides an analysis of the measurement scales used for the constructs in the model, including exploratory factor analysis, reliability analysis and confirmatory factor analysis for each of the measures. The second section provides the results of the regression analyses used to test the hypotheses.

#### Examination of the Data

Before commencing with analysis of the data, the data was examined for missing data, outliers, heteroscasticity, and normality. Missing data can be a problem if the missing data is not randomly distributed across cases and variables (Hair, Anderson, Tatham and Black, 1998) or if there is a substantial amount of missing data. Fortunately, there was very little missing data and a visual examination of the data set indicated that missing data was not a problem across cases. However, one case was eliminated due to an extreme amount of missing data – the entire second half of the questionnaire was missing data. Test for outliers, heteroscasticity and normality were also conducted. Residual plots did show outliers for different variable, however there

was little consistency as to which cases were outliers. Further examination of the response patterns in the questionnaires of the possible outliers found no inconsistencies in responses; hence no cases were eliminated from the data set. Normal probability plots indicated there was not a problem with normality, and variance inflation factor and tolerance tests indicated there were no problems with heteroscasticity.

### Measurement Scales

The measurement scales used in the study as proposed in Chapter III were first analyzed using exploratory factor analysis to examine the factor loadings and identify items with cross loadings. After the elimination of problem items, the remaining items were examined for an estimation of the scale reliability. Each of the variables is discussed next, and the exploratory factor analyses and reliability analyses results are presented in both discussion and table format.

Formalization of Sales Force Market Information Generation Processes (FSFIGP), Perceived Importance of Sales Force Information Technology (PISFIT), and Sales Force Market Information Generation Processes (SFMIG) were factor analyzed together to identify items loading on unique factors: Results of the factor analysis are presented in Table 4. Sales force market information generation processes was also included in the exploratory factor analysis of market information transfer processes and use of sales force market information. Results of that analysis are presented in Table 8. The tables reporting factor analyses results include the variable name, variable item number and the item factor loading. The items are presented in later tables with the scale statistics.

TABLE 3  
FACTOR LOADINGS FOR SFMIG, FSFIGP AND PISFIT

<u>Variable</u>	<u>Item</u>	<u>Factor Loadings</u>
SFMIG	3	.827
	7	.870
FSFIGP	1	.912
	2	.904
	3	.876
	4	.874
PISFIT	2	.689
	5	.709
	6	.843
	7	.871
	8	.840
	9	.687
	10	.759

*Absolute values less than .3 suppressed*

Formalization of Sales Force Market Information Generation Processes

As can be seen in Table 3, there are four items loading on the formalization of sales force market information generation processes scale. One item from the original five-item FSFIGP scale was eliminated due to cross-loading with the other factors. The factor loadings for FSFIGP are presented in Table 3. The reliability coefficient alpha

measure for the four item FSFIGP scale is  $\alpha = .928$ . The scale items and item-to-total correlations of the FSFIGP scale are presented in table 4.

TABLE 4  
 FORMALIZATION OF SALES FORCE MARKET  
 INFORMATION GENERATION PROCESSES  
 COEFFICIENT ALPHA AND ITEM-TO-TOTAL CORRELATIONS

FSFIGP: Coefficient alpha = .928	Item-To-Total <u>Correlation</u>
1. The responsibilities of sales people regarding the collection of information about customers are clearly defined.	.853
2. The responsibilities of sales people regarding the collection of information about competitor activities are clearly defined.	.867
3. Our sales people know their role in collecting and reporting information about the market(s) they serve.	.819
4. Management has clearly outlined the sales peoples' responsibilities for collecting information about customers' product needs.	.792

Perceived Importance of Sales Force Information Technology

The scale for perceived importance of sales force information technology (PISFIT) was included in the factor analysis with FSFIG and SFMIG as presented in Table 7. Of the original ten items in the scales, seven items remained after eliminating items with high cross-loadings. The coefficient alpha for the remaining seven items of

the PISFIT scale is  $\alpha = .895$ . The scale items and item-to-total correlations of the PISFIT scale are presented in Table 5.

TABLE 5  
PERCEIVED IMPORTANCE OF SALES FORCE INFORMATION TECHNOLOGY  
COEFFICIENT ALPHA AND ITEM-TO-TOTAL CORRELATIONS

PISFIT: Coefficient alpha = .895	Item–To–Total <u>Correlation</u>
2. Has small impact on sales efficiencies/has large impact on sales efficiencies.	.653
5. Has little potential effect on profitability/has large potential effect on profitability.	.604
6. Is of little importance/is extremely important.	.780
7. Is of little relevance to business/is highly relevant to business.	.799
8. Is more trouble than its worth/is well worth the trouble.	.768
9. Takes longer getting things done/helps get things done quicker.	.618
10. Is not necessary for competitive reasons/is essential for competitive reasons	.667

#### Sales Force Market Information Generation Processes

The scale for SFMIG was included in the factor analysis with FSFIG and PISFIT as presented in Table 6. Because of problems with cross-loadings with other factors or low scale reliability when additional items are present, the initial eight items in the SFMIG scale is reduced to two items. Similar results were found with the SFMIG items

in the factor analysis which included the SFMIG items with the MITP and USFMI construct items. The Cronbach alpha of the two-item SFMIG scale is  $\alpha=.712$ . The scale items and item-to-total correlations of the SFMIG scale are presented in Table 6.

TABLE 6  
SALES FORCE MARKET INFORMATION GENERATION PROCESSES  
COEFFICIENT ALPHA AND ITEM-TO-TOTAL CORRELATIONS

<u>Scale Item:</u>	<u>Item-To-Total Correlation</u>
SFMIG: Coefficient alpha = .712	
3. Our sales people are quick to detect changes in our customers' product preferences.	.555
7. Our sale people are quick to detect fundamental shifts in our industry.	.555

Market Information Transfer Processes

The scale items for Market Information Transfer Processes (MITP) were also subjected to analysis using factor analysis and reliability testing. Factor analysis of the MITP items, SFMIG items and USFMI items resulted in seven of the original eight items remaining in the measure. The reliability of the seven item MITP scale is coefficient  $\alpha = .843$ . The scale items and item-to-total correlations of the for the MITP scale are presented in Table 7.

TABLE 7  
 MARKET INFORMATION TRANSFER PROCESSES  
 COEFFICIENT ALPHA AND ITEM-TO-TOTAL CORRELATIONS

<u>Scale Item:</u>	<u>Item-To-Total Correlation</u>
MITP: Coefficient alpha = .843	
1. Our sales department participates in departmental meetings at least once a quarter to discuss market trends and developments.	.562
2. Sales personnel in our business unit spend time discussing customer's future needs with other functional departments.	.649
3. Our sales department periodically circulates documents (e.g. reports, newsletters) that provide information on our customers.	.575
4. When something important happens to a major customer or market, the whole business unit knows about it in a short period.	.470
5. Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.	.577
7. There is substantial communication between various units in our sale organization concerning market developments.	.682
8. We have processes for sharing information effectively within the sales organization.	.737



TABLE 8  
 FACTOR LOADINGS FOR SFMIG, MITP AND USFMI

<u>Variable</u>	<u>Item</u>	<u>Factor Loadings</u>
SFMIG	3	.850
	7	.854
MITP	1	.662
	2	.728
	3	.716
	4	.603
	5	.694
	7	.753
	8	.789
USFMI	5	.810
	6	.809
	7	.657
	8	.748
	9	.774

*Absolute values less than .3 suppressed*

Use of Sales Force Market Information

Use of sales force market information (USFMI) was factor analyzed along with two other measures, sales force market information generation (SFMIG) and market

information transfer processes (MITP). The factor loadings for the measures are presented in Table 9. As with the other measures, some USFMI items were discarded due to cross-loadings with other factors. The reliability coefficient alpha of the five item USFMI scale is  $\alpha = .835$ . The scale items and item-to-total correlations of the USFMI scale are presented in Table 9.

TABLE 9  
USE OF SALES FORCE MARKET INFORMATION  
COEFFICIENT ALPHA AND ITEM-TO-TOTAL CORRELATIONS

USFMI: Coefficient alpha = .835 <u>Scale Item:</u>	<u>Item–To–Total Correlation</u>
5. The market information provided by the sales force helped me identify aspects of our markets that otherwise would have gone unnoticed.	.557
6. My ability to make decisions would have been diminished without market information from members of the sales organization.	.568
7. My decisions really did not require the market information provided by the sales force (reverse scored).	.258
8. I used market information provided by the sales force to make specific decisions for new product sales efforts.	.459
9. Without the market information from the sales organization, my decisions would have been very different.	.497

## Sales Performance

Six items were used to measure sales organization performance and are listed in Table 10. Although the items have been used in previous studies as a composite scales (e.g., Moorman 1995), the items are separate indicators of performance and are accordingly not treated as a composite measure in this dissertation. Table 10 lists the items along with their mean and standard deviation. In the hypothesis test section, each measure is considered individually as dependent variables.

TABLE 10  
SALES PERFORMANCE  
ITEMS, MEANS AND STANDARD DEVIATIONS

---

Please rate the extent that your sales organization has achieved the following outcomes for the past 12 months.	<u>Mean:</u>	<u>St.D.</u>
1. Achieved market share relative to its stated objective.	4.81	1.295
2. Achieved unit sales volume relative to its stated objective.	4.81	1.398
3. Achieved profit margin relative to its stated objective.	4.68	1.413
4. Change in market share relative to key competitors.	4.83	1.207
5. Unit sales volume relative to key competitors.	4.80	1.146
6. Profit margin relative to key competitors.	4.85	1.138

---

## Control Variables

Data for four control variable scales were collected: Market turbulence, market uncertainty, competitive intensity and perceived information quality. Given their similarity, the first three were factored together. The results of the exploratory factor analysis are presented in Table 11. Reliability analysis showed a low alpha,  $\alpha = .540$  and hence was not used in later analysis. For the competitive intensity measure, four of the six items were used in the analysis, with a reliability coefficient of  $\alpha = .714$ . All three of the original market uncertainty items remained after factor and reliability analysis. The reliability coefficient alpha of the market uncertainty measure is  $\alpha = .722$ . The scale information for the competitive intensity and market uncertainty is presented in Table 12.

The measure for perceived information quality as adapted from extant literature included two dimensions, perceived information accuracy and perceived information relevance. Exploratory factor analysis only indicated one factor from five of the original six items. The items, their factor loadings and item-to-total correlations are presented in Table 12.

TABLE 11  
 FACTOR LOADINGS FOR  
 MARKET RELATED CONTROL VARIABLES

Market Turbulence	.539		
	.760		
	.781		
Competitive Intensity	.798		
	.744		
	.684	-.351	
	.694		
Market Uncertainty		.615	
		.876	
		.898	

*Absolute values less than .3 suppressed*

#### Descriptive Statistics

Table 13 provides a summary of the variables used in the study, including number of items for each variable, means, standard deviations, ranges, minimum and maximum values. In Table 14 a correlation matrix of the variables is shown. All of the measures use seven-point scales. As can be seen in Table 13, most of the variables have means which are slightly higher than the mid-point of the scale (4), including the performance measures, although the range and minimum and maximum statistics indicate that the entire range of the scale is used.

TABLE 12  
CONTROL VARIABLES  
COEFFICIENT ALPHA AND ITEM-TO-TOTAL CORRELATIONS

	<u>Item-To-Total Correlation</u>
Market Turbulence: $\alpha = .540$	
1. In our kind of business, customers' product preferences change quite a bit over time	.298
3. We are witnessing demand for our products and services from customers who never bought them before.	.359
4. New customers tend to have product-related needs that are different from those of our existing customers.	.400
Competitive Intensity: $\alpha = .714$	
1. Competition in our industry is cut-throat.	.627
2. There are many 'promotion wars' in our industry.	.513
3. In our industry, anything that one competitor can offer, others can match readily.	.463
4. Price competition is a hallmark of our industry.	.424
Market Uncertainty: $\alpha = .722$	
1. Stable industry volume/volatile industry volume.	.429
2. Sales forecasts are quite accurate/sales forecasts are quite inaccurate.	.576
3. Sales forecasts are predictable/sales forecasts are unpredictable.	.671
Perceived Information Quality: $\alpha = .879$	
2. The sales force provided valid estimates of the market potential for our products.	.748
3. The market information provided by the sales force was accurate.	.724
4. The sales force communicated important details about customer needs.	.587
5. The sales force provided the data necessary to estimate the size of the market for our products.	.713
6. The sales force sent me relevant information.	.787

TABLE 13  
 DESCRIPTIVE STATISTICS  
 FOR VARIABLES USED IN ANALYSIS

	No. of Items	Range	Minimum	Maximum	Mean	Std. Deviation
PISFIT	7	5.14	1.86	7	5.332	1.047
FSFIGP	4	6	1	7	4.199	1.439
SFMIG	2	6	1	7	4.789	1.052
MITP	7	6	1	7	4.801	1.140
USFMI	5	5.60	1.40	7	4.524	1.124
CI	4	4.50	2.50	7	4.721	1.115
MU	3	5.67	1.33	7	4.107	1.284
PIQ	5	6	1	7	4.363	0.996
SUP1	1	5	2	7	4.812	1.302
SUP2	1	6	1	7	4.812	1.398
SUP3	1	6	1	7	4.680	1.413
SUP4	1	5	2	7	4.830	1.207
SUP5	1	5	2	7	4.800	1.146
SUP6	1	5	2	7	4.848	1.155

TABLE 14  
CORRELATION MATRIX OF VARIABLES

	PISFIT	FSFIGP	SFMIG	MITP	USFMI	CI	MU	PIQ
PISFIT	-							
FSFIGP	0.26	-						
SFMIG	0.23	0.32	-					
MITP	0.34	0.58	0.29	-				
USFMI	0.34	0.36	0.24	0.37	-			
CI	0.11	0.08	0.02	0.03	-0.16	-		
MU	-0.01	-0.04	0.02	-0.21	0.07	0.18	-	
PIQ	0.27	0.54	0.39	0.57	0.54	0.09	0.00	-
SUP1	0.12	0.11	0.21	0.35	0.10	0.08	-0.13	0.29
SUP2	0.07	0.15	0.19	0.32	0.17	0.00	-0.24	0.29
SUP3	0.18	0.04	0.09	0.21	0.29	-0.10	-0.29	0.16
SUP4	0.15	0.14	0.20	0.34	0.16	0.01	-0.17	0.26
SUP5	0.17	0.25	0.21	0.31	0.22	-0.03	-0.09	0.29
SUP6	0.18	0.17	0.18	0.10	0.14	0.05	-0.02	0.19
	SUP1	SUP2	SUP3	SUP4	SUP5	SUP6		
SUP1	-							
SUP2	0.76	-						
SUP3	0.24	0.31	-					
SUP4	0.52	0.42	0.33	-				
SUP5	0.51	0.38	0.24	0.84	1			
SUP6	0.18	0.07	0.51	0.51	0.54	-		



## Hypotheses Tests

The hypotheses of the conceptual model proposed in chapter two of the study are analyzed using regression analysis. Given the nature of the conceptual model, separate regression models are used to test the different hypotheses.

### Hypotheses

The hypotheses proposed in chapter two are:

- H1: Perceived importance of sales force information technology is positively related to sales force market information generation processes.
- H2: The formalization of sales force market information generation processes is positively related to sales force market information generation processes.
- H3: Sales force market information generation processes are positively related to sales force market information transfer processes.
- H4: Sales force market information transfer processes are positively related to sales performance.
- H5: Sales force market information transfer processes mediate the relationship between sales force market information generation processes and sales performance
- H6: The greater the use of sales force market information, the greater the positive relationship between sales force market information transfer processes and sales performance.

### Hypotheses 1 and 2:

The first regression model tests the effects of perceived importance of sales force information technology (PISFIT) and formalization of sales force market information generation processes (FSFIGP) on sales force market information generation processes. As shown in Table 15, the overall regression model is significant ( $F = 7.210; p < .05$ ) with an R-square indicating that 12.7% of the variance in the relationship is explained by the model. However, the PISFIT component of the model was marginally significant as indicated by its unstandardized beta coefficient of .164 ( $t = 1.676, p = .097$ ), implying marginal support for H1. The FSFIGP component of the model is significant, with a beta coefficient of .203 ( $t = 2.857, p < .05$ ), meaning that H2 is supported. When the model includes the control variables of market uncertainty and competitive intensity, there is little change in the coefficients and significance levels of the model variables and the coefficients of the control variables in the regression model are not significant. The regression model data shown in Table 15 does not include the non-significant control variables.

TABLE 15  
REGRESSION ANALYSIS OF  
PERCEIVED IMPORTANCE OF SALES FORCE INFORMATION  
TECHNOLOGY AND FORMALIZATION OF SALES FORCE MARKET  
INFORMATION GENERATION PROCESSES  
WITH SALES FORCE MARKET INFORMATION GENERATION

	Variable	Expected Sign	Coefficient beta	t	p
H1	PISFIT	+	.164	1.676	.097
H2	FSFIGP	+	.203	2.857	.005
Model F	= 7.210				
Prob. F	= .001				
R. Square	= .127				
Adj. R. Square	= .109				

### Hypothesis 3

Hypothesis three proposes that greater levels of sales force market information generation will result in greater levels of market information transfer processes. Table 16 presents the results of regression analysis testing the hypothesis. As shown in Table 16, the overall regression model is significant ( $F = 9.042; p < .05$ ) with an R-square indicating that 8.3% of the variance in the relationship is explained by the model. The coefficient beta of SFMIG of .312 is in the direction hypothesized and is significant ( $t = 3.007, p < .05$ ). Hence H3 is supported.

TABLE 16  
REGRESSION ANALYSIS OF  
SALES FORCE MARKET INFORMATION GENERATION  
WITH MARKET INFORMATION TRANSFER PROCESSES

	Variable	Expected Sign	Coefficient beta	t	<i>p</i>
H3	SFMIG	+	.312	3.007	.003
Model F	= 9.042				
Prob. F	= .003				
R. Square	= .083				
Adj. R. Square	= .074				

Mediation Effect of Sales Force Market Information Generation Processes.

While not formally hypothesized, the conceptual model indicates that sales force market information generation processes mediates the relationship of the two antecedent variables (formalization and perceived importance) with market information transfer processes. Additional regression models were run as a check on this mediation effect, with the results presented in Table 16B. As can be seen in the table, the results suggest that when the two antecedent variables and sales force market information processes are all in the model together, sales force market information generation processes does not have a main effect on market information processes. Further, the analysis indicates a positive main effect of both formalization of sales force market information generation

processes and perceived importance of sales force information technologies on market information transfer processes. (Note that in this model, two control variables had significant beta values and are included in the table). These results suggest that, while hypotheses three is supported, that the linkages from the antecedent variables through market information transfer processes as suggested in the model do not hold.

TABLE 16B  
MEDIATION EFFECT OF SALES FORCE MARKET INFORMATION  
GENERATION

Dependent Variable	Independent Variable(s)	Expected Sign	Coefficient beta	t	p
SFMIG	PISFIT	+	.164	1.676	.097
	FSFIGP	+	.203	2.857	.005
MITP	SFMIG	+	.312	3.007	.003
MITP	SFMIG	+	.022	.252	.802
	PISFIT	+	.272	3.811	.000
	FSFIGP	+	.173	2.016	.047
	MU		-.171	2.601	.011
	PIQ		.189	3.604	.001

#### Hypothesis 4

Testing hypothesis four involves using separate regression models for each of the six sales performance measures (see Table 10 for a description of each of the sales

performance items). The results of the regression models are presented in Table 17. Overall the results support hypothesis 4, with most of the models showing both significance for the overall model and for the beta coefficients for the independent variable MITP. For SUP1, the overall model is significant ( $F = 13.984, p < .05$ ) and the coefficient beta of .396 is also significant ( $t = 3.722, p < .05$ ). R-Squared for the model indicates that MITP captures 12.2% of the variance in SUP1. For SUP2, the overall model is significant ( $F = 11.299, p < .05$ ) and the coefficient beta of .389 is also significant ( $t = 3.361, p < .05$ ). R-Squared for the model indicates that MITP captures 10.2% of the variance in SUP2. For SUP3, the overall model is significant ( $F = 4.820, p < .05$ ) and the coefficient beta of .263 is also significant ( $t = 2.195, p < .05$ ). R-Squared for the model indicates that MITP captures only 4.6% of the variance in SUP3. For SUP4, the overall model is significant ( $F = 12.471, p < .05$ ) and the coefficient beta of .349 is also significant ( $t = 3.531, p < .05$ ). R-Squared for the model indicates that MITP captures 11.1% of the variance in SUP4. For SUP5, the overall model is significant ( $F = 10.111, p < .05$ ) and the coefficient beta of .301 is also significant ( $t = 3.180, p < .05$ ). R-Squared for the model indicates that MITP captures 9.2% of the variance in SUP5. For SUP6, the overall model is not significant ( $F = 0.897, p > .05$ ) and the coefficient beta of .094 is also not significant ( $t = 0.947, p > .05$ ).

TABLE 17  
REGRESSION ANALYSIS OF  
MARKET INFORMATION TRANSFER PROCESSES  
WITH SALES PERFORMANCE ITEMS

	Variable	Expected Sign	Coefficient beta	t	p	
H4	MITP	+				
(SUP1)			.396	3.722	.000	
(SUP2)			.389	3.361	.001	
(SUP3)			.263	2.195	.030	
(SUP4)			.349	3.531	.001	
(SUP5)			.301	3.180	.002	
(SUP6)			.094	.947	.346	
	SUP1	SUP2	SUP3	SUP4	SUP5	SUP6
Model F	= 13.854	= 11.299	= 4.820	= 12.471	= 10.111	= .897
Prob. F	= .000	= .001	= .030	= .001	= .002	= .346
R. Square	= .122	= .102	= .046	= .111	= .092	= .009
Adj. R2	= .113	= .093	= .036	= .102	= .083	= -.001

## Hypothesis 5

The conceptual model indicates that MITP mediates the relationship between SFMIG and sales performance. The hypothesis is tested using regression analysis following considerations recommended by Baron and Kenny (1986). Their approach recommends using four models to test mediation. The first tests SFMIG effects on MITP, which has already been supported as presented in the analysis for hypothesis 3. The second tests the effect of MITP on sales performance, which has been generally supported as reported in the analysis of hypothesis 4. The third tests the effects of SFMIG on sales performance and the fourth tests the effects on sales performance when SFMIG and MITP are both in the model. According to Baron and Kenny (1986), a mediating relationship exists when the following four conditions are found:

1. There is a positive significant relationship between SFMIG and MITP.
2. There is a positive significant relationship between MITP and sales performance.
3. There is a positive significant relationship between SFMIG and sales performance.
4. When SFMIG and MITP are in the model together, SFMIG will not have a significant relationship with sales performance and MITP will have a significant relationship with sales performance.

Regression models for earlier hypotheses test of MITP with the sales performance measures provide some of the data needed to test the mediating relationship hypothesis. All of the results of the regression models to test the mediation relationship



are presented in Table 18A and Table 18B as model 1 (SFMIG → MITP), model 2 (MITP → sales performance), model 3 (SFMIG → sales performance), and model 4 (SFMIG + MITP → sales performance). In the table, model 1 is presented once. The sequence of the models 3, 4 and 5 is provided for each of the six sales performance measures (eighteen models total).

Model 1 results indicate support for the positive relationship between SFMIGP and MITP ( $F=9.049, p < .05$ ). For the first sales performance variable, SUP1, results indicate support for the relationship between MITP and SUP1 ( $F = 13.854, p < .05$ ). The results provide support for the third condition that a positive relationship exists between SFMIG and sales performance with model 3 indicating a significant model ( $F = 4.758, p < .05; b = .265, p = .032$ ), and model 4 indicates that when MITP is in the model with SFMIGP the model is significant ( $F = 7.699; p = .001$ ), the beta coefficient for MITP has changed little from model 2 and is significant ( $b = .357; p = .002$ ), but the beta coefficient for SFMIGP has a notable change from model 3 and is not significant ( $b = .153; p = .209$ ). For SUP1, The R-Square change from model 3 to model 4 is significant ( $F = 10.197; p = .002$ ).

For the second sales performance variable, SUP2, results indicate support for the relationship between MITP and SUP2 ( $F = 11.299, p < .05$ ). The results provide partial support for the third condition that a positive relationship exists between SFMIG and sales performance with model 3 indicating a marginally significant model ( $F = 3.815, p = .054; b = .256, p = .054$ ), and model 4 indicates that when MITP is in the model with SFMIGP the model is significant ( $F = 3.389; p = .003$ ), the beta coefficient for MITP has changed little from model 2 and is significant ( $b = .352; p = .005$ ), but the beta

coefficient for SFMIGP has a notable change from model 3 and is not significant ( $b = .146; p = .271$ ). For SUP2, The R-Square change from model 3 to model 4 is significant ( $F = 8.340; p = .005$ ).

For the third sales performance variable, SUP3, model 2 results indicate support for the relationship between MITP and SUP3 ( $F = 4.820, p < .05$ ). The results do not provide support for the third condition that a positive relationship exists between SFMIG and sales performance, as model 3 is not significant ( $F = .840, p = .362; b = .124, p = .362$ ). Model 4 indicates that when MITP is in the model with SFMIGP the model is marginally significant ( $F = 2.392; p = .097$ ), the beta coefficient for MITP has changed little from model 2 and is marginally significant ( $b = .254; p = .051$ ), but the beta coefficient for SFMIGP again has a notable change from model 3 and is not significant ( $b = .045; p = .749$ ). For SUP3, The R-Square change from model 3 to model 4 is marginally significant ( $F = 3.198; p = .051$ ).

For the fourth sales performance variable, SUP4, results indicate support for the relationship between MITP and SUP4 ( $F = 12.471, p < .05$ ). The results provide support for the third condition that a positive relationship exists between SFMIG and sales performance with model 3 indicating a marginally model ( $F = 4.106, p = .045; b = .230, p = .045$ ). Model 4 indicates that when MITP is in the model with SFMIGP the model is significant ( $F = 6.981; p = .001$ ), the beta coefficient for MITP has changed little from model 2 and is significant ( $b = .323; p = .003$ ), but the beta coefficient for SFMIGP has a notable change from model 3 and is not significant ( $b = .129; p = .259$ ). For SUP4, The R-Square change from model 3 to model 4 is significant ( $F = 9.499; p = .003$ ).

For the fifth sales performance variable, SUP5, results indicate support for the relationship between MITP and SUP5 ( $F = 10.111, p < .05$ ). The results provide support for the third condition that a positive relationship exists between SFMIG and sales performance with model 3 indicating a marginally model ( $F = 4.524, p = .036; b = .229, p = .036$ ). Model 4 indicates that when MITP is in the model with SFMIGP the model is significant ( $F = 6.035; p = .003$ ), the beta coefficient for MITP has changed little from model 2 and is significant ( $b = .271; p = .008$ ), but the beta coefficient for SFMIGP has a notable change from model 3 and is not significant ( $b = .144; p = .288$ ). For SUP5, The R-Square change from model 3 to model 4 is significant ( $F = 7.258; p = .008$ ).

For the sixth sales performance variable, SUP6, results do not support for the relationship between MITP and SUP6 ( $F = .897, p > .05$ ). The results provide marginal support for the third condition that a positive relationship exists between SFMIG and sales performance with model 3 indicating a marginally significant model ( $F = 3.128, p = .080; b = .188, p = .080$ ). Model 4 indicates that when MITP is in the model with SFMIGP the model is not significant ( $F = 1.660; p = .195$ ), the beta coefficient for MITP has changed notably from model 2 and is again not significant ( $b = .048; p = .642$ ), and the beta coefficient for SFMIGP has a notable change from model 3 and is also not significant ( $b = .173; p = .124$ ). For SUP6, The R-Square change from model 3 to model 4 is not significant ( $F = .218; p = .642$ ).

The overall results from the series of regression models suggest that MITP mediates the relationship between SFMIGP and sales performance and provide strong support for hypothesis 5.

TABLE 18A  
REGRESSION MODELS TESTING MEDIATING RELATIONSHIP  
OF MITP WITH SFMIG AND SALES PERFORMANCE

D.V.	model	model		R-Square (model 3 to model 4)		
		F	<i>p</i>	R <sup>2</sup>	F R <sup>2</sup> change	<i>p</i>
MITP	1	9.042	.003	.083	9.042	.003
SUP1	2	13.854	.000	.102		
	3	4.758	.032	.046		
	4	7.699	.001	.136	10.197	.002
SUP2	2	11.299	.001	.102		.
	3	3.815	.054	.037		.
	4	3.839	.003	.113	8.340	.005
SUP3	2	4.820	.030	.046		
	3	.840	.362	.009		
	4	2.392	.097	.047	3.918	.051
SUP4	2	12.471	.001	.111		
	3	4.106	.045	.040		
	4	6.981	.001	.126	9.499	.003
SUP5	2	10.111	.002	.092		
	3	4.524	.036	.210		
	4	6.035	.003	.346	7.258	.008
SUP6	2	.897	.346	.009		
	3	3.128	.080	.030		
	4	1.660	.195	.032	.218	.642

TABLE 18B  
REGRESSION MODELS TESTING MEDIATING RELATIONSHIP  
OF MITP WITH SFMIG AND SALES PERFORMANCE

D.V.	model	IV Coefficients			
		SFMIG	p	MITP	<i>p</i>
MITP	1	.312	.003		
SUP1	2			.396	.000
	3	.265	.032		
	4	.153	.209	.357	.002
SUP2	2			.389	.030
	3	.256	.054		
	4	.146	.271	.352	.005
SUP3	2			.263	.030
	3	.124	.362		
	4	.045	.749	.254	.051
SUP4	2			.349	.001
	3	.230	.045		
	4	.129	.259	.323	.003
SUP5	2			.301	.002
	3	.229	.036		
	4	.144	.188	.271	.008
SUP6	2			.094	.346
	3	.188	.080		
	4	.173	.124	.048	.642

Hypothesis 6

Hypothesis 6 suggests that the use of sales force market information moderates the relationship between market information transfer processes and sales performance. To test this hypothesis, moderated regression analysis is used. The procedures follow the recommendations of Sharma, Durand and Gur-Arie (1981) and Hair, Anderson,

Tatham and Black (1998). According to Sharma, Durand and Gur-Arie, moderated regression analysis “is an analytic technique which maintains the integrity of a sample yet provides a basis for controlling the effects of a moderator variable.” Following their procedure, three regression models are specified:

$$(1) y_1 = a + b_1 x$$

$$(2) y_2 = a + b_1 x + b_2 z$$

$$(3) y_3 = a + b_1 x + b_2 x + b_3 xz$$

where  $y_1$ ,  $y_2$  and  $y_3$  are the sales performance dependent variable in each set of models,  $x$  is the variable MITP,  $z$  is the variable USFMI, and  $xz$  is the interaction of MITP and USFMI.

Following Sharma, Durand and Gur-Arie’s procedures, if equations 2 and 3 are not significantly different,  $z$  is not a moderator variable, and a pure moderator is indicated if equations 1 and 2 are not different but are different from equation 3. Following this recommended procedure, three sets of regression models are examined. The first model set includes MITP as a predictor of sales performance, the second includes MITP and USFMI as predictors of sales performance and the third includes the interaction between MITP and USFMI as well as the two variables individually. Models are examined for each of the sales performance measures SUP1 – SUP6. Results of the tests are presented in Table 19A AND 19B. All of the models were significant, with the exception of SUP6, where all three models were not significant. The results indicate that in each of the 12 models in which USFMI appears as an independent variable, the beta coefficient for USFMI is not significant, with the exception of model 3 for SUP3 where the beta coefficient is significant. For each of the six models, the coefficients for

the interaction of MITP and USFMI are not significant. For each set of models, with the exception of model 2 for SUP3, the R<sup>2</sup>-Square change is not significant. The results of these tests suggest that USFMI does not moderate the relationship between MITP and sales performance. Hence, hypothesis six is not supported.

TABLE 19A  
 MODERATED REGRESSION RESULTS OF MITP, USFMI AND INTERACTION  
 WITH SIX SALES PERFORMANCE MEASURES

<u>D.V.</u>	<u>Model</u>	<u>Model Statistics</u>		<u>R-Square</u>	
		<u>F</u>	<u>p</u>	<u>change</u>	<u>sig.</u>
SUP1	1	13.854	.000	.122	.000
	2	6.911	.002	.001	.761
	3	4.580	.005	.000	.823
SUP2	1	11.299	.001	.102	.001
	2	5.816	.004	.004	.528
	3	3.839	.012	.000	.953
SUP3	1	4.820	.030	.046	.030
	2	5.248	.007	.050	.021
	3	3.534	.018	.002	.664
SUP4	1	12.471	.001	.111	.001
	2	6.267	.003	.001	.684
	3	4.412	.006	.007	.393
SUP5	1	10.111	.002	.092	.002
	2	5.766	.004	.013	.242
	3	4.191	.008	.009	.311
SUP6	1	.897	.346	.009	.346
	2	1.024	.363	.011	.286
	3	1.152	.332	.014	.239

TABLE 19B

MODERATED REGRESSION RESULTS OF MITP, USFMI AND INTERACTION  
WITH SIX SALES PERFORMANCE MEASURES

		Coefficients					
		<u>MITP</u>	<i>p</i>	<u>USFMI</u>	<i>p</i>	<u>M*U</u>	<i>p</i>
SUP1	1	.396	.000				
	2	.409	.001	-.036	.761		
	3	.335	.341	-.117	.760	.017	.823
SUP2	1	.389	.001				
	2	.360	.005	.080	.528		
	3	.381	.319	.103	.803	-.005	.953
SUP3	1	.263	.030				
	2	.154	.224	.299	.021		
	3	.312	.418	.472	.261	-.037	.664
SUP4	1	.349	.001				
	2	.333	.002	.044	.684		
	3	.071	.828	-.243	.492	.062	.393
SUP5	1	.301	.002				
	2	.257	.013	.121	.242		
	3	-.039	.899	-.203	.546	.070	.311
SUP6	1	.094	.346				
	2	.052	.628	.116	.286		
	3	-.309	.341	-.279	.428	.085	.239

Summary

This chapter provided the results of the data analysis including tests of the six hypotheses proposed in the conceptual model of the study. A summary of the results is presented in Table 20.

TABLE 20  
RESULTS OF HYPOTHESES TESTS Result<sup>1</sup>



---

H1: Perceived importance of sales force information technology is positively related to sales force market information generation processes.	S*
H2: The formalization of sales force market information generation processes is positively related to sales force market information generation processes.	MS
H3: Sales force market information generation processes are positively related to sales force market information transfer processes.	S*
H4: Sales force market information transfer processes are positively related to sales performance.	S*
H5: Sales force market information processes mediate the relationship between sales force market information generation processes and sales performance	S*
H6: The greater the use of sales force market information, the greater the positive relationship between sales force market information transfer processes and sales performance.	NS

---

1. *S = Supported, NS = Not Supported, MS = Marginally supported  $\alpha < .10$ .*

\*  *$\alpha < .05$*

\*\*  *$\alpha < .01$*

In the tests, H1 proposed that perceived importance of sales force technology is positively related to of sales force market information generation. The data analysis provides marginal support for H1. The second hypothesis proposed that formalization of sales force information generation processes is positively related to sales force market information generation was supported. Also supported was H3, which proposed that sales force market information generation is positively related to market information transfer processes. H4 proposed that market information transfer processes would be positively related to sales performance, the dependent variable of the conceptual model. H4 was supported for five of six sales performance measures. H5 and H6 propose mediating and moderating relationships. H5 proposed that market information transfer processes mediates the relationship between sales force market information generation

and sales performance. H5 was supported. H6 suggests that use of market information moderates the relationship between market information transfer processes and sales performance. H6 was not supported.

The next and final chapter of this dissertation, Chapter V, concludes this study and provides a discussion of the findings of the research, strengths and weaknesses of the study, as well as implications of the study for researchers and managers.

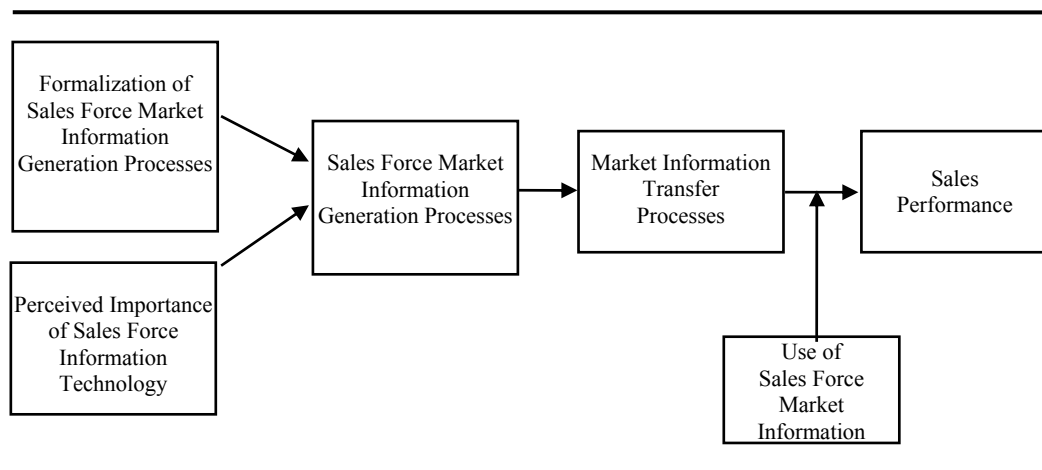
## CHAPTER V

### DISCUSSION

This study conceptualizes, measures, and analyzes a model of the relationships of sales force market information processes with sales performance. The model is

FIGURE 1

MODEL OF RELATIONSHIPS



presented in figure 1. The previous chapter presented the results of the statistical analyses of the hypotheses of this conceptual model. This chapter presents a detailed discussion of the findings of this study. The discussion is presented in five sections. Presented first is a brief overview of supporting literature, which is followed by a

discussion of the findings of the tests of the conceptual model. Third, the implications of the research and findings for researchers and managers are presented. The limitations of the study are investigated and presented next. This chapter concludes with recommendations for further research.

### Overview of Supporting Literature

The primary purpose of this study is to examine sales force market information processes influence on organizational sales force performance. Secondly, the study examines two organizational-level variables, formalization of sales force market information generation and perceived importance of sales force information technology.

#### Sales Force Market Information Generation Processes

Jaworski and Kohli (1993), in a seminal paper, proposed that market orientation of a firm consists of three dimensions: Market Intelligence Generation, Market Intelligence Utilization and Responsiveness. The first key information process variable in the conceptual model of this dissertation is related to the first dimension. Sales force market information generation processes refer to acquisition of customer, competitor, and other market information by members of the sales organization (Jaworski and Kohli 1993; Moorman 1995). Webster (1965) noted the value of people in a sales organization regarding the collection of market information, and since then research has been conducted on variety of market information related topics including information generation and new product success (Moorman 1995), idea generation (Rochford 1991)

and information accuracy (Lambert, Marmorstein and Sharma 1990). Jaworski and Kohli's (1993), as have subsequent studies on market orientation and information generation (Atuahene-Gima and Ko 2001; Baker and Sinkula 1999; Slater and Narver 2000), have linked market information generation to organization performance. These studies all support the premise that information generation processes can lead to improved organizational performance. This study specifically examines the role of sales force market information generation and sales performance.

### Market Information Transfer Processes

The second market information process variable, market information transfer processes, focuses the information transfer within and from the sales organization. While some studies have grouped information transfer processes with information generation as dimensions of a causal variable (i.e. Jaworski and Kohli), others have looked at market information transfer processes as a distinct variable having impact on performance outcomes (Moorman 1995). This study investigates market information transfer processes as a variable mediating the relationship between market information generation processes and sales performance.

### Use of Sales Force Market Information

Information generated and shared within an organization cannot influence organizational performance unless it is actually used. The use of sales force market information in this study is developed from work by Maltz and Kohli (1996) and refers to the extent to which the receiver (sales manager) uses the information disseminated by

the sales force to understand his or her work environment to make and implement decisions. The variable was measured using a scale adapted from Moorman (1995). The conceptual model suggests information use moderates the relationship between information transfer processes and sales performance.

#### Formalization of Sales Force Market Information Generation Processes

Formalization of sales force market information generation processes refers to the extent to which rules and procedures have been established and govern the market information generation activities of sales people in a sales organization. Given the independent nature of sales people, as well as the primary mission of making sales and establishing and maintaining relationship with customers, sales people on their own may or may not collect and organize market information deemed important by the organization. However, higher levels of formalization would likely result in higher levels of information generation processes. Hence this study investigates the relationship between the formalization and information generation processes.

#### Perceived Importance of Sales Force Information Technology

As noted in Chapter II, information technology improves organizational abilities to handle the growing amount of information available to organizations. The use of information technology by sales organizations has been increasing (Marshall, Moncrief and Lassk 1999; Widmier, Jackson and Brown 2002), but not always successfully (Speier and Venkatesh 2002). Other studies have found positive relationships between the attitudes toward sales force information technology with their adoption and use

(Rivers and Dart 1999; Jones, Sundaram and Chin 2002). This study simply proposes a link between the use of sales force information technology and sales force market information generation processes. Given the relationship between attitude and use of technology, the study proposes the perceived importance of sales force information technology will be positively related to sales force market information generation processes.

### Sales Force Performance

Sales performance in this study is measured using six one-item measures (see Figure 2). The measures refer to unit sales, market share and profitability relative to stated objectives and key competitors. Adapted from previous research, these measures are used first because they have been successfully used in the past and second because actual sales and profit figures from the respondent companies would be more difficult to collect and would be difficult to compare across companies from different industries.

### Summary of Findings

### Antecedents to Sales Force Market Information Generation Processes

This study is the first to empirically examine the influence of formalization of sales force market information generation processes and perceived importance of sales force market information technology on sales force market information generation processes. Other studies investigating market information generation processes (e.g. Moorman 1995), while making a distinction between the formal and informal

information processes, have not specifically examined the role of formalizing information generation processes. The investigation of the hypothesized relationships between the two antecedent variables and sales force market information generation processes show a marginally significant relationship between perceived importance of sales force information technology and sales force market information generation and a significant positive relationship between formalization and sales force information generation processes. It is not surprising the study found only marginal significance to the relationship between perceived importance of sales force information technology and sales force market information generation processes, as the literature on information technologies shows both positive and negative consequences sales force technology implementation. Yet, given the strong relationship between a positive perceived importance and actual adoption of sales force information technology, the evidence provides support for the premise that sales force information technology can have a positive impact on market information generation processes.

The findings support the premise that formalization of market information generation processes has a positive impact on the market information generation processes of a sales organization. These findings are consistent with previous research which has suggested that formalization of processes would influence their effectiveness (Armstrong 1982; Moorman 1995). Other research has concluded that a more positive learning environment will directly result in increased market information generation (Sinkula, Baker and Noordewier 1997). However, as noted by Gordon, Schoenbachler, Kaminski and Brouchous (1997), compensation structures need to be consistent with



increased levels of formalization by providing an adequate reward structure for the market information generation activities.

### Market Information Processes

The heart of the conceptual model for this dissertation involves three market information processing variables, sales force market information generation processes, sales force market information transfer processes and market information use. Four hypotheses of the study investigate the relationship of these variables with each other and with the dependent variable sales performance. Hypothesis three proposed that market information generation processes leads to market information transfer processes, and the results provide support. This finding confirms previous research of Sinkula, Baker and Noordewier (1997) who found a positive effect of market information generation on information transfer within a marketing department context.

The sharing of sales force generated market information with others in the organization is proposed to have a positive effect on sales performance (H4), and the results provide support for the hypothesis. While some previous research has not been able to find a significant relationship between information transfer processes and performance (e.g. Moorman 1995), this study's findings are consistent with Sinkula, Baker and Noordewier (1997) who found that market information dissemination positively influenced marketing program dynamism. The conceptual model also proposes that sales force market information generation processes impact sales performance through the market information transfer processes (H5). The mediating relationship of market information transfer processes was supported. When Moorman

(1995) was unable to find a direct effect of market information generation processes on new product performance, she suggested that there may be mediating relationships in the information process variables.

Whereas Moorman (1995) also suggested that market information use may be a mediating variable, this study proposed a moderating relationship between market information transfer processes and market information use (H6). The results of the analysis do not support the hypothesis, as the interaction term was nonsignificant in every model (although, with one dependent variable, the results suggest a possible mediating relationship). At first it seemed surprising not to find the moderating relationship, but a second look at the nature of the study's measure of information use may provide an explanation. This study's measure of market information use focuses on the sales manager's (the respondent in the study) use of the market information, and does not capture the extent to which others who have influence on the organization's sales performance (sales people as well as other decision makers) are using the sales force generated market information. It may be that testing dependent variable such as the sales manager's job performance would show support for the proposed moderating effect.

### Implications

Based on the findings of this study, there are implications for researchers and managers. This section is divided into two parts, theoretical implications and managerial implications. Theoretical implications focus on the relevance of study results for organizational researchers as they related to further study in the field. For

managers, the section on managerial implications discusses the relevance of the findings to the practice of sales management and makes recommendations for managerial actions.

### Theoretical Implications

Two of the measures in the dissertation, sales force market information generation processes and market information transfer processes, evolved from operationalization of market orientation. This study adds support to the research that break out these dimensions into separate constructs and considers them separately (e.g. Sinkula, Baker and Noordewier 1997; Slater and Narver 2000), as well as view them as a process (Moorman 1995).

The study introduces an adaptation of the formalization construct to focus on a specific organizational activity, the formalization of sales force market information generation. By examining the formalization of a specific activity within the confines of a distinct functional area, researchers may be better able to ascertain the impact of formal policies on various organization outcomes.

### Managerial Implications

Two findings of this study are of particular importance to sales managers. First, the findings of the relationship between sales force market information generation and market information transfer processes and their impact on sales performance implies that sales managers should make sure that market information processes are in place in their organization. These processes include market information generation, the broad activities of sales people collecting information about customers, competitors and other

forces in the firms markets. Sales managers should better enable sales people to engage in market information generation processes. Training programs should cover both the kinds of market information desired by the organization as well as the methods that might be employed to gather such information.

Second, organizations may benefit by establishing rules and procedures to guide the information generation, as opposed to simply providing training and then expecting sales people to go out of their way to gather market information. Managers should also put in place compensation and reward systems that are consistent with any additional market information generation process activities, else sales people will have little motivation to expend effort on information generation and transfer processes.

Third, the study provides some support for continued investment in sales technologies. However, sales organizations must expand the use of IT tools to include information collection about competitors and other relevant publics that are deemed important to long run company performance.

### Limitations and Future Research

One limitation of this research is the size of the sample used for the analysis. While the sample size was sufficient for the regression models, a larger sample would enable additional analysis using more powerful analytical tools such as structural equation modeling. Getting sales managers to cooperate for studies such as this appears to be getting more difficult. It may be that utilizing some alternative data collection methods, such as collecting data at industry trade shows, may help increase response rates and sample sizes.

Another weakness in this study is the use of single informants. The perspectives of sales managers regarding the collection, dissemination and use of market information within a sales force provided significant results for this study. Use of multi-informants, especially if sales people were included would provide a better test of theory. Sales people may have differing opinions regarding information collection, transfer and use. Furthermore, the study would have been able to improve the investigation of organization use of information. Additional research encompassing sales people could also examine the factors (beyond formalization) influencing sales people to engage in information generation activities – for example, would sales person understanding of the purpose for the information and use of the information make any difference? Studies might investigate the perceived quality of sales force generated information by others in the organization (such as new product development engineers). A study could investigate how formalization of information generation and transfer processes influences perceived information quality.

While the measures in the study exhibited good coefficient alpha reliability estimates, additional research should be done to improve the measures used. The measure for sales force generation of market information processes, adapted from previous studies, might be improved with greater focus on the processes of information generation by sales people and excluding the information generation processes that are often present only in other areas or functions of an organization.

The study did not investigate organizational formalization of market information transfer processes. Extending formalization to transfer processes by examining the extent to which rules and procedures govern sales person responsibilities to report and

share market knowledge might shed additional light on the relationships of market information processes with outcomes such as sale performance. Additionally, including informal information transmission processes in the research would expand the understanding of the means by which information is shared within the organization.

This research did not examine the impact of sales technology or formalization on other organizational outcomes, and further research is needed. For example, how does increasing the level of formalization of market information generation influence the individual sales person's job satisfaction and performance?

Examining the effect of technology and market information processes on other factors known to affect performance outcomes as well as other performance measures would provide additional understanding of their relationship with organizational performance. For example, how do sales force market information processes affect the sales force's success with new product launches? Can formalization of sales force market information generation and transfer improve the perceived quality of information used by others who make decisions about overall organizational strategy?

As the hypothesis regarding the use of information was not supported, additional research should be done to investigate possible explanations. Further research could measure information use at an organizational level rather than at the individual respondent level. Studies exploring how managers use the sales force generated information, coupled with measures of the sales manager's job performance, might explain the relationship between use and performance. Further insight might be gained through the use of qualitative research, interviewing sales managers regarding who uses the information, how it is used and expected outcomes of using the information.

Related, further research could examine the extent to which organizations rely on market information generated by the sales organization versus other means of information generation (e.g., market research).

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## APPENDIX A

### Research Questionnaire and Cover Letter

Copies of the research questionnaire and a sample cover letter are on the next five pages. The sample letter and the questionnaire has been resized and inserted into frames, also to comply with margin requirements. The frame borders on the both the letter and questionnaire closely represent the original page size.

April 1, 2004

Mr. Sales Manager  
VP - Sales & Marketing  
Sample Sales Corp.  
12345 East West Road  
Somewhere, US 12345-6789

Dear Mr. Manager:

I am a Ph.D. student at Oklahoma State University and a "sales executive-turned-college-professor". I am asking for your help in completing the attached questionnaire. After many years in industry, I returned to the classroom to help the next generation of sales and business professionals. To complete my degree requirements, I am conducting dissertation research. Your role is to provide insight on the impact of market information provided by sales people on sales performance, as well as to share your opinion regarding the contribution of sales organization technologies to sales performance. The results should help you improve the employment of market information processes within your sales organization and improve sales unit performance. Further, it will help identify the bottom-line contribution of investments in sales organization technologies.

Your participation in the study is completely voluntary, and you may end your participation at any time. Your responses will remain anonymous with results reported only in aggregate form. It should take about fifteen minutes to complete the questionnaire.

If you would like a summary of the results, please enclose a business card so the copy can be mailed to you. Thank you in advance for consenting to participate in this important research. If you have any questions you may reach me directly at the phone number listed below.

Sincerely,

Thomas W. Lanis  
Doctoral Candidate  
Marketing Department  
College of Business  
Oklahoma State University

Assistant Professor  
School of Business  
East Central University  
580-310-5573  
tlanis@mailclerk.ecok.edu

If you would like information about respondent rights, please contact Dr. Carol Olson, IRB Chair, 415 Whitehurst Hall, Oklahoma State University, Stillwater, OK 74078, 405-744-1676.

This study seeks your opinions about sales management and sales organization technologies. I would like to assure you that the information gathered in this questionnaire will be used only for academic purposes.



Please indicate the extent to which you agree or disagree with each of the following statements by circling the number that best fits your response: 1 = Strongly Disagree 7 = Strongly Agree

Our sales people meet with customers at least once a year to find out what products or services they will need in the future.	1	2	3	4	5	6	7
Our sales people do a lot of in-house market research.	1	2	3	4	5	6	7
Our sales people are quick to detect changes in our customers' product preferences.	1	2	3	4	5	6	7
Our sales people poll end users at least once a year to assess the quality of our products and services.	1	2	3	4	5	6	7
Our sales people often talk with or survey those who can influence our end users' purchases (e.g., retailers, distributors).	1	2	3	4	5	6	7
Our sales people also collect industry information through informal means (e.g., lunch with industry friends; talks with trade partners).	1	2	3	4	5	6	7
Our sales people are quick to detect fundamental shifts in our industry (e.g., competition, technology, regulation).	1	2	3	4	5	6	7
Our sales people periodically review the likely effect of changes in our business environment (e.g., regulation) on customers.	1	2	3	4	5	6	7

Our sales department participates in departmental meetings at least once a quarter to discuss market trends and developments	1	2	3	4	5	6	7
Sales personnel in our business unit spend time discussing customer's future needs with other functional departments.	1	2	3	4	5	6	7
Our sales department periodically circulates documents (e.g. reports, newsletters) that provide information on our customers.	1	2	3	4	5	6	7
When something important happens to a major customer or market, the whole business unit knows about it in a short period.	1	2	3	4	5	6	7
Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.	1	2	3	4	5	6	7
When one unit of our sales organization finds out something about competitors, it is quick to alert other sales units.	1	2	3	4	5	6	7
There is substantial communication between various units in our sales organization concerning market developments.	1	2	3	4	5	6	7
We have processes for sharing information effectively within the sales organization	1	2	3	4	5	6	7

The responsibilities of salespeople regarding the collection of information about customers are clearly defined.	1	2	3	4	5	6	7
The responsibilities of salespeople regarding the collection of information about competitor activities are clearly defined.	1	2	3	4	5	6	7
Our salespeople know their role in collecting and reporting information about the market(s) they serve	1	2	3	4	5	6	7
Management has clearly outlined the salespeople's responsibilities for collecting information about our customers' product needs.	1	2	3	4	5	6	7
Sales people are pretty much on their own regarding what information they collect about their customers and markets.	1	2	3	4	5	6	7

About how long have your current policies regarding the collection and reporting of market information by the sales force been in place? (check one)

- We don't have policies
- Less than six months
- About one year
- About two years
- Three or more years

(Questionnaire p2)

**This section relates to the Information Technologies used by your sales force. Sales Force Information Technologies may include, but are not limited to, laptop computers, customer relationship management software and tools, sales force automation software and tools, handheld computers and PDAs, cell phones, etc.**

For each of the following pairs of descriptors please place an X on one of the spaces that most closely describes the information technologies in your organization. For example if your information technologies require "Little effort required to use" versus "Great effort required to use" you would place an X on one of the spaces closer to "Little effort required to use".

**Example:** → Little effort required to use    \_\_\_ X \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Great effort required to use

Required little investment	___ ___ ___ ___ ___ ___ ___	Required high investment
Has small impact on sales efficiencies	___ ___ ___ ___ ___ ___ ___	Has large impact on sales efficiencies
Has minor organizational impact	___ ___ ___ ___ ___ ___ ___	Has major organizational impact
Required short-term commitment	___ ___ ___ ___ ___ ___ ___	Required long-term commitment
Has little potential effect on profitability	___ ___ ___ ___ ___ ___ ___	Has large potential effect on profitability
Is of little importance	___ ___ ___ ___ ___ ___ ___	Is extremely important
Is of little relevance to business	___ ___ ___ ___ ___ ___ ___	Is highly relevant to business
Is more trouble than it's worth	___ ___ ___ ___ ___ ___ ___	Is well worth the trouble
Takes longer getting things done	___ ___ ___ ___ ___ ___ ___	Helps get things done quicker
Is not necessary for competitive reasons	___ ___ ___ ___ ___ ___ ___	Is essential for competitive reasons

Please indicate the extent to which you agree or disagree with each of the following statements by circling the number that best fits your response:

	1=Strongly Disagree	2	3	4	5	6	7=Strongly Agree
Our firm has invested a lot in our sales force information technologies	1	2	3	4	5	6	7
Our sales force information technology is cutting edge	1	2	3	4	5	6	7
We update our sales force information technology often	1	2	3	4	5	6	7
In our kind of business, customers' product preferences change quite a bit over time.	1	2	3	4	5	6	7
Our customers tend to look for new products all the time.	1	2	3	4	5	6	7
We are witnessing demand for our products and services from customers who never bought them before.	1	2	3	4	5	6	7
New customers tend to have product-related needs that are different from those of our existing customers.	1	2	3	4	5	6	7
We cater to many of the same customers that we used to in the past.	1	2	3	4	5	6	7
Competition in our industry is cut-throat.	1	2	3	4	5	6	7
There are many "promotion wars" in our industry.	1	2	3	4	5	6	7
In our industry, anything that one competitor can offer, others can match readily.	1	2	3	4	5	6	7
Price competition is a hallmark of our industry.	1	2	3	4	5	6	7
One hears of a new competitive move almost every day.	1	2	3	4	5	6	7
Our competitors are relatively weak.	1	2	3	4	5	6	7
The technology in our industry is changing rapidly.	1	2	3	4	5	6	7
Technological changes provide big opportunities.	1	2	3	4	5	6	7
A large number of new product ideas have been made possible through technological breakthroughs in our industry.	1	2	3	4	5	6	7
Technological developments in our industry are rather minor.	1	2	3	4	5	6	7
Relative to key competitors our firm has invested a lot in our sales force information technologies	1	2	3	4	5	6	7
Relative to key competitors our sales force information technology is the best	1	2	3	4	5	6	7
Relative to key competitors we update our sales force information technology most often	1	2	3	4	5	6	7

For each of the next items, place an X on a space that best describes the market for the products sold by your sales force:

Stable industry volume	___ ___ ___ ___ ___ ___ ___	Volatile industry volume
Sales forecasts are quite accurate	___ ___ ___ ___ ___ ___ ___	Sales forecasts are quite inaccurate
Sales forecasts are predictable	___ ___ ___ ___ ___ ___ ___	Sales forecasts are unpredictable

(Questionnaire p3)

For the next set of statements, please indicate your response by choosing the number that best matches your response to the statement.

Please rate the extent that your sales organization has achieved the following outcomes for the past 12 months:

	Below Expectations					Above Expectations	
	1	2	3	4	5	6	7
• Achieved market share relative to its stated objective	1	2	3	4	5	6	7
• Achieved unit sales volume relative to its stated objective	1	2	3	4	5	6	7
• Achieved profit margin relative to its stated objective	1	2	3	4	5	6	7
• Change in market share relative to key competitors	1	2	3	4	5	6	7
• Unit sales volume relative to key competitors	1	2	3	4	5	6	7
• Profit margin relative to key competitors	1	2	3	4	5	6	7
• Number of new products introduced relative to stated objectives	1	2	3	4	5	6	7
• Number of new products introduced relative to key competitors	1	2	3	4	5	6	7
• New product unit sales relative to stated objectives	1	2	3	4	5	6	7
• New product market share relative to stated objectives	1	2	3	4	5	6	7

During the past three years, to what extent have NEW PRODUCTS

sold by your sales organization . . . . .	1=Not at all					7=A large extent	
	1	2	3	4	5	6	7
. . . . . increased your market share?	1	2	3	4	5	6	7
. . . . . increased the business unit's sales volume in dollars or units?	1	2	3	4	5	6	7
. . . . . increased the business unit's overall profitability?	1	2	3	4	5	6	7

Please indicate the extent to which you agree or disagree with each of the following statements by circling the number that best fits your response:

	1=Strongly Disagree					7=Strongly Agree	
	1	2	3	4	5	6	7
Our sales organization continuously collects information from customers.	1	2	3	4	5	6	7
Our sales organization continuously collects information about competitor activities.	1	2	3	4	5	6	7
Our sales organization continuously collects information about relevant publics other than customers and competitors.	1	2	3	4	5	6	7
Market information provided by the sales force enriched my basic understanding of the market.	1	2	3	4	5	6	7
The way I thought about the market would have been very different without the information provided by the sales force.	1	2	3	4	5	6	7
I thought about the available market information provided by the sales force for a long time.	1	2	3	4	5	6	7
The market information provided by the sales force reduced my uncertainty about our markets.	1	2	3	4	5	6	7
The market information provided by the sales force helped me identify aspects of our markets that otherwise would have gone unnoticed.	1	2	3	4	5	6	7
My ability to make decisions would have been diminished without market information from members of the sales organization.	1	2	3	4	5	6	7
My decisions really did not require the market information provided by the sales force.	1	2	3	4	5	6	7
I used market information provided by the sales force to make specific decisions for new product sales efforts.	1	2	3	4	5	6	7
Without the market information from the sales organization, my decisions would have been very different.	1	2	3	4	5	6	7
The market information provided to me by the sales force lacked objectivity.	1	2	3	4	5	6	7
The sales force provided valid estimates of the market potential for our products.	1	2	3	4	5	6	7
The market information provided by the sales force was accurate.	1	2	3	4	5	6	7
The sales force communicated important details about customer needs.	1	2	3	4	5	6	7
The sales force provided the data necessary to estimate the size of the market for our products.	1	2	3	4	5	6	7
The sales force sent me relevant information.	1	2	3	4	5	6	7

(Questionnaire p4)

Please indicate your level of agreement with the following statements concerning management practices in your company.

	1=Strongly Disagree				7=Strongly Agree		
The division encourages cooperation among salespeople.	1	2	3	4	5	6	7
Most of the salespeople in my division are familiar with each other's productivity.	1	2	3	4	5	6	7
The division fosters an environment where salespeople respect each other's work.	1	2	3	4	5	6	7
The division encourages job-related discussions among salespeople.	1	2	3	4	5	6	7
Most salespeople in my division are able to provide accurate appraisals of each other's work.	1	2	3	4	5	6	7
The work environment here encourages salespeople to feel a part of the division.	1	2	3	4	5	6	7
The work environment here encourages sales people to feel a sense of pride in their work.	1	2	3	4	5	6	7
Specific performance goals are established for my job.	1	2	3	4	5	6	7
My immediate boss monitors the extent to which I attain my performance goals.	1	2	3	4	5	6	7
If my performance goals are not met, I must explain why.	1	2	3	4	5	6	7
I receive feedback from my immediate superior concerning the extent to which I achieve my goals.	1	2	3	4	5	6	7
My pay increases are based upon how my performance compares with my goals.	1	2	3	4	5	6	7
My immediate boss monitors the extent to which I follow established procedures.	1	2	3	4	5	6	7
My immediate boss evaluates the procedures I use to accomplish a given task.	1	2	3	4	5	6	7
My immediate boss modifies my procedures when desired results are not obtained.	1	2	3	4	5	6	7
I receive feedback on how I accomplished my performance goals.	1	2	3	4	5	6	7

The following questions are used for classification purposes only.

<b>About your company:</b> Please indicate about how many sales people work for your company: _____	<b>About you:</b> About how many years have you been employed in a sales related occupation? _____
What is the primary industry in which your organization competes? _____	About how long have you been employed in your current position? _____ years _____ months
Please estimate the average annual cost (salaries, commission, expenses, support) for your organization to support one company sales person for one year. \$ _____	About how many years have you had responsibilities for managing a sales organization? _____
Please indicate the approximate distribution of annual compensation for your company sales people among these four categories: ____% base salary ____% commission ____% bonus ____% other	What is your gender? ____ male ____ female
Please indicate your company's total annual sales: <input type="checkbox"/> Under \$10,000,000 <input type="checkbox"/> \$10,000,000 to \$49,999,999 <input type="checkbox"/> \$50,000,000 to \$99,999,999 <input type="checkbox"/> \$100,000,000 to \$499,999,999 <input type="checkbox"/> Over \$500,000,000	Please indicate your position in the company: <input type="checkbox"/> V.P Sales/Sales Manager <input type="checkbox"/> V.P. Marketing/Marketing Manager <input type="checkbox"/> CEO / President <input type="checkbox"/> Other (please specify) _____

Thank you for completing this questionnaire. Please mail the completed questionnaire using the enclosed pre-addressed postage paid envelope, or address a blank envelope to: Tom Lanis, School of Business, 1000 E. 14<sup>th</sup>, Ada, OK 74820. If you have any questions, you may contact me by phone at 580-310-5573 or email at [tlanis@mailclerk.ecok.edu](mailto:tlanis@mailclerk.ecok.edu).

If you would like more information about respondent rights, please contact Dr. Carol Olson, IRB Chair, 415 Whitehurst Hall, Oklahoma State University, Stillwater, OK 74078, 405-744-1676.

## APPENDIX B

### Oklahoma State University IRB Approval

A copy of the research protocol approval form from the Oklahoma State University Institutional Review Board is included on the next page.

**Oklahoma State University  
Institutional Review Board**

**Protocol Expires: 3/14/2005**

Date: Monday, March 15, 2004

IRB Application No BU0420

Proposal Title: Effect of Market Information Generation and Information Transfer on Sales Performance

Principal Investigator(s):

Thomas W. Lanis  
530 S. Highland  
Ada, OK 74820

Gary Frankwick  
312 College of Business  
Stillwater, OK 74078

Reviewed and  
Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

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Dear PI :

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact me in 415 Whitehurst (phone: 405-744-5700, colson@okstate.edu).

Sincerely,



Carol Olson, Chair  
Institutional Review Board



## VITA

Thomas W. Lanis

Candidate for the Degree of

Doctor of Philosophy

Dissertation: SALES FORCE MARKET INFORMATION: ANTECEDENTS,  
PROCESSES, AND IMPACT ON SALES PERFORMANCE

Major Field: Marketing

Education:

Oklahoma State University, Stillwater, Oklahoma

PhD 2004

MBA 1987

B.S. Business Administration, Major: Marketing. 1977.

Academic Experience:

Assistant Professor of Business Administration. East Central University, Ada, Oklahoma. (1997-present; and 1991-1993 as visiting instructor)

Graduate Teaching Assistant. Oklahoma State University, Stillwater, Oklahoma. (1995 - 1997).

Instructor of Marketing. Northeastern State University at Tulsa, Tulsa, Oklahoma. (1993 - 1995).

Adjunct Instructor. Oklahoma State University, Stillwater, Oklahoma. (1990 - 1991). Taught Sales Management.

Business Experience:

Independent Manufacturers' Representative. Ponca City, Oklahoma. (1991-1992).

Account Representative, Metropolitan Life and Affiliated Companies, Tulsa, Oklahoma. (1988 - 1990)

Vice President and Marketing Manager. Frontier Federal Savings & Loan, Ponca City, OK. (1987 - 1988)

Assistant Vice-President and Senior Research Analyst. Liberty National Bank & Trust Company, Oklahoma City and Tulsa, Oklahoma. (1980 - 1987)

Vita: Thomas W. Lanis, page 2

Professional Memberships and Activities:

- American Marketing Association
- Direct Marketing Association DMEF Professor's Academy: Charter Member
- Academy of Marketing Science

Professional Development:

PriceBabson@Berkeley: A Symposium for Entrepreneurship Educators, Berkeley California. January 2002.

Direct Marketing Institute for Professors. Boston, May 1999.

Completed the Requirements for Degree of Doctor of Philosophy at Oklahoma State University in July 2004.



