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JUST-IN-TIME SELLING: RELATION TO MARKET ORIENTATION, ORGANIZATIONAL STRUCTURE AND ORGANIZATIONAL PERFORMANCE

by

Kenneth W. Green, Jr., B.S., M.B.A.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Business Administration

COLLEGE OF ADMINISTRATION AND BUSINESS
LOUISIANA TECH UNIVERSITY

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We hereby recommend that the dissertation prepared under our supervision

by Kenneth W. Green, Jr.

entitled Just-In-Time Selling: Relation to Market Orientation, Organizational Structure and Organizational Performance

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ABSTRACT

The purpose of this dissertation is to answer the following research questions related to the efficacy of a Just-in-Time (JIT) selling strategy:

1. What is the nature of the relationships among market orientation, JIT selling, organizational structure, and organizational performance constructs?
2. Does JIT selling mediate and/or moderate the relationships among market orientation and organizational structure and organizational performance?

The market orientation model theorized by Kohli and Jaworski (1990) and the JIT selling model theorized and tested by Germain, Dröge and Daugherty (1994) and Claycomb, Dröge and Germain (1999) are combined to facilitate investigation of the link between market orientation and JIT selling. Generally, the combined model incorporates market orientation as an antecedent to JIT selling and organizational structure and performance as consequences.

Data relating to all constructs were collected from 177 marketing oriented representatives from manufacturing firms using a combined Internet survey and traditional mailing methodology. A multiple regression and structural equation modeling approach returned results indicating that market orientation and JIT selling are positively linked, that market orientation and JIT selling are positively associated with organizational performance and with the integration, formalization and specialization components of organizational structure but not with the decentralization component. JIT selling partially mediates the relationship between market orientation and organizational performance but neither mediates nor moderates the relations among market orientation and integration, formalization and specialization.

Managers implementing a JIT selling strategy within the context of an organization exhibiting a high market orientation may expect improvements in organizational performance. A JIT selling strategy requires development of long-term, single-source relationships with buyers and efforts by the organization's sales representatives to build value during the selling process based on established organizational abilities to deliver zero-defect products precisely on-time and in the precise quantities desired by customers while minimizing total waste and total cost throughout the supply chain.

TABLE OF CONTENTS

ABSTRACT iii

LIST OF TABLES ix

LIST OF FIGURES x

ACKNOWLEDGEMENTS xi

Chapters

1. INTRODUCTION 1

Research Questions 1
Research Model 2
Construct Definitions 3
  Just-In-Time Selling 4
  Market Orientation 4
  Organizational Performance 5
  Organizational Structure 5
Research Approach 5
Managerial Relevance 7
Plan of Study 7

2. LITERATURE REVIEW 9

Kohli and Jaworski Market Orientation Model 9
Germain, Dröge and Daugherty JIT Selling Model 12
Combined JIT Selling and Market Orientation Model 14
Just-In-Time Selling 14
Market Orientation 20
Organizational Structure 21
Organizational Performance 23
Relationships Among Constructs 25
  Market Orientation and JIT Selling 26
  JIT Selling and Organizational Performance 26
  Market Orientation and Organizational Performance 30

JIT Selling Mediation/Moderation – Market
Orientation and Organizational Performance 32
Market Orientation and Organizational Structure 32
JIT Selling and Organizational Structure 33
JIT Selling Mediation/Moderation – Market
Orientation and Organizational Structure 34

3. RESEARCH METHODOLOGY 35

Research Hypotheses 35
Market Orientation and JIT Selling 35
JIT Selling and Organizational Performance 37
Market Orientation and Organizational Performance 37
JIT Selling Mediation/Moderation – Market
Orientation and Organizational Performance 38
Market Orientation and Organizational Structure 38
JIT Selling and Organizational Structure 39
JIT Selling Mediation/Moderation – Market
Orientation and Organizational Structure 39
Operationalization of Variables 39
Just-In-Time Selling 40
Market Orientation 42
Organizational Structure 43
Organizational Performance 46
Research Design 46
Data Collection Procedures 47
Statistical Techniques 48

4. RESULTS 51

The Sample 52
The Sampling Process 53
Response Rate 54
Description of Respondents 54
Descriptive Statistics of Summary Variables 55
Non-Response Bias 59
Measurement of Constructs 60
JIT Selling Related Constructs 60
Market Orientation, Organizational Performance and
Organizational Structure Scales 65
Regression Results 66
JIT Selling and Market Orientation 75
Organizational Performance, JIT Selling and
Market Orientation 75

Integration/Mechanisms, JIT Selling and Market Orientation 76
Integration/Committees, JIT Selling and Market Orientation 77
Formalization/Marketing, JIT Selling and Market Orientation 78
Formalization/External, JIT Selling and Market Orientation 79
Formalization/Internal, JIT Selling and Market Orientation 80
Specialization, JIT Selling and Market Orientation 81
Decentralization/Scheduling, JIT Selling and Market Orientation 83
Decentralization/Strategic, JIT Selling and Market Orientation 84
Decentralization/Marketing, JIT Selling, and Market Orientation 85
Split Sample Tests for Moderation Effects 86
Structural Equation Modeling Results 87
Measurement Model without Modification 88
Measurement Model with Modification 91
Structural Model without Modification 94
Structural Model with Modification 95
Summary of Structural Equation Modeling Results 99
Hypotheses Evaluation 99
Market Orientation and JIT Selling 101
JIT Selling and Organizational Performance 101
Market Orientation and Organizational Performance 102
JIT Selling Mediation/Moderation - Market Orientation and Organizational Performance 102
Market Orientation and Organizational Structure 104
JIT Selling and Organizational Structure 106
JIT Selling Mediation/Moderation – Market Orientation and Organizational Structure 109
Summary of Results 111

5. CONCLUSIONS 112

Overview of Research Findings 113
Managerial Implications 114
Limitations of the Study 115
Contributions of the Study 115

APPENDIX A DISSERTATION QUESTIONNAIRE 117

Just-In-Time Selling Survey 118

APPENDIX B INITIAL AND FOLLOW-UP E-MAIL MESSAGES AND MAIL-OUT LETTERS 123

Text of Initial E-mail Message 124
Text of Follow-up E-mail Message 125
Text of Initial Mail-out Letter 126
Text of Follow-up Mail-out Letter 127

REFERENCES 128

LIST OF TABLES

Table Page

2.1 Summary of Literature Relating to Construct Relationships 28

3.1 Just-In-Time Selling Scale 41

3.2 Market Orientation Summary Scale (Deshpande and Farley 1996) 43

3.3 Organizational Structure Scales 44

3.4 Organizational Performance Scale 46

4.1 Descriptive Statistics for Summary Variables 57

4.2 Correlation Matrix for Summary Variables 58

4.3 Comparison of Early and Late Responders 61

4.4 Factor Analysis Results for JIT Selling-Related Scales 63

4.5 Confirmatory Factor Analysis Results for Market Orientation, Organizational Structure and Organizational Performance Scales 67

4.6 Regression Results 71

4.7 Split Sample Moderator Test Results 87

4.8 Goodness-of-Fit Statistics Measurement Model without Modification 90

4.9 Goodness-of-Fit Statistics Measurement Model with Modification 93

4.10 Goodness-of-Fit Statistics Structural Model without Modification 96

4.11 Goodness-of-Fit Statistics Structural Model with Modification 98

4.12 Results Summary for Hypothesis Tests 100

LIST OF FIGURES

Figure Page

1.1 Just-In-Time Selling and Market Orientation Model..3

2.1 Antecedents and Consequences of a Market Orientation 10

2.2 Just-In-Time Selling Model (Germain, Dröge and Daugherty 1994)...............13

2.3 Combined Just-In-Time Selling and Market Orientation Model.......................15

3.1 Market Orientation and Just-In-Time Selling Model with Hypothesized Relationships...36

4.1 Measurement Model without Modifications..89

4.2 Measurement Model with Modifications...92

4.3 Structural Model without Modifications (Standardized Coefficients)..............94

4.4 Structural Model with Modifications (Standardized Coefficients)...................97

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I am thankful for the love and support of my wife, Tammie, without whom life in general and this accomplishment specifically would not be sweet. She is my true partner,

and we share this accomplishment equally. Thanks also to my brother, Charlie, for always watching my back.

I dedicate this dissertation to the memory of my father, Kenneth W. Green, whose teaching career inspired me to follow him in the family business and to the memory of my mother, Jean Green, who would not let me quit no matter the obstacle.

CHAPTER I

INTRODUCTION

It seems logical to further extend the Just-In-Time (JIT) philosophy from the production functions of manufacturing, purchasing and design to the marketing function of selling. Consideration of this extension gives rise to questions concerning the relationship between a market orientation and a JIT selling strategy that have not been empirically investigated. The purpose of this dissertation is to identify the nature of the relationship between market orientation and JIT selling and to determine whether JIT selling mediates/moderates the established relationship between market orientation and organizational performance and the theorized relationship between market orientation and organizational structure. Generally, it is proposed here that implementation of a JIT selling approach will strengthen the strategic link between the production and marketing functions and further will leverage the impact of a market orientation on organizational performance.

Research Questions

Although there are no published results concerning the market orientation and JIT selling relationship, the components of the JIT selling construct seem to naturally emanate from a market orientation. The stronger a firm's market orientation the more likely the firm's selling function will develop strong, long-term relations with customers and build value during the selling process based on the firm's abilities to provide the quantity and quality of products and services desired by its customers at the time specified by its customers.

This study is designed to answer the following research questions concerning the efficacy of a JIT selling strategy:

1. What is the nature of the relationships among market orientation, JIT selling, organizational structure, and organizational performance constructs?
2. Does JIT selling mediate/moderate the relationships between market orientation and organizational structure and organizational performance?

Research Model

A combination of the market orientation model theorized by Kohli and Jaworski (1990) and tested by Jaworski and Kohli (1993) and the JIT selling model theorized and tested by Germain, Dröge and Daugherty (1994) and Claycomb, Dröge and Germain (1999) provides a framework for investigation of the link between market orientation and JIT selling. The combined model illustrated in Figure 1.1 incorporates market orientation as an antecedent to JIT selling and organizational structure and performance as consequences. Market orientation is illustrated as having both direct and indirect (through JIT selling) impact on organizational structure and organizational performance. This model configuration allows investigation of the relationships among the four constructs and investigation of the mediation and/or moderation effects of the JIT selling construct.

Construct Definitions

The model contains four constructs: market orientation, JIT selling, organizational structure (integration, formalization, specialization and decentralization) and organizational performance. Multiple definitions of market orientation were found (Kohli and Jaworski 1990; Deshpande, Farley and Webster 1993; Kohli et al. 1993; Narver and Slater 1990), and both organizational structure (Germain et al. 1994; Kohli and Jaworski 1990) and organizational performance (Avlonitis and Gounaris 1997; Han, Kim and Srivastava 1998; Varadarajan and Jayachandran 1999; Pelham 1999; Baker, Simpson and Siguaw 1999; Chan and Chau 1998; Rapert, Babakus and Olson 1997; Pelham and Wilson 1996; Atuahene-Gima 1995; Cooper 1995; Greenley 1995; Raju, Lonial and Gupta 1995; Wrenn, LaTour and Calder 1994; Kristensen, Dahlgaard, Kanj

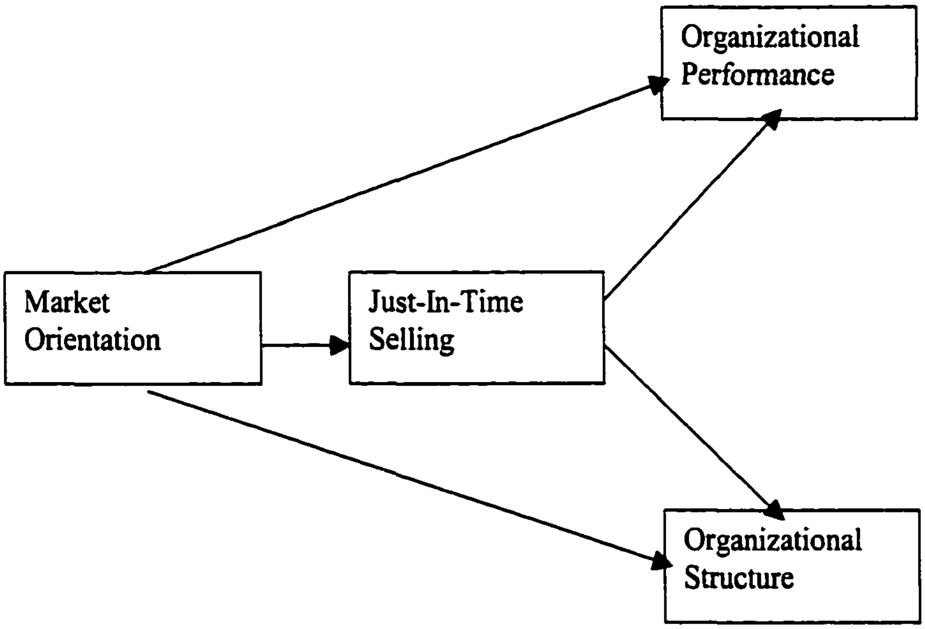

Organizational Performance
Market Orientation
Just-In-Time Selling
Organizational Structure

Figure 1.1 Just-In-Time Selling and Market Orientation Model

and Juhl 1999; Gunasekaran 1999; Germain and Dröge 1998; Dröge and Germain 1998; Lieberman and Demeester 1999) have been operationalized in previous studies. JIT selling is a relatively new construct that is less well defined and operationalized (Germain et al. 1994; Claycomb et al. 1999).

Just-in-Time Selling

A seller that builds value with customers related to zero-defect quality, zero variance quantity, precise on-time delivery and establishes single-source, internal relationships with customers is considered an extreme JIT seller (Dixon 1997; Germain et al. 1994; Claycomb et al. 1999; Davy, White, Merritt and Gritzmacher 1992; O'Neal 1987; Frazier, Spekman and O'Neil 1988). No valid, reliable scale was found for measurement of JIT selling (Germain et al. 1994). Germain et al. (1994) utilized a single question to measure JIT selling, and Claycomb et al. (1999) used a possibly complementary "JIT-with-customers" scale. These scales will serve to support the multi-method approach for scale reliability assessment recommended by Churchill (1979). This investigation, therefore, necessarily incorporates an effort to develop a JIT selling scale following the scale development process originally outlined by Churchill (1979) and updated by Gerbing and Anderson (1988).

Market Orientation

Deshpande and Farley (1996) developed a definition of market orientation based a review and analysis of previously developed definitions by Deshpande, Farley, and Webster (1993), Kohli et al. (1993), Narver and Slater (1990) and (Bearden and Netemeyer, 1999). Deshpande and Farley define market orientation as "the set of cross-functional processes and activities directed at creating and satisfying customers through continuous needs assessment (1996, 14)." The definition developed by Deshpande and Farley (1996) is used to define the market orientation construct for purposes of this dissertation.

Organizational Performance

Organizational performance is defined as a comparison of organizational profits, return on investment, sales volume, market share (Avlonitis and Gounaris 1997; Kohli and Jaworski 1990), and sales growth (Kohli and Jaworski 1990) with the industry average (Claycomb et al. 1999). The organizational performance scale used in this study was adapted from a similar scale used by Claycomb et al. (1999).

Organizational Structure

Organizational structure is defined as a self-reported measure of an organization's level of integration, formalization, specialization and decentralization (Claycomb et al. 1999; Germain et al., 1994; Germain and Dröge, 1997a; Germain and Dröge, 1997b; Germain and Droge, 1998). The organizational structure scales used in this study were adapted from similar scales used by Germain et al. (1994) and Claycomb et al. (1999).

Research Approach

A sample frame of 4,500 members of manufacturing firms with knowledge of their organization's marketing and production functions was constructed. Four thousand were randomly selected from a list of approximately 30,000 firms registered with Manufacturers' News, Inc. While the Manufacturers' News, Inc. database contains data for approximately 390,000 manufacturing firms, only approximately 30,000 manufacturers provide both e-mail and mail addresses. The remaining listing of 500 members was secured from APICS - The Educational Society for Resource Management.

A combined Internet and traditional mailing methodology was adopted to request data from the manufacturers in the sample frame. The manufacturers with valid e-mail addresses were sent initial and follow-up messages directing them to an Internet site containing the Just-In-Time Selling Survey (Appendix A). The manufacturers were requested to provide data relating to market orientation, JIT selling, organizational structure and organizational performance by completing and submitting the survey form. Manufacturers identified as having invalid e-mail addresses were mailed initial and follow-up requests to complete and return a paper version of the survey form in self-addressed, stamped envelopes.

A hierarchical regression approach recommended by James and Brett (1984) is used to test construct relationships and mediation/moderation effects of the JIT selling construct. A split sample test for moderation is also employed. A structural equation modeling approach (Bagozzi 1984; Hair, Anderson, Tatham and Black 1992) is used to test the integrated market orientation (Kohli and Jaworski 1990) and JIT selling (Germain et al. 1994; Claycomb et al. 1999) model. This approach incorporates the use of structural equation modeling techniques to more precisely specify the JIT selling construct, to identify significant relationships among the constructs, and to test the mediation/moderation effects of the JIT selling construct (Bagozzi 1984; Hair et al. 1992). Combined results from these analyses allow description of the relationship between market orientation and JIT selling and determination of the mediation/moderation effects of JIT selling on the relationships among the market orientation and organizational structure and organizational performance constructs.

Managerial Relevance

Managers constantly seek to improve overall organizational performance. Adoption of a market orientation and implementation of JIT manufacturing, purchasing, and design strategies have been found to improve performance. Continued pressure to improve performance has led to consideration of the efficacy of a JIT selling strategy. Such a strategy requires that the JIT philosophy and associated practices be extended from the production functions of the organization to the marketing functions. Previously, the marketing functions have been dominated by a desire to develop a strong market orientation.

This dissertation aims to accomplish four objectives for the practitioner: 1) define the JIT selling construct and identify its components, 2) describe the relationship between market orientation and JIT selling, 3) describe the impact of a JIT selling strategy on organizational performance, and 4) identify changes in organizational structure that might be expected following adoption of a JIT selling strategy. The results and conclusions of this study should aid managers in deciding whether or not to implement a JIT selling strategy and to proactively plan for the resulting organizational changes.

Plan of Study

Chapter 1 introduces the research questions and model to be tested and generally describes related literature and proposed research methodology. Chapter 2 includes a thorough review of the literature that supports the research questions and model. The literature review focuses on the individual constructs and the relationships among the constructs. Because the JIT selling construct is new, considerable attention is paid to developing its definition and measurement scale. Chapter 3 specifies the research hypotheses and describes the research methodology including the sampling plan, the research instrument and the statistical procedures necessary to test the hypotheses. A multiple regression approach is necessary to test the mediation and/or moderation effects of the JIT selling construct. The regression approach is complimented with a split sample test for the moderation effects of the JIT selling construct. Use of the structural equation modeling, competing-models approach is necessary to test the overall model. The regression, split sample and structural equation modeling approaches are discussed in Chapter 3. Chapter 4 presents the results of the data analysis and hypotheses tests. Chapter 5 offers conclusions, managerial implications, recommendations for future research, and limitations and contributions of this study.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to review the literature related to this investigation of the relationship between the market orientation and JIT selling constructs and the mediation and/or moderation effects of JIT selling on established relationships between the market orientation construct and the organizational structure and organizational performance constructs. The primary sources for market orientation and JIT selling theory are Kohli and Jaworski (1990) and Germain et al. (1994), respectively. This chapter includes descriptions of both models, description of all constructs included in the combined model, and discussion of the research pertinent to the hypothesized relationships among the constructs.

Kohli and Jaworski Market Orientation Model

Kohli and Jaworski (1990) provide a definition of the marketing orientation construct and a comprehensive framework that theorizes relationships among the construct and its antecedents and consequences. They provide the following formal definition.

> Market orientation is the organizationwide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organizationwide responsiveness to it (Kohli and Jaworski 1990, 6).

Figure 2.1 illustrates the antecedents and consequences to market orientation theorized by Kohli and Jaworski (1990, 7). Antecedents include senior management factors, interdepartmental dynamics, and organizational systems. Customer responses, business performance and employee responses are identified as consequences with supply-side and demand-side moderators to the market orientation-business performance link (Kohli and Jaworski, 1990, 7).

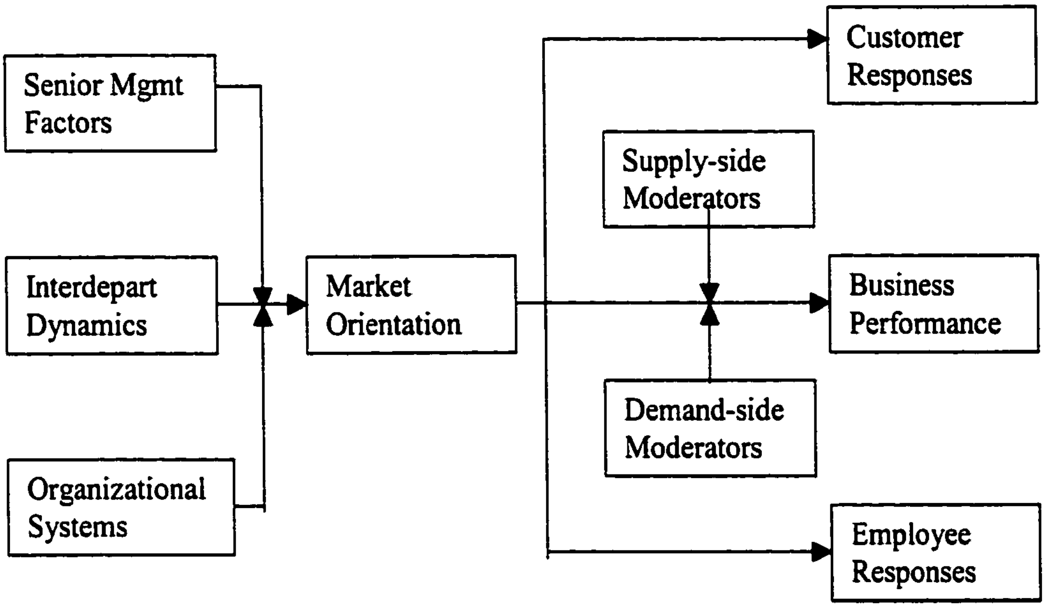

Senior Mgmt Factors
Interdepart Dynamics
Organizational Systems
Market Orientation
Customer Responses
Supply-side Moderators
Business Performance
Demand-side Moderators
Employee Responses

Figure 2.1 Antecedents and Consequences of a Market Orientation

The organizational systems set of antecedents includes three organizational structure constructs (departmentalization, formalization, and centralization) and market-based reward systems and acceptance of political behavior constructs (Kohli and Jaworski 1990, 11). The organizational structure constructs are of specific interest for this investigation. They are included as a part of the market orientation and JIT selling model theorized and tested in this study. It should be noted that organizational structure is theorized as an antecedent in the market orientation model but as a consequence in the JIT selling model of Germain et al. (1994). Jaworski and Kohli (1993) indicate that it is possible to argue that theorized antecedents to market orientation may also be treated as consequences. Kohli and Jaworski (1990) offer the following propositions concerning the relationships among the organizational structure constructs and the market orientation construct.

P9a: The greater the departmentalization, (1) the lower the intelligence generation, dissemination, and response design and (2) the greater the response implementation (Kohli and Jaworski 1990, 11).

P9b: The greater the formalization, (1) the lower the intelligence generation, dissemination, and response design and (2) the greater the response implementation (Kohli and Jaworski 1990, 11).

P9c: The greater the centralization, (1) the lower the intelligence generation, dissemination, and response design and (2) the greater the response implementation (Kohli and Jaworski 1990, 11).

Of the consequences to market orientation identified by Kohli and Jaworski (1990), the organizational performance construct was selected for inclusion as part of the market orientation and JIT selling model. Kohli and Jaworski (1990) illustrate a direct relationship between market orientation and organizational performance that is moderated by both supply-side and demand-side factors. Their proposition concerning the relationship between market orientation and organizational performance is as follows.

P13: The greater the market orientation of an organization, the higher its business performance (Kohli and Jaworski, 1990, p. 13).

Kohli and Jaworski (1990, 13) list favorable business performance indicators as return-on-investment, profits, sales volume, market share and sales growth and indicate that Narver and Slater (1988) have found preliminary support for their proposition 13. Market orientation may, however, not be strongly related to performance under certain supply-side and demand-side conditions such as "limited competition, stable market preferences, technologically turbulent industries, and booming economies (Kohli and Jaworski 1990, 15)." Because the antecedents identified by Kohli and Jaworski (1990, 15) are controllable, it is possible to take managerial action to engender a market orientation within an organization. A possible approach to increasing a firm's degree of market orientation may involve implementation of a JIT selling strategy.

Jaworski and Kohli (1993) tested their theorized model with two national samples and found that market orientation is positively related to overall business performance. Additionally, they found that, while formalization and decentralization were both positively linked as antecedents to market orientation, departmentalization was not linked to market orientation (Jaworski and Kohli, 1993)

Germain, Dröge and Daugherty JIT Selling Model

Germain et al. (1994) theorize and empirically investigate the effect of JIT selling on organizational structure. Because their research focused on manufacturers who market to external customers on a JIT basis, they used the term JIT selling (Germain et al. 1990, 472). They describe JIT selling as "the ultimate pull-based marketing strategy married to total process cost minimization (Germain et al. 1990, 472)."

Figure 2.2 illustrates the JIT selling model theorized by Germain et al. (1990, 472). Environmental uncertainty is theorized as an antecedent to the JIT selling construct, and organizational structure as a consequence. Environmental uncertainty and firm size are also theorized to relate directly to organizational structure. Organizational structure is described as having four dimensions: integration, performance control, specialization, and decentralization. Operations and scheduling decentralization are also included in the model.

For measurement purposes, JIT selling was operationalized as the percentage of sales made on a JIT basis (Germain et al. 1994, 475). Environmental uncertainty, integration, operations and scheduling decentralization were measured using scales from Miller and Dröge (1986); performance control was measured using a scale from Khandwalla (1974); and specialization was measured using a scale from Inkson, Pugh and Hickson (1970). Firm size was measured by the natural logarithm of the number of employees. This corrects for the diminishing effect of size on structure as size increases (Blau, 1970).

Germain et al. (1994, 472-473) proposed that, as JIT selling increases, integration, performance control, and specialization also increase, while scheduling decentralization decreases. Germain et al. (1994, 473) further theorized that JIT selling and operations decentralization are unrelated. The empirical investigation of the theorized model involved use of structural equation modeling methodology (Germain et al. 1994).

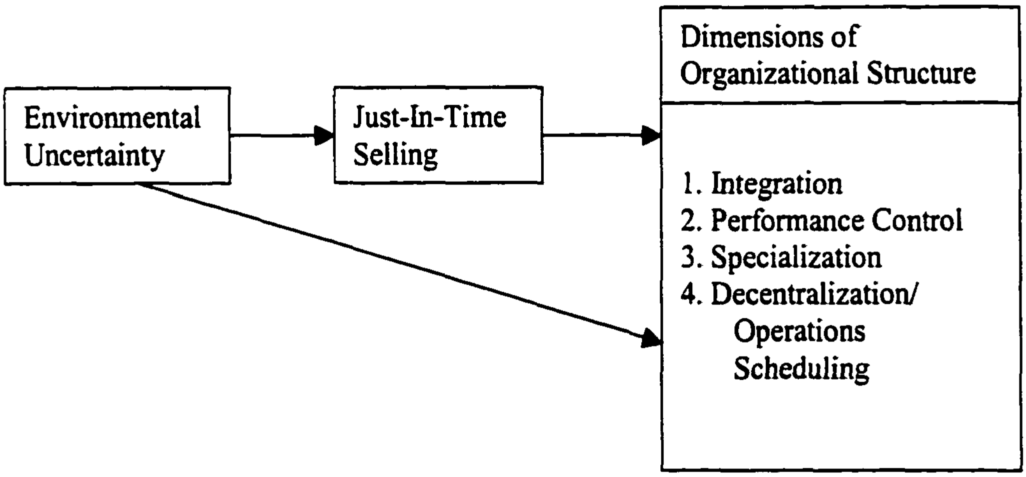

Environmental Uncertainty
Just-In-Time Selling
Dimensions of Organizational Structure
1. Integration
2. Performance Control
3. Specialization
4. Decentralization/ Operations Scheduling

Figure 2.2 Just-In-Time Selling Model (Germain, Dröge and Daugherty 1994)

Environmental uncertainty was found to predict JIT selling and to directly predict integration, performance control and operations decentralization but not specialization or scheduling decentralization (Germain et al. 1994, 477). They found that JIT selling positively predicts performance control and specialization and inversely predicts scheduling decentralization (Germain et al. 1994, 477). JIT selling did not predict operations decentralization as theorized (Germain et al. 1994, 477). JIT selling was not found to predict integration as theorized (Germain et al. 1994, 477). Firm size was identified as an important control variable (Germain et al. 1994, 478).

Combined JIT Selling and Market Orientation Model

Since both market orientation and JIT selling have been theorized to positively impact organizational performance, what is the relationship between the two constructs? The relationship between market orientation and JIT selling is investigated in this study. A combination of the market orientation model theorized by Kohli and Jaworski (1990) and tested by Jaworski and Kohli (1993) and JIT selling model theorized and tested by Germain et al. (1994) were combined for purposes of investigating the link between market orientation and JIT selling. Figure 2.3 illustrates the combined model which incorporates market orientation as an antecedent to JIT selling and organizational structure and performance as consequences.

Just-in-Time Selling

The JIT philosophy and associated practices have been adopted by both producers and purchasers (Natarajan and Weinrauch 1990). The management literature is replete with theoretical, empirical and anecdotal discussion of the buyer side of the JIT exchange dyad (O'Neal 1987; Chapman and Carter 1990; Germain and Dröge 1998; Miller and Kelle 1998). Discussion of JIT exchange is absent from the marketing literature, however (Frazier et al. 1988). With two notable exceptions (Claycomb et al. 1999; Germain et al. 1994), no attention has been given to the seller side of the JIT exchange dyad. Germain et al. (1994) identify a limitation of their study as the definition and measurement of the JIT selling construct. They measured the JIT selling construct by asking logistics managers "what percentage of sales are made on a JIT basis?" The measurement involved a one-item scale and logistics managers were used as the sample frame. Claycomb et al. (1999) developed and used a multi-item JIT with customers scale with an intent similar to that of the Germain et al. (1994) JIT selling question. Both

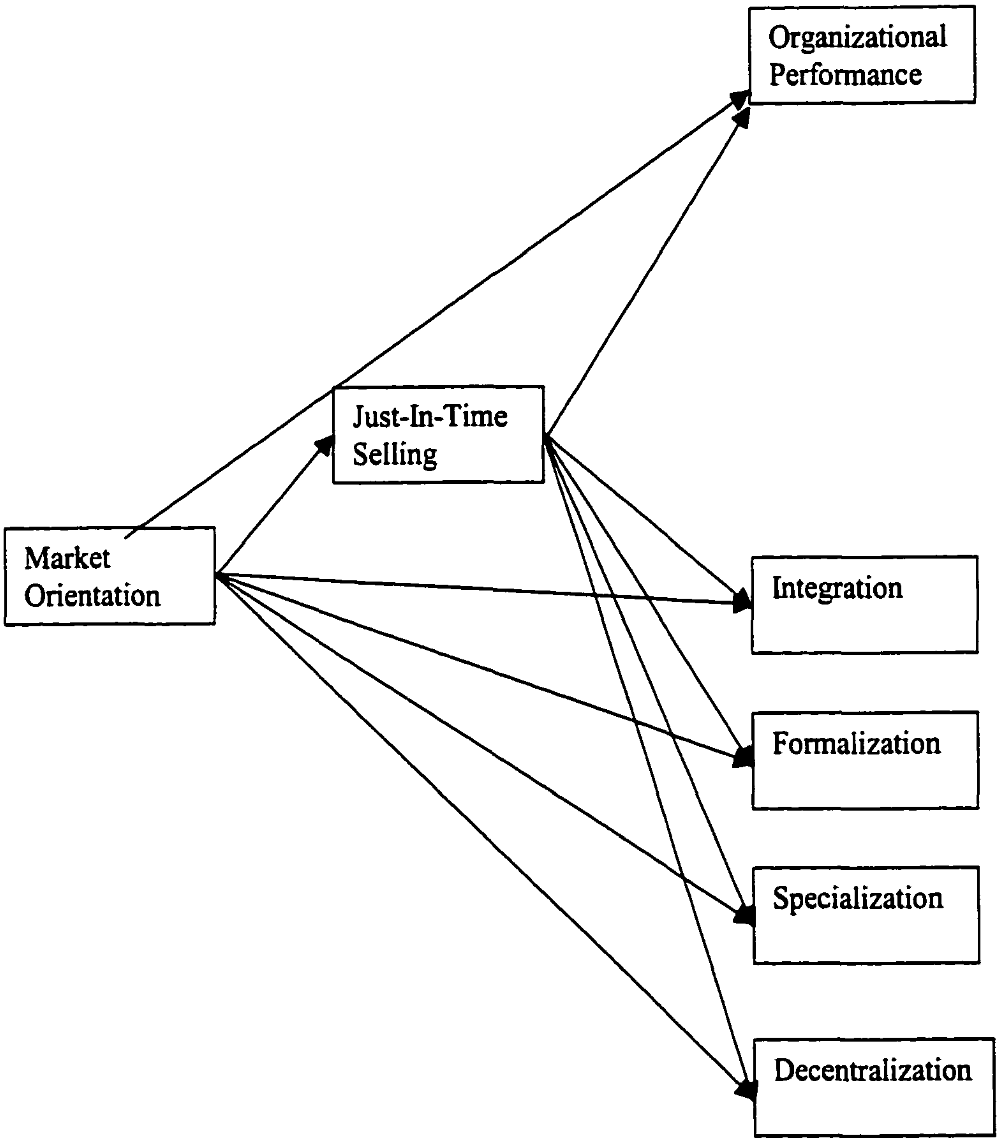

Organizational Performance
Just-In-Time Selling
Market Orientation
Integration
Formalization
Specialization
Decentralization

Figure 2.3 Combined Just-In-Time Selling and Market Orientation Model

scales were incorporated in the initial list of items used to establish the JIT selling scale for this study for the purpose of allowing the multi-method comparisons necessary to establish scale reliability as recommended by Churchill (1979).

In the most general sense, JIT is based on two fundamental ideas: (1) the elimination of waste and (2) respect for and full utilization of the capabilities of people (Davy et al. 1992; Minahan 1997). The major objectives of the JIT philosophy are improving quality and providing timely production and delivery of products (Davy et al. 1992). While the JIT system was originally applied to the manufacturing system, there is nothing within the philosophy that precludes its application to purchasing, design, and marketing functions (Davy et al. 1992). The delivery of quality products in the right amounts at the right times depends on JIT actions by all functions.

A myriad of programs has come to be associated with JIT. Among these are focused factory, total preventive maintenance, kanban, total quality control, and quality circles (Davy et al. 1992). JIT is, however, not a collection of programs; it is instead a strategic initiative that implies fundamental changes in the way business is done (Germain et al. 1994). Successful implementation of a JIT system requires internalization of the JIT philosophy as well as implementation of associated programs.

Kiichiro Toyoda is attributed with originating the JIT philosophy as he prepared to manufacture automobiles at his new Koromo plant in 1938.

> In [Kiichiro's] operating factory he hung a sign that read: JUST IN TIME. What he meant, he told the workers, was that no component for a car should be produced before it was needed. Components should be made, therefore, just in time (Tugo and Wartman, 1993, p. 79).

Taiichi Ohno began work for the Toyota Motor Company in 1943 and was charged with making the manufacturing processes efficient and adaptable. During the next thirty years Ohno worked to more fully develop and implement the JIT manufacturing system. By the mid 1970s, Toyota's success brought Ohno to the attention of U.S. manufacturers who saw the value of Ohno's JIT system and hoped to duplicate it (Ohno 1988).

Since the JIT manufacturing system originated, the philosophy has spread to include JIT purchasing and JIT design (Natarajan and Weinrauch 1990). Successful implementation of the JIT manufacturing, purchasing and design systems has allowed management's focus to shift to JIT selling (Germain et al. 1994). As more firms successfully adopt the JIT manufacturing, purchasing and design systems, competitive advantages once yielded by the systems disappear. The shift in attention to the selling side of the JIT exchange dyad results from the constant search for a new advantage. Firms that can successfully offer JIT selling services to their customers will gain advantage over other sellers.

Germain and Dröge (1998) compared the context, organizational design, and performance of JIT and non-JIT purchasers. They found that (1) there is no difference between JIT and non-JIT firms with respect to context, (2) uncertainty in production and marketing processes is higher for JIT than non-JIT firms, and (3) the level of formal performance control is higher for JIT purchasers (Germain and Dröge 1998).

One of the primary underpinnings of the JIT philosophy is the removal of all waste from the supply chain. In particular, any slack inventory is considered a liability in the extreme JIT view (Foster, Sullivan, and Ward 1998). Foster et al. (1998) tested the view that inventory is a liability and found only mixed support for the proposition.

There have been previous attempts to develop constructs associated with JIT management systems (Hall 1987; Heard 1986; and Davy et al. 1992). Hall (1987) identified three constructs, total quality, people involvement, and JIT manufacturing techniques. The first two constructs adhere to the fundamental underpinnings of the JIT philosophy, and the third is associated with JIT system implementation. All are focused primarily on JIT manufacturing systems. Heard (1986) identified five JIT associated constructs: 1) people leverage, 2) structured path flows, 3) dependable supply and demand, 4) linear operations and 5) continuous flow. Again the constructs were developed based on a JIT manufacturing focus. Davy et al. (1992) identified three associated constructs: operating structure and control, product scheduling, and quality implementation. These constructs are also associated primarily with JIT manufacturing.

JIT manufacturing systems were successfully adopted first and were followed, in order, by JIT purchasing and JIT design systems. Competitive advantage from these evolving implementations has been realized and duplicated by competitors. Using the marketing function to support JIT efforts has not been well recognized (Natarajan and Weinrauch 1990). The search for new advantage has led to a focus on JIT selling systems and strategies. Theory development in the area of JIT selling requires specification of a JIT selling model with associated constructs and relationships.

JIT sellers must build value based on organizational abilities to deliver products that meet performance specifications every time, in the precise quantities specified, and at the precise time specified (Frazier et al. 1988; Germain et al. 1994). Germain et al. (1994) describe JIT selling as the ultimate "pull" marketing strategy combined with a total process cost minimization strategy.

The successful JIT seller works continuously to reduce the variances associated with quality, quantity and delivery (Frazier et al. 1988; O'Neal 1987). Performance of a JIT seller will be judged on quality, quantity, and delivery precision (Frazier et al. 1988; Germain et al. 1994; O'Neal 1987). The JIT selling scale includes questions related to quality, quantity and delivery precision with additional questions concerning the strength of relationship between JIT seller and JIT purchaser and the level of information exchange between seller and purchaser.

The definition of quality emanates from the performance criteria specified by the customer. JIT customers insist that purchases have zero defects, removing the necessity to inspect upon receipt. Quality is the responsibility of the JIT seller and results from the implementation of the JIT manufacturing system throughout the JIT seller's manufacturing process. Freeland (1991) surveyed purchasing professionals and noted that 62% ranked quality as the most important criteria in supplier selection. During the JIT selling process, the JIT seller builds product and service value in the minds of purchasers by offering evidence that the seller's processes are governed by the JIT manufacturing system.

JIT purchasers specify quantities that minimize waste within their manufacturing processes. Any slack inventory is considered a liability, and efforts are made to remove it from the process. When larger than specified quantities are received by the JIT customer, the costs associated with inventory storage and management increase. When smaller than specified quantities are received by the JIT customer, the customer's manufacturing process halts resulting in lost production and sales opportunities.

JIT purchasers desire to minimize slack inventory. This desire leads to requests for frequent, on-time deliveries. Freeland (1991) noted that 50 percent of the manufacturing down time caused by JIT practices is associated with late deliveries of supplier products. Faster, more responsive transportation modes must be developed and utilized by JIT sellers (O'Neal 1987). JIT purchasers often ask for delivery directly to the production floor at multiple times during the day. These multiple deliveries minimize the slack inventory in the JIT purchaser's processes. Because inventory buffers have been removed by the JIT customer, late deliveries can result in lost production and sales opportunities.

Quality, quantity, and delivery precision are facilitated by strong relationships between JIT seller and JIT purchaser. Tight linkages, both behaviorally and logistically, between buyers and sellers are necessary (O'Neal, 1987). Alliances are formed to reduce costs, increase revenues and increase information sharing throughout the supply chain (Germain et al. 1994). Strong, open relationships are supported by high levels of two-way information flow (Dixon 1997). The degree and ease of information flow are indicators of strong seller/purchaser relationships (O'Neal 1987). JIT selling is facilitated by the ease with which customers can interface with sellers' order entry systems (Natarajan and Weinrauch 1990; Porter 1997).

The JIT selling construct will be measured using a multi-item JIT selling (JITS) scale developed specifically for this investigation. The JITS scale incorporates questions related to quality, quantity and delivery precision and seller/buyer relationship. The "Just-In-Time with customers" scale used by Claycomb et al. (1999) will also be incorporated with the JITS scale to allow a multi-trait comparison.

Market Orientation

Multiple definitions of the market orientation construct are available (Deshpande et al. 1993; Kohli and Jaworski 1990; Kohli et al. 1993; Narver and Slater 1990). Kohli et al. (1993, 467) define market orientation as "the organizationwide generation of market intelligence pertaining to current and future needs of customers, dissemination of intelligence horizontally and vertically within the organization, and organizationwide action or responsiveness to market intelligence." Narver and Slater (1990, 21) define market orientation as "the organizational culture that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers and thus continuous superior performance for the business."

Deshpande and Farley (1996) developed a definition of market orientation based on review and analysis of previously developed definitions by Deshpande et al. (1993), Kohli et al. (1993), and Narver and Slater (1990). Deshpande and Farley (1996, 14) define market orientation as "the set of cross-functional processes and activities directed at creating and satisfying customers through continuous needs assessment." The definition developed by Deshpande and Farley (1996) is used to define the market orientation construct for purposes of this dissertation.

Four prominent scales for the measurement of the market orientation construct have been developed (Narver and Slater 1990; Kohli et al. 1993; Deshpande et al. 1993; Deshpande and Farley 1996). The fourth market orientation scale to be developed, Deshpande and Farley's Summary Scale for Market Orientation, is a reliable, integrative scale that combines elements of the preceding Narver and Slater; Kohli, Jaworski and Kumar; and Deshpande, Farley and Webster scales (Steinman, Deshpande and Farley 2000). Bearden and Netemeyer (1999) report a coefficient alpha reliability estimate for the Deshpande and Farley scale at the .89 level. The Summary Scale for Market Orientation was adopted for use in this study.

Organizational Structure

The market orientation model theorized by Kohli and Jaworski (1990, 10-11) incorporates three organizational structure constructs (departmentalization, formalization and centralization) as antecedents to the market orientation construct. Departmentalization reflects the degree of specialization within the organization (Lundstrom 1976; Levitt 1969); formalization reflects the degree of rule dependency within the organization (Hall et al. 1967); and centralization reflects the degree of authority delegation (Aiken and Hage 1968). Organizations exhibiting low degrees of departmentalization, formalization and centralization are likely better able to utilize market information (Deshpande and Zaltman 1982; Hage and Aiken 1970; Zaltman, Duncan and Holbek 1973).

Kohli and Jaworski (1990, 6) identify three sets of antecedents to the market orientation construct: senior management factors, interdepartmental dynamics and organizational systems. Organizational systems antecedents include market-based reward systems, acceptance of political behavior, departmentalization, formalization and centralization (Kohli and Jaworski 1990, 11). Departmentalization, formalization and centralization are considered organizational structure constructs and are of particular interest for this study. Lundstrom (1978) and Levitt (1969) postulate that high degrees of departmentalization, formalization and centralization may reduce an organization's ability to implement a market orientation. Departmentalization is defined as a high degree of specialization (Lundstrom 1978; Levitt 1969); formalization is defined as the degree to which rules govern organizational communication, decision making and activity (Hall et al. 1967; Child 1972, 164); and centralization is defined as the degree that decision making authority is spread throughout the organization (Aiken and Hage 1968). Jaworski and Kohli (1993) tested the relationships between organizational structure (decentralization, formalization and departmentalization) and market orientation. They found that, while both decentralization and formalization were positively related to market orientation, departmentalization was not related to market orientation (Jaworski and Kohli, 1993).

Germain et al. (1994) theorize and empirically test organizational structure as a direct consequence of JIT selling. They include five dimensions as part of the organizational structure construct: integration, performance control, specialization, operations decentralization and scheduling decentralization. Germain et al. (1994, 472) define integration as "lateral links that coordinate differentiated subunits, reduce conflict and duplication, foster mutual adjustment, and coalesce subunits toward meeting overall organizational objectives." Integration counteracts the effects of departmentalization and specialization. Formalized performance control includes monitoring of the organization's results (Mintzberg 1979, 149) and competitor's results (Germain et al. 1994, 473). Performance control is one aspect of overall formalization (Germain et al. 1994, 473). Specialization is defined as the degree to which jobs within the organization require narrowly focused, specialized skills and knowledge (Mintzberg, 1979). Decentralization is included as a component of organizational structure by both Kohli and Jaworski (1990) and Germain et al. (1994). Germain et al. (1994, 473) generally define decentralization as the "vertical locus of decision-making authority in the firm" and further describe it as having operations and scheduling components. Germain et al. (1994, 473) indicate that only scheduling decentralization is directly related to the JIT selling strategy. Claycomb et al. (1999) conducted a similar study using JIT-with-customers as the focal construct and found JIT with customers to be associated with more decentralized, integrated and formalized organization structures and with improved organizational performance in terms of less finished goods inventory and higher overall financial performance.

The organizational structure constructs (integration, formalization, specialization, and decentralization) are measured using scales adopted from the Germain et al. (1994 p. 475) and Claycomb et al. (1999, 56-58) studies. Integration was measured using two sets of summed scales, integrated committees and integrated mechanisms, recommended by

Miller and Dröge (1986). Formalization was measured using Khandwalla's scale (1974) with minor modifications (Germain et al. 1994, 475). Specialization was measured using a scale similar to one developed by Inkson et al. (1970). Germain et al. (1994, 475) modified the list of specialty areas included within the scale. Operations and scheduling decentralization were also measured using a Miller and Dröge scale (1986). All scales as used in this study may be viewed in the questionnaire (Appendix A).

Organizational Performance

Frazier et al. (1988) reviewed JIT exchange relationships in industrial markets. They proposed changes in sales and profits as the most important outcomes of the implementation of a JIT exchange strategy (Frazier et al. 1988, 62). Kohli and Jaworski (1990) identified multiple measures of organizational performance including return on investment, profits, sales volume, market share and sales growth. Jaworski and Kohli (1993) found market orientation to be a positive predictor of overall business performance. Slater and Narver (1994) investigated the effect of a market orientation on business profitability. Narver and Slater (1990, 26) measured market performance as the top management team's assessment of the strategic business unit's return on assets relative to all other competitors in the strategic business unit's primary served market over the past year. Slater and Narver (1994) also studied the moderating effect of competitive environment on the market orientation and performance relationship. In this second study, they measured market performance as the top management team's assessment of the strategic business unit's return on assets, sales growth, and new product success relative to all other competitors in the strategic business unit's principal market over the past year (Slater and Narver 1994, 51).

Inman and Mehra (1993) identified support for the link between JIT and the financial performance of the firm. Germain et al. (1994) found support for the hypothesis that JIT selling and formal performance control are positively linked. They propose that

JIT selling leads to reduced inventory levels which in turn generates the need for more performance related information (Germain et al. 1994, 473). They cite studies by Chapman and Carter (1990) and O'Neal (1987) as supporting the negative relationship between JIT practices and inventory levels (Germain et al. 1994, 473). Reduced inventory levels translate to reduced inventory related costs and either improved profits and/or improved market share.

Pelham (1997) investigated the relationship between market orientation and profitability in small industrial firms. His study incorporated firm effectiveness, growth per share, and profitability as measures of firm performance (Pelham 1997, 58). Firm effectiveness included three measures: relative product quality, new product success, customer retention and customer retention; growth per share included measures of sales level, growth rate and target market share; and profitability included return on equity, gross margin and return on investment (Pelham 1997, 58).

Avlonitis and Gounaris (1997) compared industrial and consumer goods firms in terms of market orientation and performance. They utilized measures of profits, return on investment, sales volume and market shares as indicators of company performance (Avlonitis and Gounaris, 1997).

Tse (1998) investigated the relationship between market orientation and performance for large property companies in Hong Kong. Measures of firm performance included total assets, total equity, sales, net income, return on investment, return on equity and profit margin (Tse 1998).

Dröge and Germain (1998) also studied the effect of JIT purchasing, production and sales practices on inventory levels and found a significant, negative relationship. They used an open-ended scale to measure the amount of inventory by asking how many weeks of inbound, in-process and outbound inventory were kept on hand (Dröge and Germain, 1998).

Han et al. (1998) investigated the mediating effect of innovation on the market orientation and performance link in the banking industry. Firm performance was measured as changes in net income and return on assets from financial reports and self-reported measures on relative growth and profitability (Han et al. 1998).

Germain and Dröge (1998) contrasted the performance of JIT and non-JIT buying firms. They incorporated three measures of performance in their study: market share growth over the past three years, return on investment over the past three years, and average profit over the past three years (Germain and Dröge 1998).

Appiah-Adu and Ranchhod (1998) investigated the link between market orientation and performance in the biotechnology industry. They included four measures of firm performance in their study: introduction of successful new products or services, market share growth, profit margin, and overall performance (Appiah-Adu and Ranchhod 1998).

Relationships Among Constructs

The combined JITS model (Figure 2.3) generally proposes that 1) market orientation directly affects JIT selling, 2) that JIT selling directly affects organizational structure and organizational performance, and 3) that JIT selling mediates/moderates the relationships among market orientation and organizational structure and performance. A review of the literature relating to each of the proposed relationships follows. Table 2.1 lists and briefly describes prior research relating to the construct relationships.

Market Orientation and JIT Selling

A seller exhibiting the ability to build value-based on organizational capabilities to deliver zero-defect quality, zero-variance quantity, precise on-time delivery and exhibiting the ability to develop single-source relationships with customers is considered an extreme JIT seller (Dixon 1997; Germain et al. 1994; Davy et al. 1992; O'Neal, 1987;

Frazier et al. 1988). No valid, reliable scale exists for measurement of JIT selling (Germain et al. 1994). This investigation will incorporate an effort to develop such a scale following the scale development process originally outlined by Churchill (1979) and updated by Gerbing and Anderson (1988). The JIT selling related scales used by Germain et al. (1994) and Claycomb et al. (1999) will be used to assess reliability from the multi-trait, multi-method view required by Churchill (1979).

Although there are no published results concerning the market orientation and JIT selling relationship, the components of the JIT selling construct seem to naturally emanate from a market orientation. The stronger a firm's market orientation the more likely the firm will provide the quantity and quality products and services desired by its customers at the time specified by its customers.

JIT Selling and Organizational Performance

JIT philosophy and practices have led to inventory reductions and performance gains throughout the supply chain (Kristensen et al. 1999; Gunasekaran 1999; Germain and Dröge 1998; Dröge and Germain 1998; Lieberman and Demeester 1999; White, Pearson and Wilson 1999). Dröge and Germain (1998) examined the relationship between the percentage of purchases, production and sales made on a JIT basis and inventory levels. Dröge and Germain (1998) generated and analyzed data from a sample of 200 members of the Council of Logistics Management and found a significant, inverse relationship between JIT practices and inventory level (Dröge and Germain 1998). Lieberman and Demeester (1999) studied the link between inventory level and manufacturing productivity and found the link to be significant and negative.

Germain and Dröge (1998) categorized 200 manufacturing firms into JIT buying and non-JIT buying groups and compared the groups on the bases of context, organizational design and performance. Performance measures included market share growth, return on investment, and average profit over a three year period (Germain and

Dröge 1998). They found means for the JIT buying group to be significantly higher on the three performance measures than means for the non-JIT buying group (Germain and Dröge 1998).

Nakamura, Sakakibara and Schroeder (1998) chronicled the transfer of JIT philosophies and practices from Japan to North American organizations and found improved performance as a result of JIT implementation. White et al. (1999) investigated the relationship between JIT manufacturing practices and organizational performance by studying a sample of 454 manufacturing firms. They found that, while large manufacturing firms are more likely than small firms to implement JIT manufacturing practices, JIT manufacturing practices predict performance for both small and large firms (White et al. 1999). JIT manufacturing practices led to improved throughput and lower inventory levels for small firms and improved throughput and improved internal quality for large firms (White et al. 1999).

Mehra and Inman (1992) analyzed data from 114 manufacturing firms and found JIT vendor, education and production strategies are required for successful JIT implementation. Additionally, they found no relation between management commitment and successful JIT implementation.

Generally, the adoption of a JIT selling philosophy and associated practices is theorized to significantly impact organizational structure and performance. There has, however, been no specific identification of a relationship between JIT selling and organizational performance.

Table 2.1 Summary of Literature Relating to Construct Relationships

RELATIONSHIP		
Study	Sample	Major Finding
JIT SELLING AND MARKET ORIENTATION		
No studies identified		
MARKET ORIENTATION AND ORGANIZATIONAL PERFORMANCE		
Narver and Slater (1990)	Top management team members from 140 SBUs from wood products corporation (n = 384)	Positive relationship MO and OP (ROA compared to competitors)
Jaworski and Kohli (1993)	Members of Marketing Science Institute and Dunn & Bradstreet top 1000 (n=222)	MO positively associated with overall business performance but not with market share
Slater and Narver (1995)	SBUs in diversified Manufacturing corporations (n = 127)	Positive relationship MO and OP (ROA, sales growth, new product success).
Appiah-Adu (1997)	Small UK firms	Positive relationship MO and OP (new product success, sales growth, ROI)
Avlonitis and Gounaris (1997)	Greek industrial companies (n = 444)	Positive relationship MO and OP (profits, ROI, sales volume, market share compared internally and externally)
Appiah-Adu and Ranchhod (1998)	Biotechnology firms (n = 62)	Positive relationship MO and OP (profit margin, market share growth, overall performance). No relation MO and success of new products
Han, Kim and Srivastava (1998)	Banks from Midwestern state (n = 134)	MO and OP (net income growth, ROA) mediated by innovation (technical and administrative)
Tse (1998)	Hong Kong property managers (n = 13)	No correlational relationship MO and OP (total assets, Shareholder's equity, sales, net income, ROA)
Pelham (1999)	Small manufacturing firms	Positive relationship MO and OP (profitability)

Table 2.1—Continued

RELATIONSHIP Study	Sample	Major Finding
Caruana, Pitt and Berthon (1999)	British Service Firms (n = 132)	No relationship MO and OP
JIT AND ORGANIZATIONAL PERFORMANCE		
Claycomb, Dröge and Germain (1999)	Manufacturing Members Council of Logistics Management (n = 200)	Negative relationship JITWC and inventory levels. Positive with JITWC and financial performance
Dröge and Germain (1998)	Manufacturing Members Council of Logistics Management (n = 200)	Negative relationship JITP, JITM JITS and inventory levels
Germain and Dröge (1998)	Manufacturing Members Council of Logistics Management (n = 200)	Positive relationship JITP and OP (market share growth, ROI, average profit)
Inman and Mehra (1993)	American manufacturing firms (n=114)	Positive relationship JIT implementation and financial success
Mehra and Inman (1992)	Manufacturing Firms with JIT Implementations (n = 114)	JITM vendor, education and production strategies positively related to JITM implementation
Nakamura, Sakakibara and Schroeder (1998)	US manufacturing plants	Positive relationship JITM and OP
Lieberman and Demeester (1999)	Japanese automotive companies (n = 52)	Negative relationship Inventory levels and manufacturing productivity
White, Pearson and Wilson (1999)	Manufacturing Members Association for Manufacturing Excellence (n = 454)	Significant relationship JITM and OP (throughput + and inventory levels -) for small firms
MARKET ORIENTATION AND ORGANIZATIONAL STRUCTURE		
Jaworski and Kohli (1993)	Members of Marketing Science Institute and Dunn & Bradstreet top 1000 (n=222)	MO positively associated with decentralization and formalization but not with departmentalization
JIT AND ORGANIZATIONAL STRUCTURE		
Claycomb, Dröge and Germain (1999)	Manufacturing Members Council of Logistics Management (n = 200)	JITWC associated with decentralized, integrated and formalized organizations

Table 2.1—Continued

RELATIONSHIP Study	Sample	Major Finding
Germain, Dröge and Daugherty (1994)	Manufacturing members Council of Logistics Management (n = 183)	JITS significantly related to OS (positive with performance control, specialization; negative with scheduling decentralization)
Germain and Dröge (1997a)	Manufacturing members Council of Logistics Management (n = 199)	JIT task scope predicts OS; JIT workflow integration does not predict OS
Germain and Dröge (1997b)	Manufacturing members Council of Logistics Management (n = 200)	JITP predicts formalization, decentralization and integration
JIT SELLING MEDIATION/ MODERATION		
No studies found		

JITS	Just-In-Time Selling	ROA	Return on Assets
MO	Market Orientation	ROI	Return on Investment
JIT	Just-In-Time	JITP	Just-In-Time Purchasing
OP	Organizational Performance	JITM	Just-In-Time Manufacturing
OS	Organizational Structure	JITWC	Just-In-Time with Customers

Market Orientation and Organizational Performance

Kohli and Jaworski (1990) theorized improvement in organizational performance as a consequence of adoption of a market orientation. Considerable support for this strong, positive relationship between market orientation and organizational performance has been found (Avlonitis and Gounaris 1997; Han et al. 1998; Varadarajan and Jayachandran 1999; Pelham 1999; Baker et al. 1999; Chan and Chau 1998; Rapert et al. 1997; Pelham and Wilson 1996; Atuahene-Gima 1995; Cooper 1995; Greenley 1995; Raju et al. 1995; Wrenn et al. 1994; Slater and Narver 1995; Jaworski and Kohli, 1993). Caruana, Pitt and Berthon (1999), however, studied 132 British service firms and found no relation between market orientation and performance.

Narver and Slater (1990) developed a valid measure of market orientation and used it to investigate the hypothesized relationship between market orientation and a business's profitability. Members of the top management teams of 140 strategic business units within a major western forest products corporation were questioned (Narver and Slater 1990). Narver and Slater (1990) found a substantial, positive relationship between market orientation and profitability.

Slater and Narver (1995) investigated the relationship between market orientation and market performance (return on assets, sales growth, new product success) and the possible moderating effects of competitive environment on the relationship. They sampled 127 strategic business units from diversified manufacturing corporations and found a positive relationship between market orientation and market performance but little support for the moderating effects of competitive environment.

Appiah-Adu (1997) sampled small firms in the United Kingdom and found significant, positive links between market orientation and new product success, sales growth, and ROI. Avlonitis and Gounaris (1997) sampled a group of industrial companies in an effort to investigate the market orientation and performance relationship. They found a positive relationship between the constructs for both internally and externally compared measures of performance (profits, return on investment, sales volume, market share) for companies operating in industrial markets.

Tse (1998) gathered data from a sample of 13 large property developers in Hong Kong for purposes of studying the relationship between market orientation and performance in a seller's market. He found no significant correlational relationship between market orientation and business performance (total assets, shareholder's equity, sales, net income, return on assets) in the Hong Kong property development market.

Appiah-Adu and Ranchhod (1998) investigated the link between market orientation and business performance (new product success, profit margins, growth in market share, overall performance) in the biotechnology sector. They generated and analyzed data from 62 biotechnology firms and found market orientation significantly and positively related to profit margins, growth in market share and overall performance but not significantly related to new product success.

Han et al. (1998) used data from a sample of 134 banks in a Midwestern state to investigate the mediating effect of innovation on the market orientation and organizational performance relationship. They found that both administrative and technical innovation had significant, positive mediational effects on the link between market orientation and performance as measured by net income growth and ROA.

Pelham (1999) found a significant, positive relationship between market orientation and performance (profitability) for small manufacturers. Pelham (2000) additionally identified fast response to negative customer satisfaction information, strategies based on creating value for customers, immediate response to competitive challenges, and fast detection of changes in customer product preferences as the elements of market orientation with the strongest positive impact on measures of performance.

JIT Selling Mediation/Moderation - Market Orientation and Organizational Performance

The mediation/moderation effects of JIT selling on the established relationships between market orientation and organizational performance and market orientation and organizational structure have not been previously investigated. Identification and description of these effects form a portion of the original contribution of this dissertation.

Market Orientation and Organizational Structure

Kohli and Jaworski (1990) theorize organizational structure as an antecedent to market orientation. Jaworski and Kohli (1993) investigated this theorized link and found market orientation to be positively linked with decentralization and formalization but not with departmentalization. Germain et al. (1994) theorized and empirically found a causal relationship between JIT selling and organizational structure. The two models appear to conflict here with Kohli and Jaworski (1990) theorizing organizational structure as an antecedent and Germain et al. (1994) theorizing it as a consequence. Jaworski and Kohli (1993), however, indicate that constructs theorized as antecedents to market orientation could also reasonably be theorized and tested as consequences.

JIT Selling and Organizational Structure

Claycomb et al. (1999) collected data from a sample of 200 manufacturing members of the Council of Logistics Management to investigate the relationship between JIT-with-customers and organizational structure. Generally, they found that JIT-with-customers was associated with decentralization, formalization and integration.

Germain et al. (1994) used data from a sample of 183 manufacturing members of the Council of Logistics Management to investigate the relationship between JIT selling and organizational structure. Their organizational structure construct incorporated multiple dimensions: integration, performance control, specialization, and decentralization. They found JIT selling directly and positively related to performance control and specialization and directly and negatively related to scheduling decentralization but not directly related to operations centralization or integration.

Germain and Dröge (1997a) collected data from a sample of 199 manufacturing members of the Council of Logistics Management for purposes of investigating the links between JIT task scope and JIT workflow integration and organizational structure dimensions of integration, specialization, decentralization, and performance measurement control. They found that JIT task scope predicted all organizational structure dimensions. Organizations high in JIT task scope were more specialized, decentralized, integrated and dependent on formal performance measurement control. JIT task scope was also found to predict JIT workflow integration, while JIT workflow integration was not found to predict any of the organizational structure dimensions (Germain and Dröge, 1997a).

JIT Selling Mediation/Moderation - Market Orientation and Organizational Structure

No published results specific either to the mediation/moderation effects of JIT selling or the direct effect of market orientation on organizational structure have yet been noted. Identification and description of the mediating/moderating effects of JIT selling is a primary component of the original contribution of this dissertation.

The review of the literature revealed two studies associated with JIT selling. Germain et al. (1994) used a one-item scale to measure JIT selling and assessed its relation to organizational structure. Claycomb et al. (1999) used a JIT-with-customers scale and assessed its relation with organizational structure and organizational performance. No studies related to the focal link between JIT selling and market orientation were identified. Further, no studies investigating the mediation/moderation impact of JIT selling were identified.

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this chapter is to present the research hypotheses and the research design. The research model shown in Figure 3.1 illustrates the hypothesized relationships. The first section lists the hypotheses with accompanying theoretical justification. Operationalization of key constructs with discussion of appropriate measurement scales follows. Finally, the research design for this study is described and discussed.

Research Hypotheses

The model generally proposes that 1) market orientation directly affects JIT selling, 2) JIT selling directly affects organizational structure and organizational performance, and 3) JIT selling mediates/moderates the relationships between market orientation and organizational structure and performance. The following hypotheses are necessary to test the propositions.

Market Orientation and JIT Selling

Kohli and Jaworski (1990, 6) define market orientation as "the organization-wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization-wide responsiveness to it." Deshpande and Farley (1996) define it as "the set of cross functional processes and activities directed at creating and satisfying customers through needs assessment." The summary scale for market orientation has been established as a valid, reliable scale measure of the market orientation construct (Steinman et al. 2000).

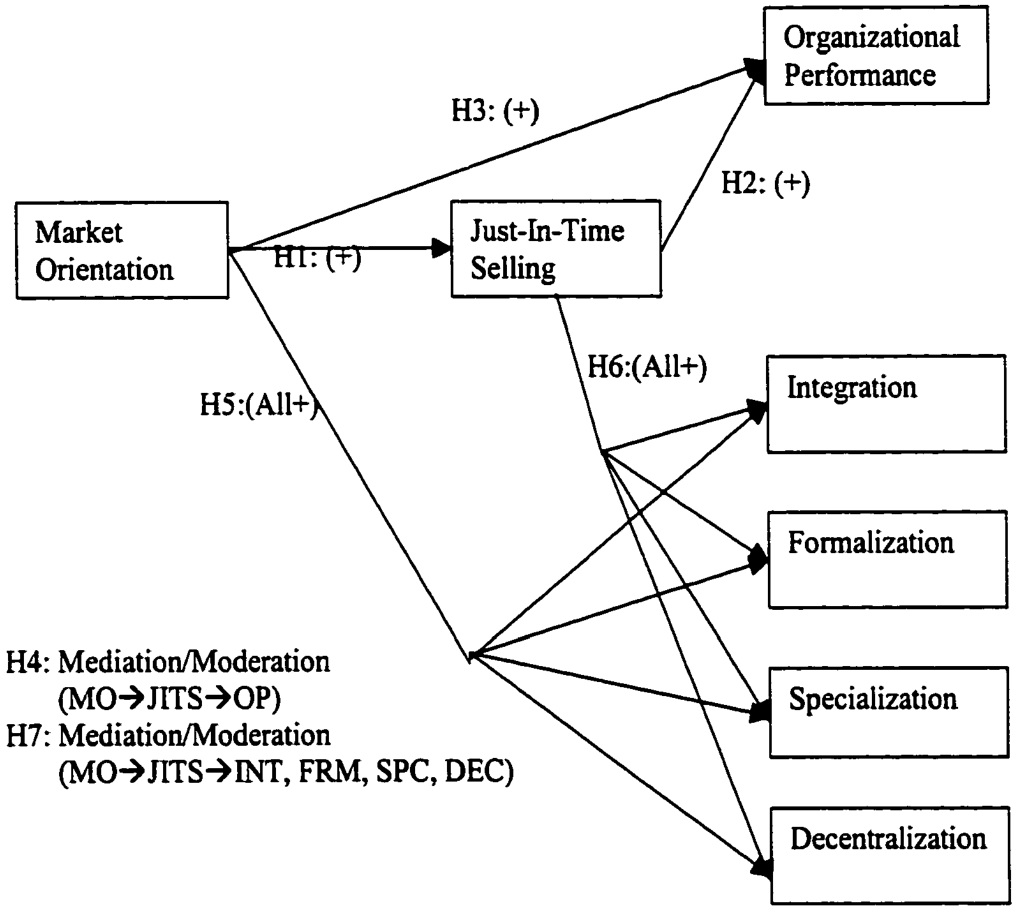

Organizational Performance
H3: (+)
H2: (+)
Market Orientation
H1: (+)
Just-In-Time Selling
H6:(All+)
H5:(All+)
Integration
Formalization
Specialization
Decentralization
H4: Mediation/Moderation (MO→JITS→OP)
H7: Mediation/Moderation (MO→JITS→INT, FRM, SPC, DEC)

Figure 3.1 Market Orientation and Just-In-Time Selling Model
with Hypothesized Relationships

A seller exhibiting zero-defect quality, zero-variance quantity, precise on-time delivery and single-source relationships with customers is considered an extreme JIT seller (Germain et al. 1994; Davy et al. 1992; O'Neal 1987; Frazier et al. 1988). No valid, reliable scale exists for measurement of the JIT selling construct (Germain et al. 1994). This investigation incorporates an effort to develop such a scale following the scale development process originally outlined by Churchill (1979) and updated by Gerbing and Anderson (1988).

Although there are no published results concerning the market orientation and JIT selling relationship, the components of the JIT selling construct seem to naturally emanate from a market orientation. The stronger a firm's market orientation the stronger the likelihood the firm will provide the quantity and quality products and services desired by its customers at the time specified by its customers.

H1: Market orientation has a significant, positive effect on JIT selling.

JIT Selling and Organizational Performance

JIT philosophy and practices have led to inventory reductions and performance gains throughout the supply chain (Kristensen et al., 1999; Gunasekaran, 1999; Germain and Dröge, 1998; Dröge and Germain, 1998; Lieberman and Demeester 1999). Generally, the adoption of a JIT selling philosophy and associated practices is theorized to significantly impact organizational structure and performance. While Claycomb et al. (1999) found a relationship between JIT with customers and less finished goods inventory and higher overall financial performance, there has been no specific theorized relation of JIT selling and organizational performance.

H2: JIT selling has a significant, positive effect on organizational performance (profits, return on investment, sales volume, market share).

Market Orientation and Organizational Performance

Kohli and Jaworski (1990) theorized improvement in organizational performance as a consequence of adoption of a market orientation. Considerable support for this strong, positive relationship between market orientation and organizational performance has been found (Avlonitis and Gounaris 1997; Han et al. 1998; Varadarajan and Jayachandran 1999; Pelham 1999; Baker et al. 1999; Chan and Chau 1998; Rapert, Babakus and Olson 1997; Pelham and Wilson 1996; Atuahene-Gima 1995; Cooper 1995; Greenley, 1995; Raju et al. 1995; Wrenn et al. 1994; Jaworski and Kohli 1993).

H3: Market orientation has a significant, positive effect on organizational performance.

JIT Selling Mediation/Moderation- Market Orientation and Organizational Performance

This hypothesis is designed to test the mediation and/or moderation effects of JIT selling on the established relationship between market orientation and organizational performance. The mediation/moderation effects of JIT selling have not been previously investigated.

H4: JIT selling mediates/moderates the relationship between market orientation and organizational performance.

Market Orientation and Organizational Structure

Kohli and Jaworski (1990) theorize organizational structure as an antecedent to market orientation. Jaworski and Kohli (1993) tested the theorized relationship between organizational structure and market orientation and found that, while both decentralization and formalization were positively linked to market orientation, departmentalization was not linked to market orientation. Germain et al. (1994) theorized and empirically found a causal relationship between JIT selling and organizational structure. The two models appear to conflict here with Kohli and Jaworski (1990) theorizing organizational structure as an antecedent and Germain et al. (1994) theorizing it as a consequence. While Jaworski and Kohli (1993) theorized and tested decentralization, formalization and departmentalization as antecedents to market orientation, they indicated that a consequence relationship could be argued. The purpose of this hypothesis is to investigate the relationship between market orientation and organizational structure in terms of relationship strength and direction.

> *H5: Market orientation significantly impacts organizational structure [integration (+), formalization (+), specialization (+), decentralization (+)].*

JIT Selling and Organizational Structure

Germain et al. (1994) found JIT selling directly and positively related to performance control and specialization and directly and negatively related to scheduling decentralization but not directly related to operations centralization and integration. Claycomb et al. (1999) found JIT-with-customers to be related to decentralization, integration and formalization.

> *H6: JIT selling significantly affects organizational structure [integration (+), formalization (+), specialization (+), decentralization (+)].*

JIT Selling Mediation/Moderation - Market Orientation and Organizational Structure

No published results, specific to the mediation and/or moderation effects of JIT selling on the relationship between market orientation and organizational structure, have yet been noted.

> *H7: JIT selling mediates/moderates the relationship between market orientation and organizational structure [integration (+), formalization (+), specialization (+), decentralization (+)].*

Operationalization of Variables

The following section provides operational definitions and measurement scales for the JIT selling, market orientation, organizational structure and organizational performance constructs. With the exception of the JIT selling scale, all scales have been previously used. A valid, reliable JIT selling scale was developed specifically for this study.

Just-in-Time Selling

JIT sellers must build value based upon organizational abilities to meet performance specifications every time, in the precise quantities specified, and at the precise time specified (Frazier et al. 1988; Germain et al. 1994). The successful JIT seller builds value based upon organizational efforts to continuously reduce the variances associated with quality, quantity and delivery (Frazier et al. 1988; O'Neal 1987). Performance of a JIT seller will be judged on quality, quantity, and delivery precision (Frazier et al. 1988; Germain et ai. 1994; O'Neal 1987). The JIT selling scale includes questions related to abilities to build value based upon quality, quantity and delivery precision with additional questions concerning the type and strength of relationship between JIT seller and JIT purchaser and the level of information exchange between seller and purchaser. Because the JIT selling scale is a new scale developed for this study, it was not yet been tested for reliability and validity prior to this study. Questions for this initial scale were generated from a thorough review of the literature related to JIT selling. Data collected during this study will be used to purify the scale as recommended by Churchill (1979). The initial set of items in the JIT selling section of the JIT Selling Survey includes the JIT selling question used by German et al. (1994) and the JIT with customers scale used by Claycomb et al. (1999). These additional scales will be used procedurally to assess JIT selling scale validity as specified by Churchill (1979). The initial scale is presented in Table 3.1.

Table 3.1 Just-In-Time Selling Scale

Please indicate the extent to which you agree with each statement. (1=Strongly Disagree, 7=Strongly Agree)

1. This organization's sales representatives work hard to build strong, long-term relationships with customers.
2. This organization's sales representatives work hard to build single-source relationships with customers.
3. This organization has dedicated full-time, on-site sales representatives to its major customers.
4. This organization's sales representatives are directly involved in the new product design and introduction efforts of its major customers.
5. This organization's sales representatives are directly involved in the replenishment decisions of our major customers.
6. This organization's sales representatives have electronic access to the product flow and product demand information of its major customers.
7. This organization's customers provide sales representatives with relatively precise and timely demand and delivery schedules.
8. During the selling process, this organization's sales representatives build value based on the zero-defect, zero-variance capabilities of this organization.
9. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver value-added services associated with its products.
10. During the selling process, this organization's sales representatives build value based on this organization's ability eliminate late, damaged and incomplete orders.
11. During the selling process, this organization's sales representatives build value based on this organization's ability to quickly respond to and resolve customer problems.
12. During the selling process, this organization's sales representatives build value based on the on-time delivery capability of this organization.
13. During the selling process, this organization's sales representatives build value based on the precise quantity delivery capability of this organization.
14. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver shipments of variable size on a frequent basis.
15. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver small lot sizes and shipping case sizes.
16. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize total product cost.

Table 3.1 Continued

17. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize all types of waste.
18. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize channel safety stock.
19. Orders are placed by our customers and delivered on a daily basis.
20. Our customers warehouses/factories are located nearby.
21. Our customers share their production plans with us.
22. Small lot size orders are placed by customers.
23. Inspection of outbound materials has been reduced.
24. Customers visit our plants on an informal basis.
25. Customers involve us in new production/materials design.
26. Customers certify us concerning product quality.
27. What percentage of your organization's sales is made on a JIT basis?

Notes: 1) Items 1 through 7 based on JIT II description from Dixon (1997); 2) Items 8 through 18 identified from Germain et al. (1994) and Erdem and Swift (1998); 3) Items 19 through 26 used by Claycomb et al. (1999); 4) Item 27 used by Germain et al. (1994).

Market Orientation

Four prominent scales for the measurement of the market orientation construct have been developed (Deshpande and Farley, 1996; Deshpande et al. 1993; Kohli et al. 1993; Narver and Slater, 1990). The summary scale for market orientation by Deshpande and Farley (1996) was developed from a synthesis of the preceding three scales (Bearden and Netemeyer, 1999, 390). Deshpande and Farley (1996, 14) define market orientation as "the set of cross-functional processes and activities directed at creating and satisfying customers through continuous needs assessment." The Deshpande and Farley scale includes 10 positively worded statements, each operationalized using a 5-point Likert response format ranging from 1=strongly disagree to 5=strongly agree (Bearden and Netemeyer 1999, 390). The Deshpande and Farley scale has been adopted for use in this study with the minor modification of use of a 7-point Likert scale. The modification was deemed necessary to insure consistency among all Likert scales used in this study. All other scales incorporated a 7-point, rather than 5-point, scale. The 10 questions adopted from the Deshpande and Farley scale are presented in Table 3.2 (Bearden and Netemeyer 1999, 391). Deshpande and Farley report the coefficient alpha estimate of internal reliability for the scale at .89 (Bearden and Netemeyer 1999, 390).

Table 3.2 Market Orientation Summary Scale (Deshpande and Farley 1996)

Please indicate the extent to which you agree with each statement. (1=Strongly Disagree, 7=Strongly Agree)

1. Our business objectives are driven primarily by customer satisfaction.
2. We constantly monitor our level of commitment and orientation to serving customer needs.
3. We freely communicate information about our successful and unsuccessful competitor experiences across all business functions.
4. Our strategy for competitive advantage is based on our understanding of customers' needs.
5. We measure customer satisfaction systematically and frequently.
6. We have routine or regular measures of customer service.
7. We are more customer focused than our competitors.
8. I believe this business exists primarily to serve customers.
9. We poll end-users at least once a year to assess the quality of our products and services.
10. Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.

Organizational Structure

The organizational structure constructs (integration, formalization, specialization, and decentralization) are measured using scales adopted from the Germain et al. (1994, 475) and Claycomb et al. (1999, 56-58) studies. Integration was measured using two sets of summed scales, integrated committees and integrated mechanisms, recommended by Miller and Dröge (1986). Formalization was measured using Khandwalla's scale (1974) with minor modifications (Germain et al., 1994, 475). Specialization was measured using a scale similar to one developed by Inkson et al. (1970). Germain et al. (1994, 475) modified the list of specialty areas included with the scale. Decentralization was measured using a scale originated by Miller and Dröge (1986) and modified by Claycomb (1999). Table 3.3 delineates the organizational structure scales used in this study.

Table 3.3 Organizational Structure Scales

Integration/Mechanisms Scale

In assuring the compatibility among decisions in one area with those in other areas, to what extent are each of the following used (7- point Likert scale anchored with "Rarely Used" = 1 and "Frequently Used" =7)?

1. Interdepartmental committees, which allow departments to engage in joint decision making.
2. Task forces, which are temporary bodies set up to facilitate inter-departmental collaboration on a specific project.
3. Liaison personnel, whose specific job it is to coordinate the efforts of several departments for purposes of a project.

Integration/Committees Scale

To what extent is decision making at top levels in your firm characterized by participative, cross-functional committees in which different departments, functions or divisions get together to decide the following classes of decisions (7- point Likert scale anchored with "Rarely Used" = 1 and "Frequently Used" =7)?

1. Distribution service strategy.
2. Marketing (or sales) strategy.
3. Capital budget decisions.
4. Long-term strategies (of growth and diversification) and decisions related to changes in the firm's operating philosophy.

Formalization/Marketing Scale

1. Does a formal, written mission or goal statement exist for the marketing/sales function? YES/NO
2. Does a formal, written strategic plan exist for the marketing/sales function? YES/NO

Formalization/External Control Scale

Please rate the extent to which performance is compared to industry standards or competitors on the basis of (7- point Likert scale anchored with "Rarely Used" = 1 and "Frequently Used" =7):

1. Functional costs (e.g., transportation, manufacturing, selling).
2. Customer service (e.g., fill rate, cycle time, on-time delivery).
3. Productivity levels.
4. Operations (e.g., warehousing, manufacturing, transportation).

Table 3.3—Continued

Formalization/Internal Control Scale

Please rate the extent to which performance is monitored internally on the basis of (7- point Likert scale anchored with "Rarely Used" = 1 and "Frequently Used" =7):

1. Functional costs (e.g., selling, transportation, manufacturing).
2. Customer service (e.g., fill rate, cycle time).
3. Cost controls by fixing standard costs and analyzing variation.
4. Productivity analysis.
5. Customer satisfaction and follow-up.
6. Profitability.

Specialization Scale

Please indicate (YES/NO) whether each of the following is dealt with by at least one full-time specialist.

1. Warehouse facilities design
2. Plant facilities design
3. Material handling
4. Market research
5. Sales forecasting
6. Distribution equipment
7. Plant or warehouse facility location
8. Production scheduling
9. Transportation scheduling
10. Manufacturing quality control

Decentralization Scale

Which management level has the authority to make decisions in each of the following areas (1 = above the chief executive, 7 = individual below first level supervisor)?

1. Production scheduling.
2. Delivery dates to customers and priority of orders.
3. Production volume.
4. Selecting suppliers.
5. Goods to be manufactured.
6. Location of factories.
7. Number of factories to operate.
8. Location of field warehouses.
9. Number of field warehouses to operate.
10. Distribution service levels (e.g., fill rates).
11. Pricing.
12. Channels of distribution.
13. Advertising/promotion strategy.
14. Target market selection.

Organizational Performance

Kohli and Jaworski (1990) identified multiple measures of organizational performance. They include return on investment, profits, sales volume, market share and sales growth. Organizational performance is operationally defined as a combined measure of profits, return on investment, sales volume, market share (Avlonitis and Gounaris 1997; Kohli and Jaworski 1990), and sales growth (Kohli and Jaworski 1990) as related to the industry average (Claycomb et al. 1999). Table 3.4 illustrates the organizational performance scale used in this study.

Table 3.4 Organizational Performance Scale

Please rate your organization's performance in each of the following areas as compared to the industry average. (1=Well Below, 7=Well Above)

1. Average return on investment over the past three years.
2. Average profit over the past three years.
3. Profit growth over the past three years.
4. Average return on sales over the past three years.
5. Average market share growth over the past three years.
6. Average sales volume growth over the past three years.
7. Average sales (in dollars) growth over the past three years.

Note: Items 1 through 4 duplicate the organizational performance scale used by Claycomb, Dröge and Germain (1999).

Research Design

Germain et al. (1994) were the first to conduct a study focusing on the JIT selling construct. It was their specific intent to study JIT selling among manufacturing organizations (Germain et al. 1994, 475). That intent is carried forward in this study. A random sample of 4,000 manufacturers was generated from the Manufacturers' News, Inc. database of approximately 30,000 manufacturing firms with e-mail and mail addresses. It should be noted that, while Manufacturers' News, Inc. maintains a database on approximately 390,000 manufacturers, only 30,000 provide both e-mail and mail addresses. A listing of an additional 500 manufacturers with e-mail addresses was secured from APICS - The Educational Society for Resource Management. While APICS maintains mailing addresses for all members, only 500 members also provided e-mail addresses. These 4,500 members of manufacturing firms identified as likely to have specific knowledge of the firm's marketing and sales activities and general knowledge of the firm's organizational structure and performance were asked to participate in the study by completing a JIT Selling Survey. The data set was then analyzed using regression and structural equation modeling techniques for purposes of testing the hypotheses imbedded in the theorized market orientation and JIT selling model.

Data Collection Procedures

Data relating to the market orientation, JIT selling, organizational structure and performance constructs were collected using a combined e-mail/Internet and traditional mail-out survey methodology (Green, Medlin and Whitten 2001; Schaefer and Dillman, 1998). Green et al. (2001) compared the effectiveness of Internet and mail survey methodologies and found that data quality for the two methodologies was not significantly different. Results of their study indicate that the Internet survey methodology is a viable alternative to the more traditional mail survey methodology. Data collected were found to be consistent across the two methods. While the mail response rate (30.11%) exceeded the Internet rate (24.54%), both rates were above 20 percent. The average response time was significantly shorter (2.45 versus 11.85 days) for Internet respondents, and the Internet process was significantly less costly. Green et al. (2001) recommended modifications to the Internet process to improve the response rate.

Schaefer and Dillman (1998) described and tested the appropriateness of a multi-mode approach to improve sampling coverage.

A distribution list of the e-mail addresses of 4,500 manufacturing firms was developed. The JIT Selling Survey questionnaire illustrated in Appendix A was constructed and located on the Henderson State University website. The 4,500 potential respondents were sent an e-mail message describing the study, promising anonymity and asking for participation. In an attempt to improve the response rate, the e-mail message indicated that $1 would be donated to the American Cancer Society for each completed survey received. The e-mail message contained a direct link to the JIT Selling Survey website. A follow-up e-mail message with similar contents was sent two weeks later. The texts of the e-mail messages are presented in Appendix B. Initial and follow-up mail-outs were sent to firms for which the initial e-mailings were determined undeliverable. Either e-mail messages or letters were sent to each of the 4,500 manufacturers.

Statistical Techniques

Descriptive statistics and a correlation matrix were generated for all data set variables. The data set was divided into two subsets based on time of response, and ANOVA was used to assess non-response bias. Each of the measurement scales was subjected to factor analysis and tested for internal reliability using coefficient alpha as suggested by Churchill (1979). The JIT selling scale was subjected to multi-trait, multi-method analysis to assess validity as recommended by Churchill (1979).

A hierarchical regression approach, as recommended by James and Brett (1984), was used to assess relationships among the constructs and to assess mediation and moderation effects of the JIT selling construct. As a further test of the moderating effects of JIT selling, a split-sample (low and high JITS) was employed. The regression approach facilitated control for firm size (number or employees). Results provide description of the relationship between market orientation and JIT selling and determination of the mediation/moderation effects of JIT selling on the relationships among the market orientation and organizational structure and performance constructs.

Additionally, Bagozzi's holistic construal approach (1984) was used to test the integrated market orientation and JIT selling model. Bagozzi's approach incorporates the use of structural equation modeling techniques to identify significant relationships and to establish a likely causal sequence of constructs. The seven-step structural equation modeling process recommended by Hair et al. (1992, 435-452) was adopted for this investigation. The steps include:

1. Develop a theoretically based model.
2. Construct a path diagram.
3. Convert the path diagram to structural and measurement models.
4. Choose input matrix type (correlations or covariances).
5. Assess identification of model.
6. Evaluate goodness-of-fit.
7. Model interpretation and modification.

This approach allowed testing of the overall model, comparison of the theorized model with alternative (competing) models, and testing of the mediation effects of the JIT selling construct.

A sample frame of 4,500 manufacturers, likely to have knowledge of their organization's marketing and production activities, was identified. Members of the sample frame were asked to participate in the study by completing a JIT Selling Survey. The survey was constructed to collect demographic data and data related to the market orientation, JIT selling, organizational structure and organizational performance constructs identified in the theorized market orientation and JIT selling model. The JIT selling scale was factor analyzed and assessed for validity and reliability. All other scales were assessed for reliability. The study model was then tested using a combined regression and structural equation modeling approach.

CHAPTER 4

RESULTS

The study results are presented in Chapter 4. The data collection process and sample are described. Response rate and non-response evaluations are included, and the demographic characteristics of the sample are presented. Results of factor analysis and reliability tests for construct measurements are presented and validity of the resulting scales is discussed. Particular attention is given to the scale development process necessary to develop the new JIT selling-related scale.

Results of the analyses, necessary to evaluate the relationships among the constructs, are presented. A correlation matrix for the construct measures is presented and described. Additionally, the results from regression analyses and the structural equation modeling analysis are described. The study hypotheses are presented with study results summarized to show support or a lack of support for each hypothesis. Finally, the results are summarized and linked to the broad purposes of the study.

Generally, the data collection process provided a satisfactory sample with data coming predominately from direct line managers of the marketing function. All scales used in the regression and structural equation analyses were determined to be both valid and reliable. Results of both the regression and structural equation analyses indicate a strong, positive relationship between market orientation and JIT selling. The established relationship between market orientation and organizational performance was strengthened through insertion of JIT selling into the model as an additional independent variable indicating the partial mediating influence of JIT selling. The moderating impact of JIT selling on the relationships among market orientation and organizational performance and structure was tested by inserting a multiplicative interaction (1/MO*JITS) variable into each of the regression equations. A further test of moderation was conducted by splitting the sample into low and high JITS categories. LISREL was then used to test for equality of the regression coefficients for market orientation across groups when market orientation was regressed against the organizational performance and structure related variables. The only noted inequality was for the equations with FRMM as the dependent variable. No differences in market orientation coefficients for the INTM, INTC, FRME, FRMI, SPC, DECSC, DECST, and DECM equations were identified. Step-wise regressions did not include the interaction variable as significant in any of the equations. Classification of JIT selling as a partial mediator requires that the direct association between market orientation and performance exist and that the insertion of JIT selling into the model strengthen the existing relationship. Moderation requires that the predictive capacity of the regression model be significantly strengthened through inclusion of the interaction variable. The distinction between mediation and moderation applied in this study follows that described by James and Brett (1984). Generally, the positive impact of a market orientation on organizational performance is enhanced (partial mediation) through adoption of a JIT selling strategy. JIT selling was not determined to have a moderating effect. JIT selling neither moderated nor mediated the relationships among the market orientation and organizational structure (integration, formalization, specialization, decentralization) scales.

The Sample

Useful data from 177 respondents were collected following a process that combined an e-mail/Internet approach with a traditional mail-out. The response rate was computed at 4.22%. Respondents generally represented manufacturers and appeared to be knowledgeable of their respective organization's marketing and sales activities and organizational structure and performance. Data for the 6 classification items were summarized and the results described. Data from the 87 construct-related items were combined into summary scale scores. Associated descriptive statistics and correlation coefficients are presented. Early and late responders are compared to assess potential non-response bias.

The Sampling Process

The sampling process aimed at gathering relevant data from members of manufacturing organizations with general knowledge of the organization's performance and structure and specific knowledge of the organization's marketing and sales activities. Four thousand e-mail and mailing addresses were purchased from Manufacturer's News, Incorporated (MNI). The organizations represented were randomly selected from a listing of over 30,000 manufacturing organizations in the MNI database with both e-mail and mailing addresses. An additional 500 e-mail addresses were provided by the APICS – The Educational Society for Resource Management.

The JIT Selling Survey was prepared using Microsoft FrontPage and was posted on the Henderson State University Internet server. The JIT Selling Survey site was configured to collect responses in a text file on the University server. A distribution list of the 4,500 e-mail addresses was constructed in Microsoft Outlook and an initial e-mail message requesting participation in the study was sent to the addresses. A follow-up e-mail message was sent two weeks following the initial message. Both messages are presented in Appendix B. The initial and follow-up e-mail messages included the purpose of the study, an appeal for participation, a promise of anonymity, and an offer to donate $1 to the American Cancer Society for each completed survey received.

Mailing addresses for organization members with undeliverable e-mail messages were identified and compiled into a mailing list. Initial mail-outs including a letter requesting participation, a JIT Selling Survey and a pre-paid return envelope were prepared and mailed through the postal service. Two weeks following the initial mail-out, a follow-up mail-out was prepared and sent. The mailed letters contained information paralleling that provided in the e-mail messages. Responses submitted to the results text file and received by mail were compiled in an SPSS compatible database file. Copies of both letters are included in Appendix B.

Response Rate

Twenty-two of the original 4,500 e-mail addresses were refused by the Microsoft Outlook distribution list module as having improper address formats. Of the remaining 4,478 e-mail addresses, 1,063 were ultimately determined to be undeliverable. Of this 1,063, mailing addresses for 838 were identified. Eighty-five of the 838 were returned as undeliverable by the postal service. Of the original 4,478 potential respondents, 4,190 received either initial and follow-up e-mailings or mailings. One hundred and seventy-seven responses with some usable data were received. The overall response rate was 4.22%. While the sample size was adequate to perform the necessary regression and structural equation modeling analyses, the response rate was disappointing. Both electronic and written messages were received from multiple non-respondents explaining their choice not to respond. Reasons included length of the survey, inappropriateness of the survey request for revenue estimates, organization not engaged in manufacturing activities, organization no longer in business, organizational policies disallowing response to unsolicited e-mailings, and finally a general lack of time to respond.

Description of Respondents

Seventy-one percent of the respondents held either line management positions responsible for the firm's marketing function or marketing/sales related positions (CEO/president/GM – 29.9%, vice president for marketing/sales – 9%, marketing/sales managers – 24.3%, other marketing/sales related managers – 7.3%). Twenty-three percent held other management related jobs (vice-presidents other than marketing/sales – 1.1%, managers other than marketing/sales – 23.2%). Respondents averaged 9.12 years in their current positions. Mean sales for the firms included in the sample were $331 million, and mean number of employees were 1,367.

Ninety-six percent of the respondents represented manufacturing organizations. Seventeen specific manufacturing SIC codes were identified by respondents with fabricated metal products (17%), electronic and other electrical equipment (11.6%), miscellaneous manufacturing (8.7%), industrial and commercial machinery (5.8%), and printing, publishing and allied industries (5.8%) being the most often selected. Respondents represented 39 different states with Pennsylvania (10.1%), Texas (9.47%), Minnesota (7.69%) and Wisconsin (5.92%) selected most often.

Generally, the objective to gather data from members of manufacturing organizations with specific knowledge of the organization's marketing and sales activities and general knowledge of the organization's performance and structure was accomplished.

Descriptive Statistics of Summary Variables

Completion of the JIT Selling Survey requires response to 6 classification related questions and 87 JIT selling, market orientation, organizational structure and organizational performance related questions. This second category of 87 items consolidate to form 15 summary variables that are ultimately used in the regression and structural equation modeling analyses. Classification items requested current position of respondent, number of years in current position, SIC code for the organization, state where home offices of the organization are located, number of employees and an estimate of revenues for the previous year. Summary variables include JIT selling (JITS), JIT II

(JITII), JIT selling process (JITSP), JIT waste minimization (JITWM), market orientation (MO), integration/mechanisms (INTM), integration/communication (INTC), formalization/marketing (FRMM), formalization/external (FRME), formalization/internal (FRMI), specialization (SPC), decentralization/scheduling (DECSC), decentralization/strategic (DECST), decentralization/marketing (DECM), and organizational performance (OP).

With the exception of JITS, FRMM, SPC and NLEMP, all summary variable scores were computed as the mean of related scale responses. JITS is computed as the average of three subscales (JITII, JITSP and JITWM). FRMM is the sum of responses of 2 observed dichotomous variables, and SPC is the sum of responses to 10 observed dichotomous variables. NLEMP is the natural log of the number of employees and is used to control for size in the regression and structural equation analyses. Table 4.1 includes the descriptive statistics (mean, standard deviation, skewness and kurtosis measures) for the summary variables. All assumptions (linearity, constant variance, independence of residuals and normality) were assessed by reviewing the skewness and kurtosis coefficients in Table 4.1 and residual plots, residual histograms, scatter diagrams of independent and dependent variables produced in conjunction with the regression analyses. Skewness and kurtosis coefficients indicate potential problems associated with a lack of univariate normality. A significant departure from normality for only one of the summary variables DECST was determined after reviewing the associated plots. A transformation of DECST to natural log form had a negligible impact on the regression results. Additional discussion of the regression assumptions is provided in the regression results section. The additional assumption of multivariate normality required for

Table 4.1 Descriptive Statistics for Summary Variables

Variable	Minimum	Maximum	Mean	St. Dev.	Skewness	Kurtosis
JITS	1.24	7.00	4.75	1.12	-.413	.158
JITII	1.29	7.00	4.67	1.14	-.225	-.017
JITSP	1.00	7.00	5.28	1.33	-.914	.638
JITWM	1.00	7.00	4.29	1.45	-.168	-.342
MO	1.50	7.00	4.99	1.18	-.477	-.097
INTM	1.00	7.00	4.04	1.66	-.265	-.740
INTC	1.00	7.00	3.91	1.57	-.076	-.544
FRMM	0.00	2.00	1.07	0.84	-.149	-1.580
FRME	1.00	7.00	4.09	1.68	-.319	-.746
MRMI	1.00	7.00	5.01	1.28	-.820	.753
SPC	0.00	10.00	4.40	2.90	.175	-.695
DECSC	1.00	7.00	4.13	1.47	.008	-.335
DECST	1.00	6.25	2.65	0.90	1.372	3.405
DECM	1.00	6.00	2.87	1.00	.667	1.152
OP	1.00	7.00	4.46	1.29	-.390	.002
NLEMP	0.69	10.82	4.26	1.92	.960	1.741

JITS	Just-In-Time Selling	JITII	Just-In-Time II
JITSP	Just-In-Time Selling Process	JITWM	Just-In-Time Waste Minimization
MO	Market Orientation	NLEMP	Natural Log of Employees
INTM	Integration/Mechanisms	INTC	Integration/Communication
FRMM	Formalization/Marketing	FRME	Formalization/External
FRMI	Formalization/Internal	SPEC	Specialization
DECSC	Decentralization/Scheduling	DECST	Decentralization/Strategic
DECM	Decentralizaiton/Marketing	OP	Organizational Performance

Note: JITS is a combination (average) of JITII, JITSP and JITWM

structural equation modeling did not hold for the data set and is further discussed in the SEM results section. Normalizing the variables and use of the generalized least squares method as recommended by Hair et al. (1992) did not significantly impact the results.

Table 4.2 contains the correlation matrix for the summary variables. Generally, the correlation coefficients are of the expected sign and strength. JIT selling and market orientation exhibit a strong, positive relationship (R = .65, significant at the .01 level).

Table 4.2 Correlation Matrix for Summary Variables

Variables	JITS	JITII	JITSP	JITWM	MO
JITS	1.00				
JITII	0.79a	1.00			
JITSP	0.87a	0.53a	1.00		
JITWM	0.89a	0.56a	0.68a	1.00	
MO	0.65a	0.53a	0.60a	0.54a	1.00
INTM	0.29a	0.24	0.22	0.29b	0.35a
INTC	0.31a	0.27b	0.21	0.32a	0.39a
FRMM	0.13	0.13	0.12	0.08	0.25
FRME	0.32a	0.25	0.32a	0.26	0.45a
FRMI	0.24	0.17	0.27b	0.18	0.49a
SPC	0.24	0.27b	0.12	0.23	0.30a
DECSC	-0.12	-0.15	-0.09	-0.07	-0.13
DECST	0.00	0.02	-0.03	0.02	-0.04
DECM	0.07	0.04	0.03	0.11	0.06
OP	0.31a	0.30a	0.28b	0.24	0.33a
NLEMP	-0.03	0.04	-0.10	0.00	0.00

	INTM	INTC	FRMM	FRME	FRMI
INTM	1.00				
INTC	0.62a	1.00			
FRMM	0.30a	0.27b	1.00		
FRME	0.38a	0.28b	0.24	1.00	
FRMI	0.37a	0.37a	0.30	0.48a	1.00
SPC	0.52a	0.48a	0.34	0.37a	0.36a
DECSC	0.17	0.08	0.17	-0.06	0.06
DECST	0.25	0.17	0.00	-0.05	0.06
DECM	0.21	0.21	0.24	0.07	0.13
OP	0.16	0.22	0.22	0.23	0.26
NLEMP	0.26	0.21	0.36	0.20	0.24

	SPC	DECSC	DECST	DECM	OP
SPC	1.00				
DECSC	0.01	1.00			
DECST	0.06	0.57a	1.00		
DECM	0.16	0.48a	0.73a	1.00	
OP	0.28b	0.05	0.04	0.17	1.00
NLEMP	0.42a	0.32a	0.23	0.26	0.20

(a) Correlation is significant at the 0.01 level

(b) Correlation is significant at 0.05 level

JITS	Just-In-Time Selling	JITII	Just-In-Time II
JITSP	Just-In-Time Selling Process	JITWM	Just-In-Time Waste Minimization
MO	Market Orientation	NLEMP	Natural Log of Employees
INTM	Integration/Mechanisms	INTC	Integration/Communication
FRMM	Formalization/Marketing	FRME	Formalization/External
FRMI	Formalization/Internal	SPEC	Specialization
DECSC	Decentralization/Scheduling	DECST	Decentralization/Strategic
DECM	Decentralizaiton/Marketing	OP	Organizational Performance

JITS is positively and significantly related with OS, INTM, INTC, FRME, FRMI, and SPC but is not significantly related to the decentralization variables. MO is positively and significantly related to OP and the organizational structure variables related to integration, formalization and specialization. As with JIT selling, MO is not strongly related to any of the decentralization variables. Neither JITS nor MO was found to be significantly related to firm size as measured by the natural log of the number of firm employees (NLEMP).

The integration variables (INTM, INTC) are positively related to formalization (FRMM, FRME, FRMI), specialization (SPC), decentralization (DECSC, DECST, DECM), organizational performance (OP) and organization size (NLEMP). The formalization variables relate positively to integration, specialization, organizational performance and size. Only one of the formalization variables (FRMM) was positively and significantly related to one of the decentralization variables (DECM). Decentralization is positively and significantly related to integration, formalization (DECM and FRMM only) and size.

To summarize, market orientation and JIT selling are positively correlated with each other and with the organizational performance and structure variables with the exception of decentralization. The organizational structure variables are generally positively correlated with each other and with organizational performance, with the exception of decentralization.

Non-Response Bias

Respondents were categorized as responding to either initial or follow-up messages. Fifty-seven percent (101) of the respondents were categorized as early respondents; 43% (76) as late respondents. A comparison of the means of sample classification variables and summary variables for the two groups was conducted using one-way ANOVA. Table 4.3 displays the results of this analysis.

All comparisons returned insignificant differences. Only the summary variable representing external formalization approached significance with an F-value of 3.851 and a significance level of .051. Because non-respondents have been found to descriptively resemble late respondents (Armstrong and Overton 1977), this finding of equality between early and late respondents indicates that non-response bias has not negatively impacted the assembled data set.

Measurement of Constructs

Measures of market orientation, JIT selling, organizational structure (integration, formalization, specialization and decentralization) and performance were necessary to test the model theorized in this study. It was necessary to develop a reliable, valid measure of JIT selling. Measures of the other constructs were identified and tested in related studies (Germain et al. 1994; Claycomb et al. 1999).

JIT Selling Related Constructs

Twenty-seven items related to JIT selling were included in the questionnaire. Items 1-18 were developed from a thorough review of the literature relating to JIT selling. Items 1 through 7 were developed specifically to focus on JIT II (JITII). The main thrust of these questions was the type and strength of relationship that an organization's sales representatives developed with customers.

Table 4.3 Comparison of Early and Late Responders

Variable	Group	Means	F-value	Sig.
YRS	1	9.35	.123	.726
	2	8.81		
EMP	1	1004.09	.683	.410
	2	1862.03		
REV	1	2.14E+8	.810	.370
	2	5.00E+8		
JITII	1	4.61	.572	.450
	2	4.74		
JITSP	1	5.24	.278	.599
	2	5.34		
JITWM	1	4.24	.333	.565
	2	4.36		
MO	1	4.97	.078	.781
	2	5.02		
INTM	1	4.08	.166	.684
	2	3.98		
INTC	1	3.98	.529	.468
	2	3.81		
FRMM	1	1.06	.025	.875
	2	1.08		
FRME	1	3.88	3.851	.051
	2	4.37		
FRMI	1	4.95	.577	.449
	2	5.10		
SPC	1	4.21	.997	.319
	2	4.66		
DECSC	1	4.17	.175	.677
	2	4.08		
DECST	1	2.73	2.225	.138
	2	2.53		
DECM	1	2.92	.630	.429
	2	2.80		
OP	1	4.46	.004	.951
	2	4.47		

JITII	Just-In-Time II	JITSP	Just-In-Time Selling Process
JITWM	Just-In-Time Waste Minimization	MO	Market Orientation
INTM	Integration/Mechanisms	INTC	Integration/Communication
FRMM	Formalization/Marketing	FRME	Formalization/External
FRMI	Formalization/Internal	SPEC	Specialization
DECSC	Decentralization/Scheduling	DECST	Decentralization/Strategic
DECM	Decentralization/Marketing	OP	Organizational Performance

A JIT II seller works to locate sales representatives on the buyer's premises and to integrate the sales representatives within the buyer's purchasing processes. Items 8 through 15 focused directly on building value through the selling process and were newly developed to specifically assess the JIT selling process (JITSP) construct. These questions aimed at the sales representative's ability to build value based on the organization's JIT capabilities, such as zero-defect manufacturing, on-time delivery and quantity precision. Items 16, 17 and 18 form the JIT waste minimization (JITWM) scale and were developed to focus on the selling organization's overall ability to minimize total waste and total cost throughout the production and marketing processes. Items 19 through 26 measure JIT with customers. This scale was taken from the Claycomb et al. (1999) study of the effects of JIT with customers on organizational design and performance. Items 1 through 26 were phrased as statements, and respondents were asked to indicate degree of disagreement/agreement on a 7-point Likert scale. The final question relating to JIT selling was taken from the Germain et al. (1994) study of the impact of JIT selling on organizational structure. This final question asked respondents to indicate the percentage of their organization's sales made on a JIT basis.

The JITII, JITSP and JITWM scales were subjected to factor and reliability analyses. Table 4.4 displays the results of the these analyses. The JITII scale returned a Cronbach's alpha value of .73, the JITSP scale returned a Cronbach's alpha value of .91, and the JITWM scale returned a .78. Potential scale improvement through item deletion for each scale was assessed through review of "alpha if item deleted" information. None of the three scales was determined to be improved through item deletion. The JITWC scale returned an alpha value of .68 which is consistent with the .62 alpha value reported

Table 4.4 Factor Analysis Results for JIT Selling-Related Scales

Scale/Item	Item-to-Total Correlation
JIT II Scale (alpha = .73) Mean of seven 7-point scales with endpoints "strongly disagree" and "strongly agree"	
1. This organization's sales representatives work hard to build strong, long-term relationships with customers.	.39
2. This organization's sales representatives work hard to build single-source relationships with customers.	.44
3. This organization has dedicated full-time, on-site sales representatives to its major customers.	.45
4. This organization's sales representatives are directly involved in the new product design and introduction efforts of its major customers.	.53
5. This organization's sales representatives are directly involved in the replenishment decisions of our major customers.	.62
6. This organization's sales representatives have electronic access to the product flow and product demand information of its major customers.	.39
7. This organization's customers provide sales representatives with relatively precise and timely demand and delivery schedules.	.34
JIT Selling Process Scale (alpha = .91) Mean of eight 7-point scales with endpoints "strongly disagree" and "strongly agree"	
8. During the selling process, this organization's sales representatives build value based on the zero-defect, zero variance capabilities of this organization.	.68
9. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver value-added services associated with its products.	.65
10. During the selling process, this organization's sales representatives build value based on this organization's ability eliminate late, damaged and incomplete orders.	.79
11. During the selling process, this organization's sales representatives build value based on this organization's ability to quickly respond to and resolve customer problems.	.73
12. During the selling process, this organization's sales representatives build value based on the on-time delivery capability of this organization.	.71
13. During the selling process, this organization's sales representatives build value based on the precise quantity delivery capability of this organization.	.77
14. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver shipments of variable size on a frequent basis.	.73
15. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver small lot sizes and shipping case sizes.	.62
JIT Selling Waste Minimization Scale (alpha = .78) Mean of three 7-point scales with endpoints "strongly disagree" and "strongly agree"	
16. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize total product cost.	.58
17. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize all types of waste.	.70

Table 4.4—Continued

Scale/Item	Item-to-Total Correlation
18. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize channel safety stock.	.57
JIT with Customers Scale (alpha = .68) Mean of eight 7-point scales with endpoints "strongly disagree" and "strongly agree"	
19. Orders are placed by our customers and delivered on a daily basis.	.36
20. Our customers warehouses/factories are located nearby.	.30
21. Our customers share their production plans with us.	.50
22. Small lot size orders are placed by customers.	.37
23. Inspection of outbound materials has been reduced.	.24
24. Customers visit our plants on an informal basis.	.32
25. Customers involve us in new production/materials design.	.46
26. Customers certify us concerning product quality.	.42

by Claycomb et al. (1999). It was determined that the scale could not be improved through item deletion.

The JITII, JITSP and JITWM alphas exceed the .70 level specified by Hair et al. (1992) for scales used in confirmatory studies. While the JITWC scale returns an alpha level below the .70 cut-off, it is not directly used in the regression and structural equation analyses. The JITWC scale is used to assist in the validation of the JIT selling related scales. Churchill's (1979) paradigm for scale development was followed to develop the JITII, JITSP and JITWM scales that are combined as a summary measure of the overall JIT selling construct. Churchill (1979) requires that a multi-trait, multi-method approach be used to assist in the assessment of validity of a new scale. First, it should be noted that all 18 new JIT selling items were generated from a thorough of analysis of JIT and JIT selling-related literature and were further reviewed by members of the dissertation committee who are experts in the fields of production management and marketing. Summary scores resulting from the JITII, JITSP and JITWM scales were correlated and determined to be positively and significantly related. The new scales returned the expected results when correlated with an existing scale (JITWC) measuring a similar construct. Additionally, JITPC measured the degree of JIT selling using a method different from the multi-item Likert format incorporated in the JITII, JITSP and JITWM scales. As expected, JITPC was determined to be highly and significantly correlated with JITII, JITSP and JITWM. Bagozzi (1984) requires that the validity of the newly developed focus construct be assessed holistically within a framework of antecedent and consequence constructs. Results of the structural equation analysis indicate that the JIT selling construct as measured by JITS (JITII, JITSP, JITWM combined) performs as expected within a model containing market orientation as the antecedent and organizational performance as the consequence. For purposes of this study, the measures of JIT selling are believed to be both reliable (alpha scores > than .70) and valid (multi-trait, multi-method; holistic assessment).

Market Orientation, Organizational Performance and Organizational Structure Scales

The market orientation (MO), organizational performance (OP) and organizational structure scales (INTM, INTC, FRMM, FRME, FRMI, SPC, DECSC, DECST and DECM) were all exact or modified versions of previously developed and tested scales. With the two exceptions, all scales included multiple items with responses recorded on anchored 7-point Likert formats. The exceptions (formalization/marketing and specialization) were multiple item scales requiring YES/NO responses. Reliability analysis indicated Cronbach's alpha or KR-20 (for formalization/marketing and specialization) values greater than .70 for all scales with the exception of the formalization/marketing scale (KR-20 = .55). Table 4.5 displays the results of the reliability analysis for the market orientation, organizational performance and organizational structure scales.

Germain et al. (1994) and Claycomb et al. (1999) authored the only two prior published studies relating to JIT selling. These two studies focused on the effect of JIT selling (JITPC) and JIT with customers (JITWC) on organizational structure and performance. With the exceptions of scales for market orientation (MO) and the newly developed JITII, JITSP, and JITWM, the organizational structure and performance scales used by Germain et al. (1994) and Claycomb (1999) were either exactly or with minor modification used in this study. Table 4.5 includes a comparison of the reliability scores from this study with those reported by Germain et al. (1994) and Claycomb et al. (1999). The reliability scores are relatively consistent across the three studies.

Regression Results

Regression analyses were employed to identify the relationships among market orientation, JIT selling, organizational performance and organizational structure variables and to determine the mediation/moderation effects of JIT selling. In an effort to maximize the value of the data provided by respondents, the SPSS series mean method of replacing missing values was used to modify the data set prior to regression analysis. This modification resulted in an effective sample size of 177. The natural log of the number of employees was used to control for organization size. An interaction term (1/MO*JITS) was included to allow for the testing of the moderation effects of JITS.

Table 4.5 Factor Analysis Results for Market Orientation, Organizational Structure and Organizational Performance Scales

Scale/Item	Item-to-Total Correlation
Market Orientation Scale (alpha = .88) Mean of ten 7-point scales with endpoints "strongly disagree" and "strongly agree"	
1. Our business objectives are driven primarily by customer satisfaction.	.61
2. We constantly monitor our level of commitment and orientation to serving customer needs.	.77
3. We freely communicate information about our successful and unsuccessful competitor experiences across all business functions.	.37
4. Our strategy for competitive advantage is based on our understanding of customers' needs.	.57
5. We measure customer satisfaction systematically and frequently.	.78
6. We have routine or regular measures of customer service.	.71
7. We are more customer focused than our competitors.	.63
8. I believe this business exists primarily to serve customers.	.43
9. We poll end-users at least once a year to assess the quality of our products and services.	.57
10. Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.	.70
Integration/Mechanisms Scale (alpha = .76) Mean of three 7-point scales with endpoints "rarely used" and "frequently used." Germain et al. (1994) and Claycomb et al. (1999) report alphas of .71 and .74, respectively.	
In assuring the compatibility among decisions in one area with those in other areas, to what extent are each of the following?	
1. interdepartmental committees, which allow departments to engage in joint decision making.	.59
2. task forces, which are temporary bodies set up to facilitate interdepartmental collaboration on a specific project.	.72
3. liaison personnel, whose specific job it is to coordinate the efforts of several departments for purposes of a project.	.46
Integration/Committees Scale (alpha = .85) Mean of four 7-point scales with endpoints "rarely used" and "frequently used." Germain et al. (1994) report an alpha of .81.	
To what extent is decision making at top levels in your firm characterized by participative, cross-functional committees in which different departments, functions or divisions get together to decide the following classes of decisions?	
1. Distribution service strategy.	.61
2. Marketing (or sales) strategy.	.77
3. Capital budget decisions.	.67
4. Long-term strategies (of growth and diversification) and decisions related to changes in the firm's operating philosophy.	.71

Table 4.5—Continued

Scale/Item	Item-to-Total Correlation
Formalization/Marketing Plan Scale (KR-20 = .55) Sum of two YES/NO responses.	
1. Does a formal, written mission or goal statement exist for the marketing/sales function?	
2. Does a formal, written strategic plan exist for the marketing/sales function?	
Formalization/External Scale (alpha = .89) Mean of four 7-point scales with endpoints "rarely used" and "frequently used." Germain et al. (1994) and Claycomb et al. (1999) report alphas of .86 and .83, respectively.	
Please rate the extent to which performance is compared to industry standards or competitors on the basis of:	
1. Functional costs (e.g., transportation, manufacturing, selling).	.71
2. Customer service (e.g., fill rate, cycle time, on-time delivery).	.72
3. Productivity levels.	.80
4. Operations (e.g., warehousing, manufacturing, transportation).	.82
Formalization/Internal Scale (alpha = .84) Mean of six 7-point scales with endpoints "rarely used" and "frequently used." Germain et al. (1994) and Claycomb et al. (1999) report alphas of .78 and .81, respectively.	
Please rate the extent to which performance is monitored internally on the basis of:	
1. Functional costs (e.g., selling, transportation, manufacturing).	.72
2. Customer service (e.g., fill rate, cycle time).	.63
3. Cost controls by fixing standard costs and analyzing variation.	.61
4. Productivity analysis.	.67
5. Customer satisfaction and follow-up.	.52
6. Profitability.	.58
Specialization Scale (KR-20 = .90) Sum of ten YES/NO responses. Germain et al. (1994) report a KR-20 of .76.	
Please indicate whether each of the following is dealt with by at least one full-time specialist.	
1. Warehouse facilities design	
2. Plant facilities design	
3. Material handling	
4. Market research	
5. Sales forecasting	
6. Distribution equipment	
7. Plant or warehouse facility location	
8. Production scheduling	
9. Transportation scheduling	
10. Manufacturing quality control	

Table 4.5—Continued

Scale/Item	Item-to-Total Correlation
Decentralization/Scheduling Scale (alpha = .85) Mean of two 7-point scales with endpoints of "decision made above the chief executive" and "decision made by individual below first level supervisor." Intermediate points expressly associated with specific organizational level. Germain et al. (1994) and Claycomb et al. (1999) report alphas of .61 and .64, respectively.	
Which management level has the authority to make decisions in the following areas?	
1. Production scheduling.	.74
2. Delivery dates to customers and priority of orders.	.74
Decentralization/Strategic Scale (alpha = .87) Mean of eight 7-point scales with endpoints of "decision made above the chief executive" and "decision made by individual below first level supervisor." Intermediate points expressly associated with specific organizational level. Germain et al. (1994) and Claycomb et al. (1999) report alphas of .61 and .78, respectively.	
Which management level has the authority to make decisions in the following areas?	
3. Production volume.	.49
4. Selecting suppliers.	.47
5. Goods to be manufactured.	.54
6. Location of factories.	.76
7. Number of factories to operate.	.75
8. Location of field warehouses.	.73
9. Number of field warehouses to operate.	.77
10. Distribution service levels (e.g., fill rates).	.56
Decentralization/Marketing Scale (alpha = .87) Mean of four 7-point scales with endpoints of "decision made above the chief executive" and "decision made by individual below first level supervisor." Intermediate points expressly associated with specific organizational level. Claycomb et al. (1999) report an alpha of .82.	
11. Pricing.	.72
12. Channels of distribution.	.74
13. Advertising/promotion strategy.	.71
14. Target market selection.	.76
Organizational Performance Scale (alpha = .95) Mean of seven 7-point scales with endpoints "well below industry average" and "well above industry average." Claycomb et al. (1999) report an alpha of .97 on a similar financial performance scale.	
1. Average return on investment over the past three years.	.83
2. Average profit over the past three years.	.83
3. Profit growth over the past three years.	.86
4. Average return on sales over the past three years.	.87
5. Average market share growth over the past three years.	.75
6. Average sales volume growth over the past three years.	.81
7. Average sales (in dollars) growth over the past three years.	.82

Results generally indicate 1) a strong, positive relationship between market orientation and JIT selling, 2) strong, positive relationships among JIT selling, market orientation, organizational performance, integration, formalization and specialization, 3) a lack of relationship between decentralization and either market orientation and JIT selling, 4) JIT selling partially mediates but does not moderate the relationship between market orientation and organizational performance, 5) JIT selling neither mediates nor moderates the relationships between MO and the organizational structure variables (integration, formalization, specialization and decentralization), and 6) organizational size is positively related to organizational performance and organizational structure variables but not to either JIT selling or market orientation. Concern for multicollinearity between JIT selling and market orientation was alleviated with a reported VIF factor of 1.73 for regression models that incorporated variables representing both constructs. It was, however, necessary to invert the interaction term (1/MO*JITS) to minimize the impact of multicollinearity. This transformation reduced the associated VIF value from 45.46 to 3.31 which is well under the maximum threshold of 10 identified by Hair et al. (1992).

All regressions were tested to ensure that the underlying assumptions of linearity, constant variance, independent residuals and normality held for this data set. Measures of skewness and kurtosis were perused to identify any departures from univariate normality. The only summary variable exhibiting such a departure was DECST. Similarly, views of residual plots, residual histograms and normal plots indicated potential problems with DECST. In an attempt to alleviate any potential problems

Table 4.6 Regression Results

Model	R^2	Model-F
JIT Selling and Market Orientation		
MO = 4.981a - .003c*SIZE	.000	.00c
JITS = 4.812a - .015c*SIZE	.001	.12c
JITS = 1.665a + .618a*MO	.422	127.82a
SIZE does not significantly impact either MO or JITS. MO and JITS are strongly and positively related. MO is a good predictor of JITS.		
Organizational Performance, JIT Selling and Market Orientation		
OP = 3.903a + .132a*SIZE	.038	6.97a
OP = 2.133a + .137a*SIZE + .368a*JITS	.140	14.13a
OP = 2.125a + .131a*SIZE + .357a*MO	.144	14.64a
OP = 1.753a + .134a*SIZE + .225b*MO + .214b*JITS	.164	11.30a
OP = 2.367b + .133a*SIZE + .180c*MO + .166c*JITS - 3.007c*1/(MO*JITS)	.166	8.58a
SIZE is positively related to OP. Both JITS and MO are strongly and positively related to OP. Both JITS and MO are strong individual predictors of OP. JITS does not moderate but positively mediates the relation between MO and OP.		
Integration/Mechanisms, JIT Selling and Market Orientation		
INTM = 3.078a + .226a*SIZE	.068	12.84a
INTM = .944c + .233a*SIZE + .444a*JITS	.158	16.27a
INTM = .657c + .225a*SIZE + .486a*MO	.187	20.00a
INTM = .324c + .228a*SIZE + .367a*MO + .194c*JITS	.197	14.12a
INTM = - 2.124c + .232a*SIZE + .547a*MO + .384b*JITS + 11.985c*1/(MO*JITS)	.220	12.13a
SIZE is positively related to INTM. Both JITS and MO are strongly and positively related to INTM. Both JITS and MO are strong individual predictors of INTM. JITS neither moderates nor mediates the relation between INTM and MO.		

Table 4.6—Continued

Model	R²	Model-F
Integration/Committees, JIT Selling and Market Orientation		
INTC = 3.193a + .168a*SIZE	.042	7.72a
INTC = 1.049b + .175a*SIZE + .446a*JITS	.143	14.47a
INTC = .596c + .167a*SIZE + .521a*MO	.194	20.99a
INTC = .329c + .170a*SIZE + .426a*MO + .154c*JITS	.201	14.53a
INTC = - .595c + .173a*SIZE + .567a*MO + .304b*JITS + 9.419c*1/(MO*JITS)	.217	11.94a
SIZE is positively related to INTC. Both JITS and MO are strongly and positively related to INTC. Both JITS and MO are strong individual predictors of INTC. JITS neither mediates nor moderates the relation between INTC and MO.		
Formalization/Marketing, JIT Selling and Market Orientation		
FRMM = .407a + .156a*SIZE	.127	25.43a
FRMM = -.100c + .158a*SIZE + .106a*JITS	.146	14.92a
FRMM = -.438c + .156a*SIZE + .177a*MO	.187	20.08a
FRMM = -.426c + .156a*SIZE + .193a*MO - .026c*JITS	.188	13.37a
FRMM = -.116c + .155a*SIZE + .170b*MO - .051c*JITS - 1.520c*1/(MO*JITS)	.190	10.06a
SIZE is positively related to FRMM. Both JITS and MO are strongly and positively related to FRMM. Both JITS and MO are strong individual predictors of FRMM. JITS neither mediates nor moderates the relation between FRMM and MO.		
Formalization/External, JIT Selling and Market Orientation		
FRME = 3.349a + .174a*SIZE	.039	7.18a
FRME = .986c + .182a*SIZE + .491a*JITS	.146	14.84a
FRME = .134c + .172a*SIZE + .645a*MO	.243	27.90a
FRME = -.015c + .174a*SIZE + .592a*MO + .086c*JITS	.245	18.68a
FRME = -.505c + .176a*SIZE + .702a*MO + .202c*JITS + 7.299c*1/(MO*JITS)	.253	14.57a
SIZE is positively related to FRME. Both JITS and MO are strongly and positively related to FRME. Both JITS and MO are strong individual predictors of FRME. JITS neither mediates nor moderates the relation between FRME and MO.		

Table 4.6—Continued

Model	R^2	Model-F
Formalization/Internal, JIT Selling and Market Orientation		
FRMI = 4.337a + .159a*SIZE	.057	10.51a
FRMI = 2.954a + .164a*SIZE + .287a*JITS	.119	11.76a
FRMI = 1.698a + .158a*SIZE + .538a*MO	.292	35.83a
FRMI = 1.923a + .156a*SIZE + .610a*MO - .130c*JITS	.299	24.61a
FRMI = 1.295c + .157a*SIZE + .656a*MO - .081c*JITS + 3.077c*1/(MO*JITS)	.302	18.58a
SIZE is positively related to FRMI. Both JITS and MO are strongly and positively related to FRMI. Both JITS and MO are strong individual predictors of FRMI. JITS neither mediates nor moderates the relation between FRMI and MO.		
Specialization, JIT Selling and Market Orientation		
SPC = 1.737a + .627a*SIZE	.172	36.42a
SPC = -1.386c + .637a*SIZE + .649a*JITS	.235	26.70a
SPC = -1.866a + .625a*SIZE + .723a*MO	.258	30.31a
SPC = -2.329a + .629a*SIZE + .558a*MO + .267c*JITS	.264	20.74a
SPC = -6.600a + .636a*SIZE + .871a*MO + .601b*JITS + 20.913b*1/(MO*JITS)	.288	17.38a
SIZE is positively related to SPC. Both JITS and MO are strongly and positively related to SPC. Both JITS and MO are strong individual predictors of SPC. JITS moderates but does not mediate the relation between SPC and MO.		
Decentralization/Scheduling, JIT Selling and Market Orientation		
DECSC = 3.104a + .241a*SIZE	.099	19.26a
DECSC = 3.792a + .239a*SIZE - .143c*JITS	.111	10.86a
DECSC = 3.942a + .242a*SIZE - .168c*MO	.117	11.56a
DECSC = 4.026a + .241a*SIZE - .138c*MO - .048c*JITS	.118	7.72a
DECSC = 3.832a + .241a*SIZE - .124c*MO - .003c*JITS + .948c*1/(MO*JITS)	.118	5.77a
SIZE is positively related to DECSC. Neither JITS nor MO is significantly related to DECSC. JITS neither mediates nor moderates the relation between DECSC and MO.		

Table 4.6—Continued

Model	R^2	Model-F
Decentralization/Strategic, JIT Selling and Market Orientation		
DECST = 2.194a + .106a*SIZE	.052	9.54a
DECST = 2.161a + .106a*SIZE - .007c*JITS	.052	4.75a
DECST = 2.347a + .106a*SIZE - .031c*MO	.053	4.90a
DECST = 2.263a + .107a*SIZE - .060c*MO - .048c*JITS	.055	3.38b
DECST = 2.744a + .106a*SIZE - .096c*MO + .011c*JITS - 2.356c*1/(MO*JITS)	.058	2.67b

SIZE is positively related to DECST. Neither JITS nor MO is significantly related to DECSC. JITS neither mediates nor moderates the relation between DECSC and MO.

Model	R^2	Model-F
Decentralization/Marketing, JIT Selling and Market Orientation		
DECM = 2.306a + .133a*SIZE	.066	12.33a
DECM = 1.969a + .134a*SIZE + .070c*JITS	.072	6.75a
DECM = 2.059a + .133a*SIZE - .049c*MO	.069	6.47a
DECM = 1.951a + .134a*SIZE + .011c*MO + .063c*JITS	.072	4.48a
DECM = 2.799a + .133a*SIZE - .051c*MO - .004c*JITS - 4.152c*1/(MO*JITS)	.080	3.73a

SIZE is positively related to DECM. Neither JITS nor MO is significantly related to DECM. JITS neither mediates nor moderates the relation between DECM and MO.

a Significant at the 0.01 level (2-tailed); b Significant at the 0.05 level (2-tailed); c Not significant

MO	Market Orientation
JITS	JIT Selling
SIZE	Natural log of number of employees
INTM	Integration/mechanisms
INTC	Integration/communication
FRMM	Formalization/marketing
FRME	Formalization/external
FRMI	Formalization/internal
SPC	Specialization
DECSC	Decentralization/scheduling
DECST	Decentralization/strategic
DECM	Decentralization/marketing

associated with the use of the DECST variable, it was transformed to natural log form. The transformation resulted in negligible differences in regression results. Therefore, regression results including DECST as the independent variable utilize the variable in its original form.

JIT Selling and Market Orientation

The JITII, JITSP and JITWM summary values were combined (averaged) to form an overall JIT selling (JITS) summary variable. Size (NLEMP) and market orientation (MO) were regressed against overall JIT selling. Size was not found to be significantly related to JIT selling and was removed from the model. Overall JIT selling and market orientation exhibit a strong, positive relationship ($R^2 = .422$). Market orientation is a strong predictor of JIT selling ($JITS = 1.665 + .618*MO$). The regression model is significant at the .01 level with an F statistic of 127.82.

Organizational Performance, JIT Selling and Market Orientation

The organizational performance summary value was computed as the average of the 7-items comprising the organizational performance scale. Size was determined to be positively related to organizational performance at the .01 level with an F value of 6.97 and was, therefore, entered as the initial independent variable for all regression models which incorporated organizational performance as the dependent variable. When JIT selling was added to the model as a second independent variable, R^2 for the overall model improved from .038 to .140 and the F value increased from 6.97 to 14.13. Size and JIT selling, in conjunction, explain 14% of the variation in organizational performance. When market orientation was added as the second independent variable, R^2 improved to .144 and the F value increased to 14.64. Size and market orientation together explain 14.4% of the variation in organizational performance.

To test for the mediation effect of JIT selling on the established relationship between market orientation and organizational performance, overall JIT selling was added as the third independent variable to the model containing size and market orientation. R^2 increased from .144 to .164, and the coefficients for all three independent variables in the model returned *t*-values significant at the .01 level. Low variance inflation factors (1.73, 1.73) dismissed concern for multicollinearity between market orientation and JIT selling within the model.

To test for the moderation effect of JIT selling on the established relationship between market orientation and organizational performance, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased slightly from .164 to .166 and only the coefficient for SIZE remained significant. No moderation effect was identified. When the regression method was changed to step-wise, the interaction term did not enter the regression.

Both market orientation and JIT selling are significant predictors of organizational performance. JIT selling partially mediates but does not moderate the significant relation between organizational performance and market orientation.

Integration/Mechanisms, JIT Selling and Market Orientation

Integration/mechanisms (INTM) values were computed as the average for the three-item scale. Size was found to positively impact INTM ($R^2 = .068$, $F = 12.84$ / sig. at .01 level) and was necessarily included as the first independent variable entered into all regression models including INTM as the dependent variable. JIT selling was entered as the second independent variable and was found to have a significant positive impact. R^2 rose from .068 to .158, and the F value increased from 12.84 to 16.27. Similar results were found when market orientation was entered as the second independent variable. R^2 improved from .068 to .187, and F value increased from 12.84 to 20.00.

JIT selling was entered as a third independent variable following size and market orientation to assess the mediating effect of JIT selling on the theorized relationship between market orientation and integration/mechanisms. Variance inflation factors of 1.73 indicated that damaging multicollinearity was not present in the model. While R^2 did show improvement from .187 to .197, the beta coefficient for the JIT selling variable was not found to be significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and integration/mechanisms, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased from .197 to .220, the coefficients for SIZE and MO remained significant, and the coefficient for JITS became significant. The coefficient for the interaction term was insignificant. No moderation effect was identified. When the regression method was changed to step-wise, the interaction term did not enter the regression.

Both market orientation and JIT selling are significant predictors of integration/mechanisms. JIT selling neither mediates nor moderates the significant relation between market orientation and integration/mechanisms.

Integration/Committees, JIT Selling and Market Orientation

Integration/committees (INTC) values were computed as the average for the four-item scale. Size was found to positively impact INTC ($R^2 = .042$, $F = 7.72$ / sig. at .01 level) and was necessarily included as the first independent variable entered into all regression models including INTC as the dependent variable. JIT selling was entered as the second independent variable and was found to have a significant positive impact. R^2 rose from .042 to .143, and the F value increased from 7.72 to 14.47. Similar results were found when market orientation was entered as the second independent variable. R^2 improved from .042 to .194, and F value increased from 7.72 to 20.99.

JIT selling was entered as a third independent variable following size and market orientation to assess the mediating effect of JIT selling on the theorized relationship between market orientation and integration/committees. Variance inflation factors of 1.73 indicated that damaging multicollinearity was not present in the model. While R^2 did show improvement from .194 to .201, the regression coefficient for the JIT selling variable was not found to be significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and integration/committees, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased slightly from .201 to .217, the coefficients for SIZE and MO remained significant, and the coefficient for JITS became significant. The coefficient for the interaction term was not identified as significantly different from zero. No moderation effect was identified. When the regression method was changed to step-wise, the interaction term did not enter the model.

Both market orientation and JIT selling are significant predictors of integration/committees. JIT selling neither mediates nor moderates the significant relation between market orientation and integration/committees.

Formalization/Marketing, JIT Selling and Market Orientation

Formalization/marketing (FRMM) was computed as the sum of responses to two YES/NO items. Size was found to be significantly related to formalization/marketing with an R^2 of .127 and an F value of 25.43 (significant at the .01 level) requiring that size be entered as the initial independent variable in all models in which FRMM is specified as the dependent variable. Entering JIT selling as the second independent variable resulted in an increase in the model R^2 from .127 to .146 but a decrease in the F value from 25.43 to 14.92. Market orientation was similarly entered as the second independent variable. R^2 improved from .127 to .187, and the computed F value decreased from 25.43

to 20.08. Individually, both market orientation and JIT selling are positively related to formalization/marketing.

To test the mediation effect of JIT selling on formalization/marketing, JIT selling was entered as a third independent variable following size and market orientation. R^2 was virtually unchanged at .188 while the computed F for the model dropped from 20.08 to 13.37. Although the overall model was significant, the regression coefficient for the JIT selling variable was not found to be significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and formalization/marketing, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased slightly from .188 to .190 and both the coefficients for SIZE and MO remained significant. The coefficients for JITS and the interaction term were not identified as significantly different from zero. When the regression method was changed to step-wise, neither JITS nor the interaction term entered the model. No moderation effect was identified.

Both market orientation and JIT selling are significant predictors of formalization/marketing. JIT selling neither mediates nor moderates the significant relation between market orientation and formalization/marketing.

Formalization/External, JIT Selling and Market Orientation

Formalization/external (FRME) was computed as the average of responses to 4 items. Size was found to be significantly related to formalization/external with an R^2 of .039 and an F value of 7.18 (significant at the .01 level) requiring that size be entered as the initial independent variable in all models in which FRME is specified as the dependent variable. Entering JIT selling as the second independent variable resulted in an increase in the model R^2 from .039 to .146 and an increase in the F value from 7.18 to

14.84. Market orientation was similarly entered as the second independent variable. R^2 improved from .039 to .243, and the computed F value increased from 7.18 to 27.90. Individually, both market orientation and JIT selling are positively related to formalization/external.

To test the mediation effect of JIT selling on formalization/external, JIT selling was entered as a third independent variable following size and market orientation. R^2 was virtually unchanged at .245 and the computed F for the model dropped from 27.90 to 18.68. Although the overall model was significant, the regression coefficient for the JIT selling variable was not found to be significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and formalization/external, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 changed from .245 to .253, and both the coefficients for SIZE and MO remained significant. The coefficients for JITS and the interaction term were not identified as significantly different from zero. When the regression method was changed to step-wise, neither JITS nor the interaction term entered the model. No moderation effect was identified.

Both market orientation and JIT selling are significant predictors of formalization/external. JIT selling neither mediates nor moderates the significant relation between market orientation and formalization/external.

Formalization/Internal, JIT Selling and Market Orientation

Formalization/internal (FRMI) was computed as the average of responses to 6 items. Size was found to be significantly related to formalization/marketing with an R^2 of .057 and an F value of 10.51 (significant at the .01 level) requiring that size be entered as the initial independent variable in all models in which FRMI is specified as the dependent variable. Entering JIT selling as the second independent variable resulted in an increase in the model R^2 from .057 to .119 and an increase in the F value from 10.51 to 11.76. Market orientation was similarly entered as the second independent variable. R^2 improved from .057 to .292, and the computed F value increased from 10.51 to 35.83. Individually, both market orientation and JIT selling are positively related to formalization/internal.

To test the mediation effect of JIT selling on the relationship between market orientation and formalization/internal, JIT selling was entered as a third independent variable following size and market orientation. R^2 increased to .299 and the computed F for the model dropped from 35.83 to 24.61. Although the overall model was significant, the regression coefficient for the JIT selling variable was not found to be significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and formalization/internal, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased from .299 to .302, and both the coefficients for SIZE and MO remained significant. The coefficients for JITS and the interaction term were not identified as significantly different from zero. When the regression method was changed to step-wise, neither JITS nor the interaction term entered the model. No moderation effect was identified.

Both market orientation and JIT selling are significant predictors of formalization/marketing. JIT selling neither mediates nor moderates the significant relation between market orientation and formalization/marketing.

Specialization, JIT Selling and Market Orientation

Specialization values were computed as the sum of the 10 items requiring YES/NO responses (YES as 1, NO as 0) in the specialization scale. Specialization and size were determined to be positively and significantly related (R^2 = .172, F = 36.42) necessitating the inclusion of size as the first independent variable entered in regression models which specify specialization as the dependent variable. Insertion of overall JIT selling as a second independent variable resulted in an improved R^2 (from .172 to .235) and a reduced F value (from 36.42 to 26.70). Similarly, the insertion of market orientation resulted in an improved R^2 (from .172 to .258) and a reduced F value (from 36.42 to 30.31). Both market orientation and JIT selling are positively and significantly related to specialization.

Overall JIT selling was entered as the third independent variable in an effort to identify the mediating effect. While R^2 improved from .258 to .264 and the overall model was significant, the regression coefficient for JIT selling was not found to be significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and specialization, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased from .264 to .288, the coefficient for SIZE and MO remained significant, and the coefficients for both JITS and the interaction term were identified as significantly different from zero. The significance of the interaction term indicates the possible presence of a moderation effect. When the regression method was changed to step-wise, however, neither the JITS nor the interaction variables entered the model. The possibility of a moderation effect was identified but is not likely.

Both market orientation and JIT selling are significant predictors of specialization. JIT selling likely neither mediates nor moderates the significant relation between market orientation and specialization.

Decentralization/Scheduling, JIT Selling and Market Orientation

Decentralization/scheduling (DECSC) summary values were computed as the average of two items. Size was identified as significantly related ($R^2 = .099$, $F = 19.26$) to DECSC necessitating its inclusion as the initial independent variable in all regression models specifying DECSC as the dependent variable. Overall JIT selling and market orientation were separately entered as the second independent variable. Both insertions improved the R^2 (.099 to .111 for JITS, .099 to .117 for MO), but neither associated regression coefficient was judged significantly different from zero. Neither JIT selling nor market orientation is significantly related to decentralization.

To test the mediation effect of overall JIT selling on the relation between market orientation and DECSC, JIT selling was inserted as a third independent variable following size and market orientation. R^2 was relatively unchanged at .118 and the regression coefficients for both market orientation and overall JIT selling were judged not significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and DECSC, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 did not change from .118, and only the coefficient for SIZE remained significant. When the regression method was changed to step-wise, only the SIZE variable entered the model. No moderation effect was identified.

Neither market orientation nor JIT selling are significant predictors of DECSC. JIT selling neither mediates nor moderates the significant relation between market orientation and DECSC.

Decentralization/Strategic, JIT Selling and Market Orientation

Decentralization/strategic (DECST) summary values were computed as the average of 8 items. Size was identified as significantly related ($R^2 = .052$, $F = 9.54$) to DECST necessitating its inclusion as the initial independent variable in all regression models specifying DECST as the dependent variable. Overall JIT selling and market orientation were separately entered as the second independent variable. Neither insertion improved the R^2 significantly (.052 to .052 for JITS, .052 to .053 for MO), and neither associated regression coefficient was judged significantly different from zero. Neither JIT selling nor market orientation is significantly related to decentralization.

To test the mediation effect of overall JIT selling on the relation between market orientation and DECSC, JIT selling was inserted as a third independent variable following size and market orientation. R^2 increased slightly from .053 to .555, and the regression coefficients for both market orientation and overall JIT selling were judged not significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and DECST, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased slightly from .055 to .058 and only the coefficient for SIZE remained significant. When the regression method was changed to step-wise, only the SIZE variable entered the model. No moderation effect was identified.

Neither market orientation nor JIT selling are significant predictors of DECSC. JIT selling neither mediates nor moderates the significant relation between market orientation and DECST.

Decentralization/Marketing, JIT Selling and Market Orientation

Decentralization/marketing (DECM) summary values were computed as the average of four items. Size was identified as significantly related ($R^2 = .066$, $F = 12.33$) to DECM necessitating its inclusion as the initial independent variable in all regression models specifying DECM as the dependent variable. Overall JIT selling and market orientation were separately entered as the second independent variable. Both insertions improved the R^2 (.066 to .072 for JITS, .066 to .069 for MO), but neither associated regression coefficient was judged significantly different from zero. Neither JIT selling nor market orientation is significantly related to DECM.

To test the mediation effect of overall JIT selling on the relation between market orientation and DECM, JIT selling was inserted as a third independent variable following size and market orientation. R^2 increased slightly from .069 to .072, but the regression coefficients for both market orientation and overall JIT selling were judged to be not significantly different from zero.

To test for the moderation effect of JIT selling on the established relationship between market orientation and DECM, an interaction variable (1/MO*JITS) was inserted into the model as a fourth independent variable. It was necessary to invert the interaction to reduce the impact of multicollinearity. R^2 increased slightly from .072 to .080 and only the coefficient for SIZE remained significant. When the regression method was changed to step-wise, only the SIZE variable entered the model. No moderation effect was identified.

Neither market orientation nor JIT selling are significant predictors of DECM. JIT selling neither mediates nor moderates the significant relation between market orientation and DECSM.

To summarize, market orientation is a significant, positive predictor of JIT selling. Both market orientation and JIT selling are significant positive predictors of organizational performance. JIT selling partially mediates but does not moderate the relationship between market orientation and organizational performance. Size is a positive predictor of all organizational structure variables. Controlling for size, both market orientation and JIT selling are positive predictors for both integration measures, all three of the formalization measures, and the specialization measure. Neither market orientation nor JIT selling is a significant predictor for any of the decentralization measures. JIT selling plays neither a moderating nor mediating role between market orientation and any of the organizational structure variables.

Split Sample Tests for Moderation Effects

A split sample analysis was conducted to test for the moderating effects of JIT selling on the relationships between market orientation and organizational performance and market orientation and organizational structure. The sample was sorted in ascending order by JIT selling values and then split at the median to form two groups (high and low JITS). Controlling for size, market orientation was regressed on each of the dependent variables in the model. The regression coefficients associated with market orientation in each pair of equations were constrained facilitating a test of coefficient equality. LISREL was used to perform a split sample test of equality of the market orientation coefficients. Table 4.7 displays the results of the comparisons.

A significant difference was noted for only the FRMM relationship. The significant difference identified for FRMM was indicated by a relatively high Chi-Square value of 7.22 with 2 degrees of freedom and an associated P-value of .027. In all other cases, the Chi-Square values were small with associated probabilities significantly greater than .05 indicating that the level of JITS (low or high) did not moderate the relationships

Table 4.7 Split Sample Moderator Test Results

Dependent Variable	Chi-Square (d.f. = 2)	P-value	RMSEA
OP	0.36	0.83	0.00
INTM	0.01	0.99	0.00
INTC	0.92	0.63	0.00
FRMM	7.22	0.03	0.17
FRME	0.02	0.99	0.00
FRMI	2.14	0.34	0.02
SPC	0.42	0.81	0.00
DECSC	1.15	0.56	0.00
DECST	2.50	0.29	0.05
DECM	4.16	0.12	0.11

INTM	Integration/mechanisms	INTC	Integration/communication
FRMM	Formalization/marketing	FRME	Formalization/external
FRMI	Formalization/internal	SPC	Specialization
DECSC	Decentralization/scheduling		
DECST	Decentralization/strategic		
DECM	Decentralization/marketing		

between MO and the dependent variables OP, INTM, INTC, FRME, FRMI, SPC, DECSC, DECST and DECM.

Structural Equation Modeling Results

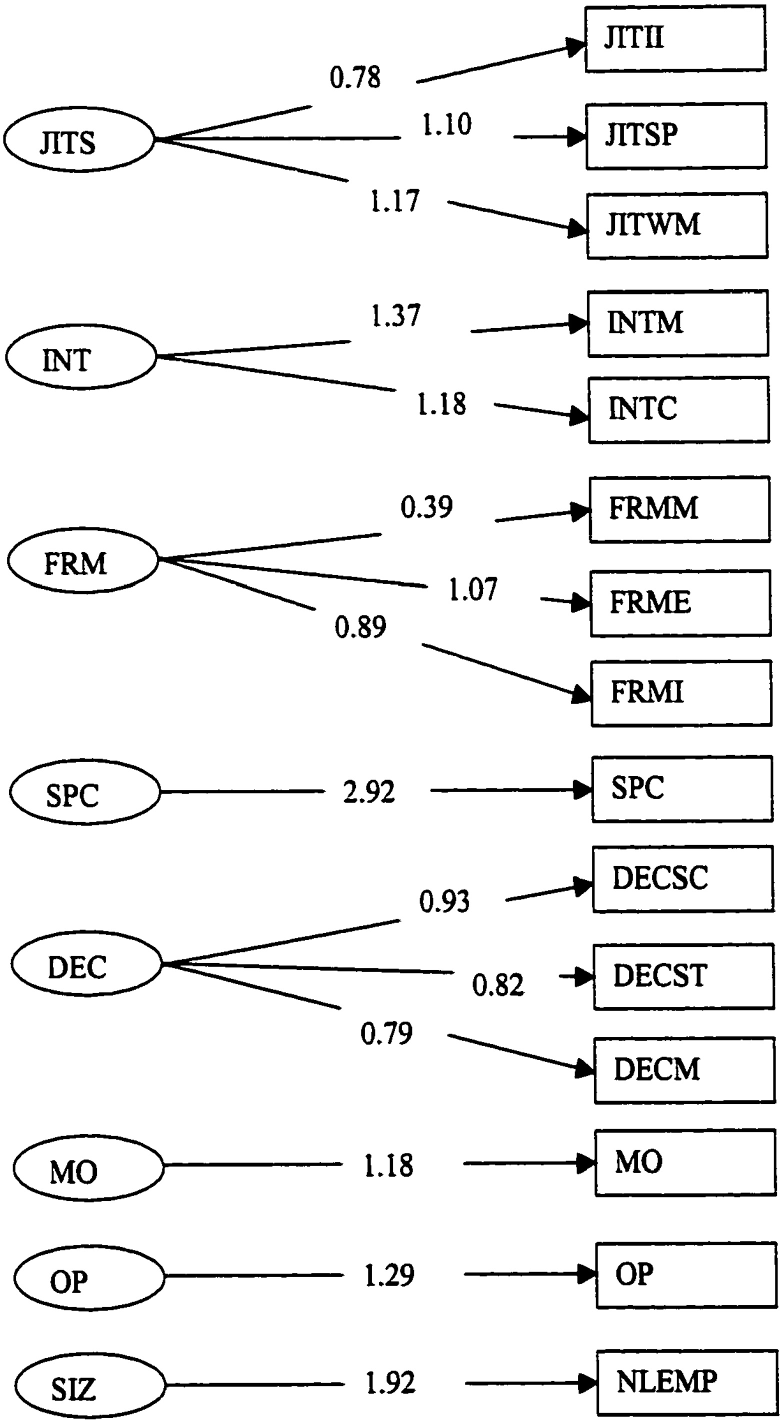
Regression analysis allowed testing of individual paths through the overall theorized model. The structural equation modeling capabilities of LISREL 8.3 software were employed to further test these relationships. LISREL 8.3 allows testing of the model as a whole. Four models are presented in this section: 1) the measurement model without modification, 2) an alternative "good fit" measurement model, 3) the structural model without modification and 4) an alternative "good fit" structural model.

Departures from univariate normality were indicated in Table 4.1 based upon the computed measures of skewness and kurtosis. Further review indicated significant problems with the DECST measure. A transformation did not significantly alter the regression results. The additional requirement of multivariate normality for structural equation modeling was tested and found not to hold for this data set. In an attempt to minimize the impact of this problem, the variables were normalized and the generalized least squares method of analysis was employed. No significant differences in results were noted following these alterations.

Measurement Model without Modification

Figure 4.1 illustrates the initial measurement model without modifications. The model incorporates: 1) JITII, JITSP and JITWM as measures of the JITS construct, 2) INTM and INTC as measures of the INT construct, 3) FRMM, FRME, and FRMI as measures of the FRM construct, 4) DECSC, DECST, and DECM as measures of the DEC construct, and 5) MO, OP, SPC and SIZ as individually measured constructs.

Table 4.8 displays goodness-of-fit statistics for this initial measurement model. While the chi-square tests indicate a poor fit, the measures associated with root mean square error and the multiple goodness-of-fit indices approach good fit levels. The chi-square tests have small associated P-values (.0005, .0020) indicating a poor fit. Values for root mean square error of approximation (RMSEA), root mean square residual (RMR) and standardized root mean square residual (SRMR) all exceed the recommended .05 level, though just barely. While the non-normed fit (NNFI) and goodness of fit (GFI)


JITS
0.78
1.10
1.17
JITII
JITSP
JITWM
INT
1.37
1.18
INTM
INTC
FRM
0.39
1.07
0.89
FRMM
FRME
FRMI
SPC
2.92
SPC
DEC
0.93
0.82
0.79
DECSC
DECST
DECM
MO
1.18
MO
OP
1.29
OP
SIZ
1.92
NLEMP

Chi-square = 103.93, d.f. = 66, P-value = .002, RMSEA .057

Figure 4.1 Measurement Model without Modifications

Table 4.8 Goodness-of-Fit Statistics Measurement Model without Modification

Degrees of Freedom = 66
Minimum Fit Function Chi-Square = 110.341 (P = 0.000512)
Normal Theory Weighted Least Squares Chi-Square = 103.928 (P = 0.00201)
Estimated Non-centrality Parameter (NCP) = 37.928
90 Percent Confidence Interval for NCP = (14.115 ; 69.670)

Minimum Fit Function Value = 0.627
Population Discrepancy Function Value (F0) = 0.215
90 Percent Confidence Interval for F0 = (0.0802 ; 0.396)
Root Mean Square Error of Approximation (RMSEA) = 0.0571
90 Percent Confidence Interval for RMSEA = (0.0349 ; 0.0774)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.274

Expected Cross-Validation Index (ECVI) = 1.204
90 Percent Confidence Interval for ECVI = (1.069 ; 1.384)
ECVI for Saturated Model = 1.364
ECVI for Independence Model = 6.144

Chi-Square for Independence Model with 105 Degrees of Freedom = 1051.332
Independence AIC = 1081.332
Model AIC = 211.928
Saturated AIC = 240.000
Independence CAIC = 1143.974
Model CAIC = 437.440
Saturated CAIC = 741.138

Normed Fit Index (NFI) = 0.895
Non-Normed Fit Index (NNFI) = 0.925
Parsimony Normed Fit Index (PNFI) = 0.563
Comparative Fit Index (CFI) = 0.953
Incremental Fit Index (IFI) = 0.955
Relative Fit Index (RFI) = 0.833

Critical N (CN) = 153.530

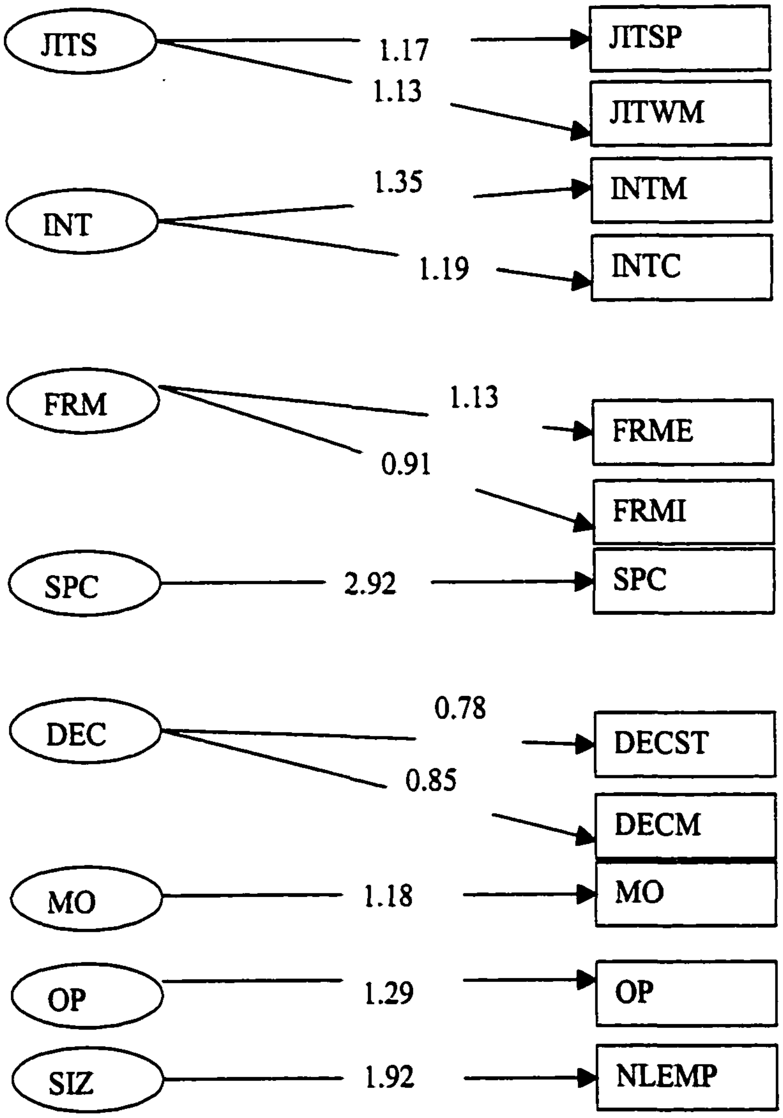
Root Mean Square Residual (RMR) = 0.107
Standardized RMR = 0.0549
Goodness of Fit Index (GFI) = 0.927
Adjusted Goodness of Fit Index (AGFI) = 0.867
Parsimony Goodness of Fit Index (PGFI) = 0.510

indices exceed the recommended .90 level indicating good fit, the values for the normed fit (NNI) and adjusted goodness of fit (AGFI) do not. The results indicate that this initial model approaches, but does not achieve, good fit status.

Measurement Model with Modification

To improve the fit of the model it was necessary to remove JITII, FRMM and DECSC as observed variables. Additionally, the LISREL 8.3 output recommended allowing the errors for DECST and SPC and DESCT and INTM to correlate. Figure 4.2 illustrates the final "good fit" measurement model with these modifications. The model now incorporates 1) JITSP and JITWM as measures of the JITS construct, 2) INTM and INTC as measures of the INT construct, 3) FRME and FRMI as measures of the FRM construct, 4) DECST, and DECM as measures of the DEC construct, and 5) MO, OP, SPC and SIZ as individually measured constructs.

Table 4.9 displays goodness-of-fit statistics for this improved measurement model. The chi-square tests, the measures associated with root mean square error and the multiple goodness-of-fit indices indicate a good fit. The P-values of .190 and .239 associated with the chi-square tests exceed the recommended .05 value and indicate a good fit for the model. Values for RMSEA (.032) and SRMR (.032) fall below the recommended .05 level. Values for NFI (.957), NNFI (.979), GFI (.970) and AFGI (.916) all exceed the recommended .90 level indicating good fit. The results indicate that this modified measurement model achieves a good fit status. LISREL modification indices for this structuring of the measurement model did not recommend any additional modifications to improve the measurement model.


JITS
1.17
1.13
JITSP
JITWM
INT
1.35
1.19
INTM
INTC
FRM
1.13
0.91
FRME
FRMI
SPC
2.92
SPC
DEC
0.78
0.85
DECST
DECM
MO
1.18
MO
OP
1.29
OP
SIZ
1.92
NLEMP

Modifications:

1. JITII, FRMM and DECSC removed as observed variables
2. LET ERRORS FROM DECST AND SPC CORRELATE
3. LET ERRORS FROM DECST AND INTM CORRELATE

Chi-square = 32.91, d.f. = 28, P-value = .239, RMSEA = 0.032

Figure 4.2 Measurement Model with Modifications

Table 4.9 Goodness-of-Fit Statistics Measurement Model with Modification

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Degrees of Freedom = 28
Minimum Fit Function Chi-Square = 34.349 (P = 0.190)
Normal Theory Weighted Least Squares Chi-Square = 32.914 (P = 0.239)
Estimated Non-centrality Parameter (NCP) = 4.914
90 Percent Confidence Interval for NCP = (0.0; 23.441)

Minimum Fit Function Value = 0.195
Population Discrepancy Function Value (F0) = 0.0279
90 Percent Confidence Interval for F0 = (0.0 ; 0.133)
Root Mean Square Error of Approximation (RMSEA) = 0.0316
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.0690)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.754

Expected Cross-Validation Index (ECVI) = 0.755
90 Percent Confidence Interval for ECVI = (0.727 ; 0.860)
ECVI for Saturated Model = 0.886
ECVI for Independence Model = 4.650

Chi-Square for Independence Model with 66 Degrees of Freedom = 794.423
Independence AIC = 818.423
Model AIC = 132.914
Saturated AIC = 156.000
Independence CAIC = 868.537
Model CAIC = 341.722
Saturated CAIC = 481.740

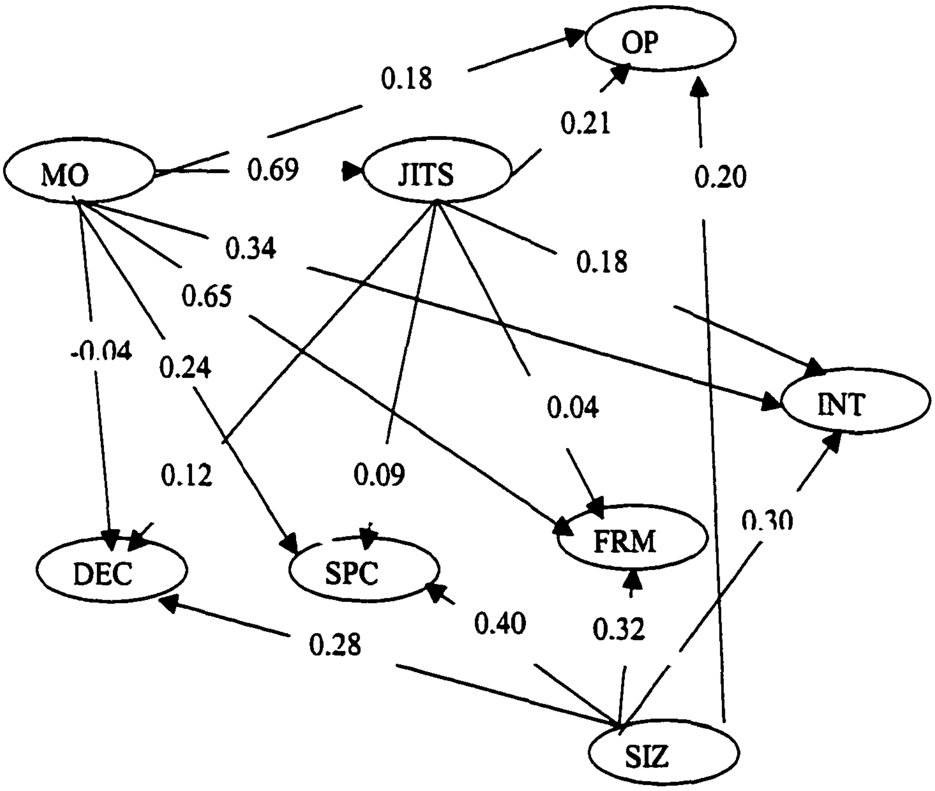
Normed Fit Index (NFI) = 0.957
Non-Normed Fit Index (NNFI) = 0.979
Parsimony Normed Fit Index (PNFI) = 0.406
Comparative Fit Index (CFI) = 0.991
Incremental Fit Index (IFI) = 0.992
Relative Fit Index (RFI) = 0.898

Critical N (CN) = 248.370

Root Mean Square Residual (RMR) = 0.0766
Standardized RMR = 0.0319
Goodness of Fit Index (GFI) = 0.970
Adjusted Goodness of Fit Index (AGFI) = 0.916
Parsimony Goodness of Fit Index (PGFI) = 0.348

Structural Model without Modification

Figure 4.3 illustrates the initial structural model without modifications. The model incorporates the previously described modified measurement model with theorized paths associating the latent constructs. This initial structural model includes MO, JITS, OP, INT, FRM, SPC, DEC and SIZE as latent variables. The heart of the model includes MO as antecedent to JITS and OP, INT, FRM, SPC and DEC as consequences of JITS. To allow testing for the mediation effects of JITS, paths from MO directly to OP, INT, FRM, SPC and DEC are included. SIZ is incorporated to control for firm size and causally directed to OP, INT, FRM, SPC and DEC.



Chi-square =110.22, d.f. = 41, P-value = .000, RMSEA = 0.098

Figure 4.3 Structural Model without Modifications (Standardized Coefficients)

Table 4.10 displays goodness-of-fit statistics for this initial structural model. Generally, the initial model, as structured, fits the data poorly. The chi-square tests have very small associated P-values (.000, .000) indicating a poor fit. Values for root mean square error of approximation (RMSEA), root mean square residual (RMR) and standardized root mean square residual (SRMR) all significantly exceed the .05 level that is recommended. Some of the goodness-of-fit indices fall short of the recommended .90 level, while some exceed the level. Generally, the results indicate that this initial model does not achieve good fit status.

Structural Model with Modification

The improved fit measurement model was used as input for modification of the structural model. Results from the regression analyses indicated that links between JITS and the organizational structure constructs (INT, FRM, SPC and DEC) be removed. The path from MO to DEC was also removed. Modification indices recommended that paths from SPC to INT and from INT to FRM be added. These modifications resulted in the model illustrated in Figure 4.4. This modified structural model includes MO, JITS, OP, INT, FRM, SPC, DEC and SIZ as latent variables. The heart of the model includes MO as antecedent to JITS, OP, INT, FRM and SPC but not to DEC. JITS is now an antecedent to OP only. SIZ remains incorporated to control for firm size and is causally directed to OP, INT, FRM, SPC and DEC.

Table 4.11 displays goodness-of-fit statistics for this improved structural model. The initial model, as structured, fits the data reasonably well. The P-values of .248 and .262 associated with the chi-square tests exceed the recommended .05 value and indicate a good fit for the model. The value for RMSEA (.027) fall below the recommended .05

Table 4.10 Goodness-of-Fit Statistics Structural Model without Modification

---

Degrees of Freedom = 41
Minimum Fit Function Chi-Square = 114.918 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 110.216 (P = 0.000)
Estimated Non-centrality Parameter (NCP) = 69.216
90 Percent Confidence Interval for NCP = (41.812; 104.283)

Minimum Fit Function Value = 0.653
Population Discrepancy Function Value (F0) = 0.393
90 Percent Confidence Interval for F0 = (0.238; 0.593)
Root Mean Square Error of Approximation (RMSEA) = 0.0979
90 Percent Confidence Interval for RMSEA = (0.0761; 0.120)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.000322

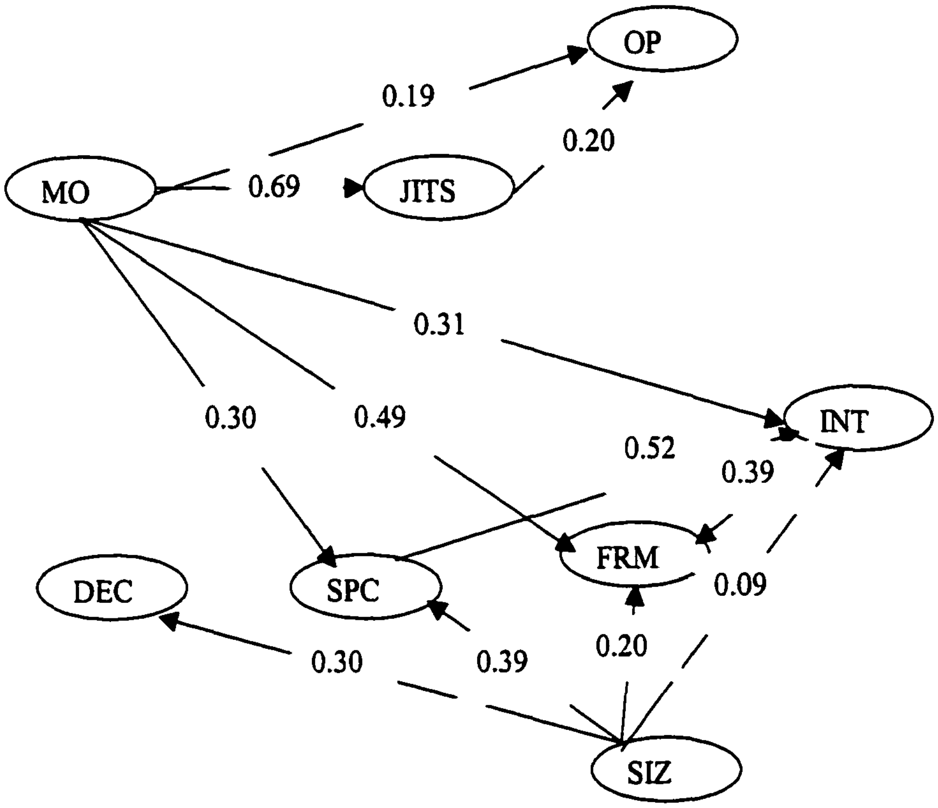
Expected Cross-Validation Index (ECVI) = 1.047
90 Percent Confidence Interval for ECVI = (0.891; 1.246)
ECVI for Saturated Model = 0.886
ECVI for Independence Model = 4.666

Chi-Square for Independence Model with 66 Degrees of Freedom = 797.303
Independence AIC = 821.303
Model AIC = 184.216
Saturated AIC = 156.000
Independence CAIC = 871.417
Model CAIC = 338.733
Saturated CAIC = 481.740

Normed Fit Index (NFI) = 0.856
Non-Normed Fit Index (NNFI) = 0.837
Parsimony Normed Fit Index (PNFI) = 0.532
Comparative Fit Index (CFI) = 0.899
Incremental Fit Index (IFI) = 0.902
Relative Fit Index (RFI) = 0.768

Critical N (CN) = 100.474

Root Mean Square Residual (RMR) = 0.137
Standardized RMR = 0.0777
Goodness of Fit Index (GFI) = 0.905
Adjusted Goodness of Fit Index (AGFI) = 0.820
Parsimony Goodness of Fit Index (PGFI) = 0.476



Modifications:

1. Paths from JITS to INT, FRM, SPC and DEC removed.
2. Path from MO to DEC removed
3. Paths from SPC to INT and INT to FRM added

Chi-square = 47.40, d.f. = 42, P-value = .262, RMSEA = 0.027

Figure 4.4 Structural Model with Modifications (Standardized Coefficients)

level. The value for SRMR (.053) only slightly exceeds the .05 target. The value for RMSR (.090) is significantly higher than the recommended level.

Values for NFI (.940), NNFI (.987), GFI (.957) and AFGI (.920) all exceed the recommended .90 level indicating good fit. The results indicate that this modified structural model achieves a good fit status. LISREL modification indices for this version did not recommend any additional modifications to improve the measurement model.

Table 4.11 Goodness-of-Fit Statistics Structural Model with Modification

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Degrees of Freedom = 42
Minimum Fit Function Chi-Square = 47.824 (P = 0.248)
Normal Theory Weighted Least Squares Chi-Square = 47.399 (P = 0.262)
Estimated Non-centrality Parameter (NCP) = 5.399
90 Percent Confidence Interval for NCP = (0.0; 26.534)

Minimum Fit Function Value = 0.272
Population Discrepancy Function Value (F0) = 0.0307
90 Percent Confidence Interval for F0 = (0.0; 0.151)
Root Mean Square Error of Approximation (RMSEA) = 0.0270
90 Percent Confidence Interval for RMSEA = (0.0; 0.0599)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.854

Expected Cross-Validation Index (ECVI) = 0.678
90 Percent Confidence Interval for ECVI = (0.648; 0.798)
ECVI for Saturated Model = 0.886
ECVI for Independence Model = 4.666

Chi-Square for Independence Model with 66 Degrees of Freedom = 797.303
Independence AIC = 821.303
Model AIC = 119.399
Saturated AIC = 156.000
Independence CAIC = 871.417
Model CAIC = 269.741
Saturated CAIC = 481.740

Normed Fit Index (NFI) = 0.940
Non-Normed Fit Index (NNFI) = 0.987
Parsimony Normed Fit Index (PNFI) = 0.598
Comparative Fit Index (CFI) = 0.992
Incremental Fit Index (IFI) = 0.992
Relative Fit Index (RFI) = 0.906

Critical N (CN) = 244.653

Root Mean Square Residual (RMR) = 0.0902
Standardized RMR = 0.0529
Goodness of Fit Index (GFI) = 0.957
Adjusted Goodness of Fit Index (AGFI) = 0.920
Parsimony Goodness of Fit Index (PGFI) = 0.515

Summary of Structural Equation Modeling Results

The generalized results of the structural equation modeling (SEM) analysis reinforce the previously described regression results. Multiple competing models were assessed during the SEM process. Movement from the theorized structural model to the better fit structural model suggested by the regression results reduced Chi-Square from 110.22 with 41 degrees of freedom to 47.40 with 42 degrees of freedom, RMSEA from 0.098 to 0.027 and the GFI improved from 0.905 to 0.957. The better fit model ultimately selected generally indicates the following: 1) there are strong, positive paths from MO to JITS, from JITS to OP and from MO to OP, 2) JITS positively partially mediates the path from MO to OP, 3) there are strong, positive paths from MO to INT, FRM and SPC but not to DEC and 4) JITS neither mediates nor moderates the relationships from MO to INT, FRM and SPC.

Hypotheses Evaluation

Results from the regression, split-sample moderation tests and structural equation modeling analyses provide information necessary to evaluate the study hypotheses. The hypotheses are listed with supporting evidence. Table 4.12 summarizes the results for all hypothesis tests. It should be noted that JITS was measured for regression purposes as the average of the JITII, JITSP and JITWM scale scores but as a combination of only the JITSP and JITWM scales for SEM purposes. Elimination of the JITII scale was indicated as a modification necessary to improve the fit of the measurement model. This distinction results in slight differences in coefficient values between the methods.

Table 4.12 Results Summary for Hypothesis Tests

Hypothesis 1: Market orientation has a significant, positive effect on JIT selling.

> *Supported – Correlation, regression and structural coefficients all positive and significant.*

Hypothesis 2: JIT selling has a significant, positive effect on organizational performance.

> *Supported – Correlation, regression and structural coefficients all positive and significant.*

Hypothesis 3: Market orientation has a significant, positive effect on organizational performance.

> *Supported – Correlation, regression and structural coefficients all positive and significant.*

Hypothesis 4: JIT selling mediates/moderates the relationship between market orientation and organizational performance.

> *Partially Supported – Regression and structural coefficients all positive and significant for partial impact. Moderation effect not significant in either regression with interaction or split-sample.*

Hypothesis 5: Market orientation significantly and positively impacts organizational structure.

> *Partially Supported – Correlation, regression and structural coefficients positive and significant for integration, formalization and specialization but not for decentralization.*

Hypothesis 6: JIT selling significantly and positively impacts organizational structure.

> *Partially Supported – Correlation, regression and structural coefficients positive and significant for integration, formalization and specialization but not for decentralization.*

Hypothesis 7: JIT selling positively mediates/moderates the relationship between market orientation and organizational structure.

> *Not Supported – Regression and structural coefficients not significant for mediation. Moderation effect not significant in either regression with interaction or split-sample.*

Market Orientation and JIT Selling

H1: Market orientation has a significant, positive effect on JIT selling.

The strong, positive relationship between MO and JITS is evidenced by a correlation coefficient of .65 (significant at the .01 level). The regression analysis returns an equation (JITS = 4.812 + .618*MO) with an overall F value for the model of 127.82 which is significant at the .01 level. The associated coefficient of determination is .422. The regression coefficient for MO of .618 is positive and significant at the .01 level. The structural coefficient for the path from MO to JITS in the structural model is .688 with an accompanying *t*-value of 8.90 (significant at the .01 level). The associated coefficient of determination is .474. The results of this study support the hypothesis that market orientation has a significant, positive effect on JIT selling.

JIT Selling and Organizational Performance

H2: JIT selling has a significant, positive effect on organizational performance (profits, return on investment, sales volume, market share).

The strong, positive relationship between JIT selling and organizational performance is evidenced by a correlation coefficient of .31 (significant at the .01 level). The regression analysis returns an equation (OP = 2.133 + .137*SIZ + .368*JITS) with an overall F value for the model of 14.13 which is significant at the .01 level. The associated coefficient of determination is .140. The regression coefficient for JITS of .368 is positive and significant at the .01 level. The structural coefficient for the path from JITS to OP in the structural model is .199 with an accompanying *t*-value of 1.748 (significant at the .05 level). The results of this study support the hypothesis that JIT selling has a significant, positive effect on organizational performance.

Market Orientation and Organizational Performance

H3: Market orientation has a significant, positive effect on organizational performance (profits, return on investment, sales volume, market share).

A strong, positive relationship between market orientation and organizational performance is evidenced by a correlation coefficient of .33 (significant at the .01 level). The regression analysis returns an equation (OP = 2.125 + .131*SIZ + .357*MO) with an overall F value for the model of 14.64 which is significant at the .01 level. The associated coefficient of determination is .144. The regression coefficient for MO of .357 is positive and significant at the .01 level. The structural coefficient for the path from MO to OP in the structural model is .188 with an accompanying t-value of 1.796 (significant at the .05 level). The results of this study support the hypothesis that market orientation has a significant, positive effect on organizational performance.

JIT Selling Mediation/Moderation - Market Orientation and Organizational Performance

H4: JIT selling mediates/moderates the relationship between market orientation and organizational performance (profits, return on investment, sales volume, market share).

To test the mediation effect of JIT selling on the relationship between market orientation and organizational performance, JITS was entered as a third independent variable to a model already containing SIZ and MO. The prior model (OP = 2.125 + .131*SIZ + .357*MO) has an associated F value of 14.64 which is significant at the .01 level with a coefficient of determination of .144. The regression coefficients for SIZ (.131) and MO (.357) returned t-values that are significant at the .01 level. The expanded model (OP = 1.753 + .134*SIZ + .225*MO + .214*JITS) has an associated F value of 11.30 (significant at the .01 level) and a coefficient of determination of .164. The coefficients for SIZ (.134) and MO (.225) continue significance at the .01 level. The coefficient for the newly inserted variable JITS (.214) also achieves significance at the .01 level. The increase in explanatory power from 14.4% to 16.4% is slight but significant. This improvement in explanatory capability is evidence of a partial mediation effect from JITS. The revised structural model includes significant paths from MO to both JITS and OP and a path from JITS to OP. The reduced form equation (OP = 0.324*MO + 0.205*SIZ) containing SIZ and MO as independent variables contains coefficients which are significant at the .01 level and has an associated R^2 of .148. The structural form equation (OP = 0.199*JITS + 0.188*MO + 0.205*SIZ) additionally includes JITS. All coefficients were determined to be significant at the .01 level. R^2 increased from .148 to .169 with the addition of JITS to the model. The significance of the JITS coefficients and the improvement in R^2 supports the hypothesis that JITS is a partial mediator of the relationship between MO and OP.

To test for moderation, an interaction variable (1/MO*JITS) was entered as a fourth independent variable in the regression model following SIZE, MO and JITS. The coefficient for the interaction term was not identified as significantly different from zero. When the regression method was changed to step-wise, the interaction variable did not enter the model. Additionally, the split-sample test for moderation identified equal coefficients associated with market orientation across the low and high JITS groups. JITS does not moderate the relationship between MO and OP.

Market Orientation and Organizational Structure

H5: Market orientation significantly and positively impacts organizational structure [integration (+), formalization (+), specialization (+), decentralization (+)].

The regression analyses associating market orientation as the primary independent variable with integration, formalization and specialization support this hypothesis. The analyses containing market orientation and the decentralization variables do not support the hypothesis.

The survey contained two measures of integration, integration/mechanisms and integration/committees. The integration/mechanisms equation (INTM = .657 + .225*SIZE + .486*MO) has an overall F value of 20.00 (significant at the .01 level) and an associated R^2 of .187. The regression coefficient for MO (.486) is positive and significantly different from 0 at the .01 level. The integration/committees equation (INTC = .596 + .167*SIZE + .521*MO) has an overall F value of 20.99 (significant at the .01 level) and an associated R^2 of .194. The regression coefficient for MO (.521) is positive and significant at the .01 level. MO is demonstrated as having a significant, positive impact on both measures of integration. INTM and INTC were combined in the SEM analysis to represent the INT construct. The structural path from MO to INT (.311) is positive and significant at the .01 level. Market orientation does, therefore, appear to have a positive impact on integration.

The JIT selling survey contained three measures of formalization: formalization/marketing, formalization/external and formalization/internal. The formalization/marketing equation (FRMM = -.438 + .156*SIZE + .177*MO) has an overall F value of 20.08 (significant at the .01 level) and an R^2 of .187. The regression coefficient for MO (.177) is positive and significantly different from 0 at the .01 level. The formalization/external equation (FRME = .134 + .172*SIZE + .645*MO) has an overall F value of 27.90 (significant at the .01 level) and an R^2 of .243. The regression coefficient for MO (.645) is positive and significant at the .01 level. MO is demonstrated as having a significant, positive impact on both measures of integration. FRME and FRMI were combined in the SEM analysis to represent the FRM construct. The structural path from MO to FRM (.490) is positive and significant at the .01 level. Market orientation does, therefore, appear to have a positive impact on formalization.

The survey contained one measurement scale for specialization. The specialization equation (SPC = -1.866 + .625*SIZE + .723*MO) has an overall F value of 30.31 (significant at the .01 level) and an associated R^2 of .258. The regression coefficient for MO (.723) is positive and significantly different from zero at the .01 level. The structural path from MO to SPC (.305) is positive and significant at the .01 level. Study results indicate that market orientation has a positive impact on specialization.

The JIT selling survey contained three measures of decentralization: decentralization/scheduling, decentralization/strategic and decentralization/marketing. The decentralization/scheduling equation (DECSC = 3.942 + .242*SIZE - .168*MO) has an overall F value of 11.56 (significant at the .01 level) and an R^2 of .117. The regression coefficient for MO (.242) is positive and is not significantly different from zero. The decentralization/strategic equation (DECST = 2.347 + .106*SIZE - .031*MO) has an overall F value of 4.90 significant at the .01 level and an associated R^2 of .053. The regression coefficient for MO (-.031) is negative but not significantly different from zero. The decentralization/marketing equation (DECM = 2.059 + .133*SIZE - .049*MO) has an overall F value of 6.47 (significant at the .01 level) and an R^2 of .069. The regression coefficient for MO (-.049) is negative but not significantly different from zero. MO is not demonstrated as having a significant, positive impact on the measures of decentralization. DECST and DECM were combined in the SEM analysis to represent the DEC construct. The standardized coefficient for the structural path from MO to DEC in the initial structural model is -0.042 which is not significantly different from zero. The hypothesized positive link between market orientation and decentralization is not supported by the results

Market orientation was found to significantly and positively impact the integration, formalization and specialization components of organizational structure but not the decentralization component. This hypothesis is, therefore, determined to be only partially supported.

JIT Selling and Organizational Structure

H6: JIT selling significantly and positively impacts organizational structure [integration (+), formalization (+), specialization (+), decentralization (+)].

The regression analyses associating JIT selling as the primary independent variable with integration, formalization and specialization support this hypothesis. The analyses containing JIT selling and the decentralization variables do not support the hypothesis.

The JIT survey contained two measures of integration, integration/mechanisms and integration/committees. The integration/mechanisms equation (INTM = .944 + .233*SIZE + .444*JITS) has an overall F value of 16.27 (significant at the .01 level) and an R^2 of .158. The regression coefficient for JITS (.444) is positive and significantly different from zero at the .01 level. The integration/committees equation (INTC = 1.049 + .175*SIZE + .446*JITS) has an overall F value of 14.47 (significant at the .01 level) and an R^2 of .143. The regression coefficient for MO (.446) is positive and significant at the .01 level. JITS is demonstrated as having a significant, positive impact on both measures of integration. INTM and INTC were combined in the SEM analysis to represent the INT construct. The revised fit SEM did not include paths from JITS to INT, FRM, SPC and DEC. To assess the relationships from JITS to the organizational structure constructs an alternative SEM was constructed and assessed. The structural path from JITS to INT (.602) is positive and significant at the .01 level. JIT selling does, therefore, appear to have a positive impact on integration when MO is excluded from the model.

The JIT selling survey contained three measures of formalization: formalization/marketing, formalization/external and formalization/internal. The formalization/marketing equation (FRMM = -.100 + .158*SIZE + .106*JITS) has an overall F value of 14.92 (significant at the .01 level) and an R^2 of .146. The regression coefficient for JITS (.106) is positive and significantly different from zero at the .01 level. The formalization/external equation (FRME = .986 + .182*SIZE + .491*JITS) has an overall F value of 14.84 (significant at the .01 level) and an R^2 of .146. The regression coefficient for JITS (.491) is positive and significant at the .01 level. The formalization/internal equation (FRMI = 2.954 + .164*SIZE + .287*JITS) has an overall F value of 11.76 (significant at the .01 level) and an R^2 of .119. The regression coefficient for JITS (.287) is positive and significant at the .01 level. JITS is demonstrated as having a significant, positive impact on all measures of formalization. FRME and FRMI were combined in the SEM analysis to represent the FRM construct. The revise fit SEM did not include paths from JITS to INT, FRM, SPC and DEC. To assess the relationships from JITS to the organizational structure constructs an alternative

SEM was constructed and assessed. The structural path from JITS to FRM (.718) is positive and significant at the .01 level. JITS does, therefore, appear to have a positive impact on formalization when MO is excluded from the model.

The survey contained one scale for specialization. The specialization equation (SPC = -1.386 + .637*SIZE + .649*JITS) has an overall F value of 26.70 (significant at the .01 level) and an R^2 of .235. The regression coefficient for JITS (.649) is positive and significantly different from zero at the .01 level. The revised fit SEM did not include paths from JITS to INT, FRM, SPC and DEC. To assess the relationships from JITS to the organizational structure constructs an alternative SEM was constructed and assessed. The structural path from JITS to SPC (.400) is positive and significant at the .01 level. Study results indicate that JIT selling has a positive impact on specialization when MO is excluded from the model.

The JIT selling survey contained three measures of decentralization: decentralization/scheduling, decentralization/strategic and decentralization/marketing. The decentralization/scheduling equation (DECSC = 3.792 + .239*SIZE - .143*JITS) has an overall F value of 10.86 (significant at the .01 level) and an R^2 of .111. The regression coefficient for JITS (-.143) is negative but not significantly different from zero. The decentralization/strategic equation (DECST = 2.161 + .106*SIZE - .007*JITS) has an overall F value of 4.75 (significant at the .01 level) and an R^2 of .052. The regression coefficient for JITS (-.007) is negative but not significantly different from zero. The decentralization/marketing equation (DECM = 1.969 + .134*SIZE + .070*JITS) has an overall F value of 6.75 (significant at the .01 level) and an R^2 of .072. The regression coefficient for JITS (.070) is positive but not significantly different from zero. JITS is not demonstrated as having a significant, positive impact on the measures of decentralization. DECST and DECM were combined in the SEM analysis to represent the DEC construct. The revised fit SEM did not include paths from JITS to INT, FRM, SPC and DEC. To assess the relationships from JITS to the organizational structure constructs an alternative SEM was constructed and assessed. The structural path from JITS to DEC (.106) is positive but not significantly different from zero. The hypothesized positive link between JIT selling and decentralization is not supported by the results.

JIT selling was found to significantly and positively impact the integration, formalization and specialization components of organization structure when MO is excluded from the model. No relationship between JITS and DEC was identified. This hypothisis is, therefore, determined to be only partially supported.

JIT Selling Mediation/Moderation - Market Orientation and Organizational Structure

H7: JIT selling positively mediates/moderates the relationship between market orientation and organizational structure(integration, formalization, specialization and decentralization).

To test the mediation/moderation effects of JIT selling on the relationships among market orientation and the organizational structure variables, JITS was entered as a third independent variable and an interaction term (1/MO*JITS) as a fourth variable to models already containing SIZ and MO. Additionally, the good fit structural model was assessed for significant paths representing mediation and the results of the split sample analysis were assessed for evidence supporting moderation effects. JITS was found to neither mediate nor moderate the relationships between market orientation and the structure variables.

The prior regression models for INTM, INTC, FRMM, FRME, FRMI and SPC containing SIZE and MO as independent variables had associated F values indicating overall significance at the .01 level. Regression coefficients for both SIZE and MO were identified as significant at the .01 level. The prior regression models for DECSC, DECST and DECM were identified as significant the .01 level but only for inclusion of the SIZE independent variable. The expanded models for INTM, INTC, FRMM, FRME, FRMI and SPC have F values indicating significance at the .01 level. The coefficients for SIZ and MO remain significant at the .01 level. The coefficients for the newly inserted variable JITS do not achieve significance at the .05 level in any of the expanded equations. The initial structural model assessed returned non-significant structural path coefficients from JITS to INT, FRM, SPC and DEC. Goodness-of-fit measures for this initial model indicated poor overall fit (Chi-square P-value = .00, GFI = .91). These insignificant paths were removed resulting in a better fit (Chi-square P-value = .262, GFI = .96).

To test for moderation, an interaction variable (1/MO*JITS) was entered as a fourth independent variable in the regression models following SIZE, MO and JITS. The coefficients for the interaction terms were not identified as significantly different from zero. When the regression method was changed to step-wise, the interaction variable did not enter any of the organizational structure models. Additionally, the split-sample test for moderation identified equal coefficients associated with market orientation across the low and high JITS groups. JITS does not moderate the relationship between MO and OS.

Support for this hypothesis is not indicated by the results. JIT selling neither mediates nor moderates the relationships among market orientation and integration, formalization, specialization and decentralization.

Summary of Results

Hypotheses 1 through 6 are generally supported. No support for hypothesis 7 was found. Market orientation has a significant, positve impact on JIT selling. Both market orientation and JIT selling significantly and positively impact organizational performance and the organizational structure variables of integration, formalization and specialization. Neither market orientation nor JIT selling were identified as impacting decentralization. Further, JIT selling partially mediates but does not moderate the relationship between market orientation and organizational performance. JIT selling neither mediates nor moderates the relationships between market orientation and the organizational structure variables. No relationships were identified between either market orientation or JIT selling and decentralization. Results indicated that decentralization was explained by firm size rather than by market orientation and JIT selling.

CHAPTER 5

CONCLUSIONS

Chapter 5 includes an overview of the findings, a discussion of the implications of the findings for organization members responsible for the marketing and sales activities, a discussion of the limitations of the study and a discussion of the contributions of the study. The study offers an operational definition of JIT selling and provides a reliable, valid scale for its measurement. Results indicate that the implementation of a JIT selling strategy may result in improved organizational performance when coupled with a market orientation philosophy. The implementation of a market orientation is positively linked to increased integration, specialization and formalization. The coupling of a market orientation with a JIT selling strategy appears to cause no additional organizational restructuring. Implementation of a JIT selling strategy may, in fact, be made possible because of the increased organizational flexibility and responsiveness resulting from an established market orientation.

Overview of Research Findings

A positive relationship between the market orientation and JIT selling constructs was identified. Individually, both market orientation and JIT selling are positively related to organizational performance and the integration, formalization and specialization components of organizational structure. Neither market orientation nor JIT selling was found to be significantly associated with the decentralization component of organizational structure. The JIT selling construct was found to partially mediate but not moderate the impact of market orientation on organizational performance. JIT selling neither mediated nor moderated the relationships among market orientation and the organizational structure components.

A high level of market orientation prepares the organization for adoption of a JIT selling strategy that in turn results in improved organizational performance. A high level of market orientation may also lead to organizational restructuring that enhances the organization's flexibility and responsiveness through increased integration, formalization and specialization. A JIT selling strategy appears to have no additional impact on organizational structure, however. Though not specifically tested in this study, a flexible, responsive organizational structure may prove to be a necessary antecedent to adoption of a JIT selling strategy.

Managers and marketers understand the importance of adopting a market orientation philosophy throughout their organization. A JIT selling strategy offers an alternative for practical implementation of the market orientation philosophy. Successful implementation of a JIT selling strategy requires prior adoption of a market orientation and prior successful implementation of JIT manufacturing, purchasing and design strategies. Generally, a JIT selling strategy requires that 1) sales representatives establishing long-term, single-source relationships with buyers, 2) sales representatives build value during the selling process based on established organizational abilities to deliver zero-defect products, exactly on time and in exactly the quantities specified by the buyer and 3) sales representatives build value during the selling process based on established organizational abilities to assist in minimization of waste and total cost throughout the supply chain.

Firms that have adopted a market orientation and JIT manufacturing, JIT purchasing and JIT design strategies have done so with the expectation of incrementally improved organizational performance. Adoption of a JIT selling strategy is the next logical step in the progression and, as study results support, may lead to incremental improvement in organizational performance.

A JIT selling organization, therefore, is one which has 1) successfully adopted a market orientation philosophy, 2) successfully implemented JIT manufacturing, purchasing and design strategies, 3) successfully developed long-term, single-source relationships with buyers, 4) successfully built value during the selling process based on abilities to deliver precise quantities of zero-defect products and services exactly on time, and 5) successfully built value during the selling process based on the organization's ability to assist in minimizing total waste and total cost throughout the supply chain.

Managerial Implications

This study aimed to accomplish four objectives for the practitioner: 1) define the JIT selling construct and identify its components, 2) describe the relationship between market orientation and JIT selling, 3) describe the impact of a JIT selling strategy on organizational performance, and 4) identify changes in organizational structure that might be expected following adoption of a JIT selling strategy. The objectives have generally been accomplished.

Management practitioners are provided with a description of JIT selling that may be used to develop a JIT selling strategy that extends the JIT philosophy through the production functions to the selling function. Practitioners may use the newly developed JIT selling scale to measure the level of JIT selling exhibited by their organization. Such a JIT selling strategy compliments and supports efforts to develop a strong market orientation. Practitioners can expect organizational performance to improve as the result of adoption of a market orientation philosophy and a JIT selling strategy. The results and conclusions of this study should aid managers in deciding whether or not to implement a JIT selling strategy.

Limitations of the Study

While strident efforts to minimize the limitations of this study were made, some limitations must be noted. The data collection process produced a relatively low response rate in the 4 to 5% range. This low rate is likely attributed to the length of the questionnaire and the incorporation of e-mailing and Internet based data collection capacities in the process. Additionally, all data was gathered through a self-reporting survey form.

Another concern relates to the testing of organizational structure as a consequence rather than as an antecedent to market orientation. While Kohli and Jaworski (1990) theorized organizational structure as an antecedent, Jaworski and Kohli (1993) indicate that testing as a consequence may also be appropriate.

Several of the study variables were identified as having relatively large skewness and/or kurtosis coefficients indicating potential problems associated with a lack of univariate normality. Additionally, the data set was not determined to exhibit multivariate normality. Recommended modifications were made with insignificant impact on results. While these departures from normality do not appear to have caused significant problems with results interpretation, the departures are considered a limitation of the study.

Contributions of the Study

This study presents and initially tests a theoretical JIT selling model. Marketing and sales managers may be encouraged to implement a JIT selling strategy by the supported expectation of improved organizational performance. Further, these managers can expect no additional changes in organizational structure associated with implementation of the JIT selling strategy.

From a theory development perspective, this study offers support for a link between a market orientation philosophy and the production management-based JIT philosophy and its associated strategies. The definition of JIT selling is operationalized and a valid, reliable scale for its measurement is now available. The link between JIT selling and organizational performance has been supported. The study does not support, however, the findings of Germain et al. (1994) and Claycomb et al. (1999) concerning the relation of JIT selling to organizational structure. Instead, study results point to an overpowering association between market orientation and organizational structure.

APPENDIX A

DISSERTATION QUESTIONNAIRE

JUST-IN-TIME SELLING SURVEY

The purpose of this study is to investigate the extent to which manufacturers have adopted ***JIT selling strategies*** and the impact of such strategies on organizational structure and performance. Please take a few minutes to complete this survey form and return it to me in the accompanying self-addressed, stamped envelope. Your responses are anonymous. Thanks for taking the time to consider my request. I will happily donate $1 to the American Cancer Society for each completed survey form.

SECTION A -- *Demographic Information*

Please provide the following demographic data related to you and your organization. This data will be used only for purposes of statistical classification.

1. Title of your current position.________________________________

2. Years in your current position. _____________

3. Identify the SIC code for your organization. _____

    - 20 Food & Kindred Products
    - 21 Tobacco Products
    - 22 Textile and Mill Products
    - 23 Apparel & Other Except Furniture
    - 24 Lumber & Wood Products
    - 25 Furniture & Fixtures Products
    - 26 Paper & Allied Products
    - 27 Printing Publishing & Allied Industries
    - 28 Chemicals & Allied Products
    - 29 Petroleum Refining & Related Industries
    - 30 Rubber & Miscellaneous Plastics
    - 31 Leather & Leather Products
    - 32 Stone, Clay, Glass & Concrete Products
    - 33 Primary Metals Industries
    - 34 Fabricated Metal Products
    - 35 Industrial & Commercial Machinery
    - 36 Electronic & Other Electrical Equip
    - 37 Transportation Equipment
    - 38 Measuring & Analyzing Instruments
    - 39 Miscellaneous Manufacturing
    - 98 Other Manufacturing
    - 99 Other Non-Manufacturing

4. State in which your organization's home offices are located. ____

5. Number of employees in your organization. ____________________

6. Your organization's sales revenues for last year. ____________________

SECTION B -- *Just-In-Time Selling*

Please indicate the extent to which you agree with each statement (SDA = Strongly Disagree, SA = Strongly Agree)

1. This organization's sales representatives work hard to build strong, long-term relationships with customers. SDA 1 2 3 4 5 6 7 SA
2. This organization's sales representatives work hard to build single-source relationships with customers. SDA 1 2 3 4 5 6 7 SA
3. This organization has dedicated full-time, on-site sales representatives to its major customers. SDA 1 2 3 4 5 6 7 SA
4. This organization's sales representatives are directly involved in the new product design and introduction efforts of its major customers. SDA 1 2 3 4 5 6 7 SA
5. This organization's sales representatives are directly involved in the replenishment decisions of our major customers. SDA 1 2 3 4 5 6 7 SA
6. This organization's sales representatives have electronic access to the product flow and product demand information of its major customers. SDA 1 2 3 4 5 6 7 SA
7. This organization's customers provide sales representatives with relatively precise and timely demand and delivery schedules. SDA 1 2 3 4 5 6 7 SA
8. During the selling process, this organization's sales representatives build value based on the zero-defect, zero variance capabilities of this organization. SDA 1 2 3 4 5 6 7 SA
9. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver value-added services associated with its products. SDA 1 2 3 4 5 6 7 SA
10. During the selling process, this organization's sales representatives build value based on this organization's ability to eliminate late, damaged and incomplete orders. SDA 1 2 3 4 5 6 7 SA
11. During the selling process, this organization's sales representatives build value based on this organization's ability to quickly respond to and resolve customer problems. SDA 1 2 3 4 5 6 7 SA
12. During the selling process, this organization's sales representatives build value based on the on-time delivery capability of this organization. SDA 1 2 3 4 5 6 7 SA
13. During the selling process, this organization's sales representatives build value based on the precise quantity delivery capability of this organization. SDA 1 2 3 4 5 6 7 SA
14. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver shipments of variable size on a frequent basis. SDA 1 2 3 4 5 6 7 SA
15. During the selling process, this organization's sales representatives build value based on this organization's ability to deliver small lot sizes and shipping case sizes. SDA 1 2 3 4 5 6 7 SA
16. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize total product cost. SDA 1 2 3 4 5 6 7 SA
17. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize all types of waste. SDA 1 2 3 4 5 6 7 SA

18. During the selling process, this organization's sales representatives build value based on this organization's ability to minimize channel safety stock. SDA 1 2 3 4 5 6 7 SA
19. Orders are placed by our customers and delivered on a daily basis. SDA 1 2 3 4 5 6 7 SA
20. Our customers warehouses/factories are located nearby. SDA 1 2 3 4 5 6 7 SA
21. Our customers share their production plans with us. SDA 1 2 3 4 5 6 7 SA
22. Small lot size orders are placed by customers. SDA 1 2 3 4 5 6 7 SA
23. Inspection of outbound materials has been reduced. SDA 1 2 3 4 5 6 7 SA
24. Customers visit our plants on an informal basis. SDA 1 2 3 4 5 6 7 SA
25. Customers involve us in new production/materials design. SDA 1 2 3 4 5 6 7 SA
26. Customers certify us concerning product quality. SDA 1 2 3 4 5 6 7 SA

27. What percentage of your organization's sales is made on a JIT basis? _______%

SECTION C -- *Market Orientation*

Please indicate the extent to which you agree with each statement (SDA = Strongly Disagree, SA = Strongly Agree).

1. Our business objectives are driven primarily by customer satisfaction. SDA 1 2 3 4 5 6 7 SA
2. We constantly monitor our level of commitment and orientation to serving customer needs. SDA 1 2 3 4 5 6 7 SA
3. We freely communicate information about our successful and unsuccessful competitor experiences across all business functions. SDA 1 2 3 4 5 6 7 SA
4. Our strategy for competitive advantage is based on our understanding of customers' needs. SDA 1 2 3 4 5 6 7 SA
5. We measure customer satisfaction systematically and frequently. SDA 1 2 3 4 5 6 7 SA
6. We have routine or regular measures of customer service. SDA 1 2 3 4 5 6 7 SA
7. We are more customer focused than our competitors. SDA 1 2 3 4 5 6 7 SA
8. I believe this business exists primarily to serve customers. SDA 1 2 3 4 5 6 7 SA
9. We poll end-users at least once a year to assess the quality of our products and services. SDA 1 2 3 4 5 6 7 SA
10. Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis. SDA 1 2 3 4 5 6 7 SA

SECTION D -- *Organizational Structure*

1. In assuring the compatibility among decisions in one area with those in other areas, to what extent are each of the following used **(RU = Rarely Used, FRU = Frequently Used)**?

    a. **interdepartmental committees**, which allow departments to engage in joint decision making. RU 1 2 3 4 5 6 7 FRU
    b. **task forces**, which are temporary bodies set up to facilitate interdepartmental collaboration on a specific project. RU 1 2 3 4 5 6 7 FRU
    c. liaison personnel, whose specific job it is to coordinate the efforts of several departments for purposes of a project. RU 1 2 3 4 5 6 7 FRU

2. To what extent is decision making at top levels in your firm characterized by participative, cross-functional committees in which different departments, functions or divisions get together to decide the following classes of decisions **(RU = Rarely Used, FRU = Frequently Used)**?

a. Distribution service strategy.	RU 1 2 3 4 5 6 7 FRU
b. Marketing (or sales) strategy.	RU 1 2 3 4 5 6 7 FRU
c. Capital budget decisions.	RU 1 2 3 4 5 6 7 FRU
d. Long-term strategies (of growth and diversification) and decisions related to changes in the firm's operating philosophy.	RU 1 2 3 4 5 6 7 FRU

3. Does a formal, written mission or goal statement exist for the marketing/sales function?	YES NO
4. Does a formal, written strategic plan exist for the marketing/sales function?	YES NO

5. Please rate the extent to which performance is compared to industry standards or competitors on the basis of **(RU = Rarely Used, FRU = Frequently Used)**:

a. Functional costs (e.g., transportation, manufacturing, selling).	RU 1 2 3 4 5 6 7 FRU
b. Customer service (e.g., fill rate, cycle time, on-time delivery).	RU 1 2 3 4 5 6 7 FRU
c. Productivity levels.	RU 1 2 3 4 5 6 7 FRU
d. Operations (e.g., warehousing, manufacturing, transportation).	RU 1 2 3 4 5 6 7 FRU

6. Please rate the extent to which performance is monitored internally on the basis of **(RU = Rarely Used, FRU = Frequently Used)**:

a. Functional costs (e.g., selling, transportation, manufacturing).	RU 1 2 3 4 5 6 7 FRU
b. Customer service (e.g., fill rate, cycle time).	RU 1 2 3 4 5 6 7 FRU
c. Cost controls by fixing standard costs and analyzing variation.	RU 1 2 3 4 5 6 7 FRU
d. Productivity analysis.	RU 1 2 3 4 5 6 7 FRU
e. Customer satisfaction and follow-up.	RU 1 2 3 4 5 6 7 FRU
f. Profitability.	RU 1 2 3 4 5 6 7 FRU

7. Please indicate whether each of the following is dealt with by at least one full-time specialist.

a. Warehouse facilities design	YES	NO
b. Plant facilities design	YES	NO
c. Material handling	YES	NO
d. Market research	YES	NO
e. Sales forecasting	YES	NO
f. Distribution equipment	YES	NO
g. Plant or warehouse facility location	YES	NO
h. Production scheduling	YES	NO
i. Transportation scheduling	YES	NO
j. Manufacturing quality control	YES	NO

8. Which management level has the authority to make decisions in each of the following areas?
1 = above the chief executive (e.g., board of directors, owners)
2 = chief executive
3 = divisional manager
4 = functional manager (e.g., senior marketing manager)
5 = sub-department manager
6 = first-level supervisor
7 = individual below first level supervisor

a.	Production scheduling.	1 2 3 4 5 6 7
b.	Delivery dates to customers and priority of orders.	1 2 3 4 5 6 7
c.	Production volume.	1 2 3 4 5 6 7
d.	Selecting suppliers.	1 2 3 4 5 6 7
e.	Goods to be manufactured.	1 2 3 4 5 6 7
f.	Location of factories.	1 2 3 4 5 6 7
g.	Number of factories to operate.	1 2 3 4 5 6 7
h.	Location of field warehouses.	1 2 3 4 5 6 7
i.	Number of field warehouses to operate.	1 2 3 4 5 6 7
j.	Distribution service levels (e.g., fill rates).	1 2 3 4 5 6 7
k.	Pricing.	1 2 3 4 5 6 7
l.	Channels of distribution.	1 2 3 4 5 6 7
m.	Advertising/promotion strategy.	1 2 3 4 5 6 7
n.	Target market selection.	1 2 3 4 5 6 7

SECTION E -- *Organizational Performance*

*Please rate your organization's performance in each of the following areas as compared to the industry average (**WB** = **Well Below**, **WA** = **Well Above**).*

1.	Average return on investment over the past three years.	WB 1 2 3 4 5 6 7 WA
2.	Average profit over the past three years.	WB 1 2 3 4 5 6 7 WA
3.	Profit growth over the past three years.	WB 1 2 3 4 5 6 7 WA
4.	Average return on sales over the past three years.	WB 1 2 3 4 5 6 7 WA
5.	Average market share growth over the past three years.	WB 1 2 3 4 5 6 7 WA
6.	Average sales volume growth over the past three years.	WB 1 2 3 4 5 6 7 WA
7.	Average sales (in dollars) growth over the past three years.	WB 1 2 3 4 5 6 7 WA

Please indicate your willingness to anonymously participate in this study by returning the completed survey form to me in the self-addressed, stamped envelope. I'll add $1 to the American Cancer Society contribution total on behalf of manufacturers. Thanks again for supporting this research effort.

If you have questions or would like a copy of the results and conclusions of this study, please e-mail me at greenk@hsu.edu.

APPENDIX B

INITIAL AND FOLLOW-UP E-MAIL MESSAGES AND MAIL-OUT LETTERS

Text of initial e-mail message

Re: Research Study - Just-In-Time Selling

I apologize for interrupting your workday, but I need your help. I'm conducting a research study related to Just-In-Time Selling for my doctoral dissertation and am asking approximately 2,000 representatives from manufacturing firms to anonymously participate by completing the JIT Selling Survey at the Internet site identified below. Respondents should have general knowledge of their firm's organizational structure and performance and specific knowledge of the firm's selling activities. If you don't have such knowledge, please forward this message to your firm's marketing or sales manager.

http://www.hsu.edu/faculty/greenk/JITSSURVEY.HTM

Please access the site and take a few minutes to complete the survey. I know that your time is valuable and that I cannot adequately compensate you for it. What I can do, however, is donate $1 to the American Cancer Society for each completed survey form.

Thanks for considering my request. If you have any questions or comments concerning this research project, please contact me at greenk@hsu.edu.

Ken Green
Assistant Professor of Management
Henderson State University
1100 Henderson St.
Box 7762
Arkadelphia, AR 71999
(870) 230-5018

Text of follow-up e-mail message requesting participation (submitted two weeks after original message

Subject Line: Research Study - Just-In-Time Selling

Once again, I apologize for interrupting you work day. Approximately two weeks ago, I requested your help in completing a JIT Selling Survey. If you haven't yet been able to complete the questionnaire, would you please access the site and take a few minutes and do so. Please remember that, while I can't compensate you directly, I am donating $1 to the American Cancer Society for each completed survey form. Respondents should have general knowledge of their firm's organizational structure and performance and specific knowledge of the firm's selling activities. If you don't have such knowledge, please forward this message to your firm's marketing or sales manager. Thanks very much to those of you that have already completed the survey.

http://www.hsu.edu/faculty/greenk/JITSSURVEY.HTM

I started taking doctoral classes almost 20 years ago and am finally getting close to finishing the degree. I do, however, need a larger data set to complete this research project and my dissertation. I certainly need your help in providing the additional data.

Thanks for reading this message and considering my request. If you have any questions or comments concerning this research project, please e-mail me at greenk@hsu.edu.

Ken Green
Assistant Professor of Management
Henderson State University
1100 Henderson St.
Box 7762
Arkadelphia, AR 71999
(870) 230-5018

Text of initial mail-out letter

«MRMS»«FIRST»«LAST»
«TITLE»
«COMPANY»
«STREETPO»
«CITYSTATE»«ZIP»

Dear «MRMS»«LAST»:

Subject: ***Request to Participate in a Study of Just-In-Time Selling Strategies***

I apologize for interrupting your workday, but I need your help. I am a business teacher and researcher at Henderson State University and am working to complete my doctorate in management at Louisiana Tech University. For my doctoral dissertation, I am conducting a study to determine the extent to which manufacturing organizations have adopted ***Just-In-Time selling strategies*** and the impact of such strategies on organizational performance and organizational structure. I am asking approximately 2,000 marketing and sales managers from manufacturing firms to anonymously provide the necessary data for the study.

Please take a few minutes to complete the enclosed ***Just-In-Time Selling Survey*** and return it to me in the self-addressed, stamped envelope. I know that your time is valuable and that I cannot adequately compensate you for it. What I can do, however, is donate $1 to the American Cancer Society for each completed survey form.

Thanks for considering my request. If you would like a copy of the results and conclusion or have questions or comments concerning this study, please contact me at greenk@hsu.edu.

Sincerely,

Ken Green, Jr.
Assistant Professor of Management
(870) 230-5018

Text of follow-up mail-out letter (mailed two weeks after initial mailing)

«MRMS»«FIRST»«LAST»
«TITLE»
«COMPANY»
«STREETPO»
«CITYSTATE»«ZIP»

Dear «MRMS»«LAST»:

Subject: ***Request to Participate in a Study of Just-In-Time Selling Strategies***

Approximately three weeks ago, I requested your help in completing a research project aimed at measuring the extent to which manufacturing companies in the U.S. have implemented ***Just-In-Time selling strategies***. If you haven't yet responded, please take a few minutes to complete the enclosed ***Just-In-Time Selling Survey*** and return it to me in the self-addressed, stamped envelope. Please know that your responses are anonymous. Also, note that I will donate $1 to the American Cancer Society on behalf of manufacturers for each completed survey form.

Thanks for considering my request. If you have any questions or comments concerning this research project or would like a copy of the results, please contact me at greenk@hsu.edu.

Sincerely,

Ken Green, Jr.
Assistant Professor of Management
(870) 230-5018

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