AN EMPIRICAL STUDY OF THE RESOLUTIONS TO BARRIERS TO INTERNATIONAL TRADE CREATED BY UNCONTROLLABLE ELEMENTS IN INTERNATIONAL LOGISTICS

BY

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ABSTRACT

AN EMPIRICAL STUDY OF THE RESOLUTIONS TO BARRIERS TO INTERNATIONAL TRADE CREATED BY UNCONTROLLABLE ELEMENTS IN INTERNATIONAL LOGISTICS

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The study of logistics is somewhat new, and most research in this field has concentrated on domestic issues. However, at a time when federal trade deficits are the highest they have been in more than 40 years, research concentrating on international logistics seems appropriate if not necessary. Logistic solutions have been used effectively to resolve barriers to international trade. However, research has focussed on the elements of barriers perceived by scholars as controllable.

The objectives of this dissertation include identifying uncontrollable elements of barriers to international trade and their underlying factors. Further, objectives include prioritizing the underlying factors, determining what resolutions to the uncontrollable elements have been applied, and recommending resolutions that should be applied.

Both secondary and primary research were employed to meet objectives. The secondary research included a review

of literature about both domestic and international logistics. This review resulted in the identification of six uncontrollable elements of barriers to international trade: Competition, Geography, Technology, Economics, Cultural and Social Status, and Political and Legal Systems. Factors underlying these elements were also identified.

Interviews with logistics scholars and industry experts were conducted to obtain additional information about the uncontrollable elements. These interviews resulted in the formulation of 40 specific barriers to international trade, derived from the underlying factors of the six uncontrollable elements.

Using a questionnaire, logistics managers across the United states rated these 40 barriers in terms of importance and controllability. Managers also indicated solutions employed to overcome each barrier. The results of this questionnaire were statistically analyzed to reduce large amounts of data into categories.

The primary research disputes the findings of the secondary research, indicating that many barriers previously thought to be important and uncontrollable are neither. Further, barriers that are important and uncontrollable to logistics managers can more accurately be classified into seven uncontrollable elements: Competition/Marketing, Financial Management, Channels of Distribution, Demand Assessment, Business Practices, Ethics, and Law.

Logistics managers use combinations of marketing/ logistics, financial, and production solutions to overcome these newly identified elements. Recommended resolutions include elevating logistics to senior management status within firms, increasing foreign market information analysis, and forming lasting business relationships with competent agents and brokers.

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CHAPTER ONE

The Research Problem Defined

INTRODUCTION

The increasing importance of logistics has become more apparent in recent years, first in the military and then for commercial application. In the 1960's the field of logistics was still undergoing development as an academic area. The research into and development of logistics proved to be of great value to business. The cost savings and increased efficiency created by effective logistic's techniques enabled businesses to be more profitable.

The major research area has been domestic logistics. The field of international logistics has developed more slowly as the emphasis for research has tended to be transportation oriented or descriptive of the exporting process. The research was concerned with variables and elements over which the international manager was able to exert control. The research partially surfaced and discussed barriers to international trade and logistics, but often did not directly consider the uncontrollable elements.

The overall study objectives are to: (1) discover the barriers to international logistics encountered by U.S. firms which export and classify them into controllable and uncontrollable elements; (2) identify the factors underlying each of the uncontrollable elements; (3) identify the relative priorities of each of the underlying factors which

comprise the uncontrollable elements; (4) identify resolutions to the barriers created by the uncontrollable elements and their underlying factors that have been used; and (5) identify resolutions to the barriers created by the uncontrollable elements and their underlying factors that should be used.

LOGISTICS PERSPECTIVE

This section offers a perspective on overall logistics in terms of its activities, magnitude of domestic logistics expenditures, and its strategic importance.

LOGISTICS DEFINITION

Although the definition of logistics has also undergone numerous changes, this study adopts the definition proposed by the Council of Logistics Management as being descriptive of the broad range of logistics activities.

The Council of Logistics Management has defined logistics as "the broad range of activities concerned with efficient movement of finished products from the end of the production line to the consumer, and in some cases included the movement of raw materials from the source of supply to the beginning of the production line. These activities include freight transportation, warehousing, material handling, protective packaging, inventory control, plant and

warehouse site selection, order processing, marketing forecasting and customer service" (CLM, 1982).

MAGNITUDE OF LOGISTICS EXPENDITURES

The economic impact of logistics is the best surrogate to establish the magnitude of logistics activities. In the United States, it is estimated that the cost of logistics represents approximately twenty percent of the gross national product (Tinghitella, 1984). During 1982, United States industries spent more than $240 billion on freight transportation (Tinghitella, 1984). More than 435 billion on warehousing and storage, and an additional $100 billion to administer, communicate, and manage the logistics process. A total of more than $400 billion expended on logistics (Delaney, 1984).

Logistics and related activities provided employment for more than 15 million people in the United States in 1980; approximately 14 percent of the workforce for 1980 (Coyle and Bardi, 1984). Investment in transportation and logistics facilities, excluding public sources, is estimated to be in the hundreds of billions of dollars (Stock and Lambert, 1987), which confirms the original study of Stewart and Morehouse (1978) that estimated the investment at $420 billion. These statistics clearly indicate the impact of logistics on the economy. Beyond the economic impact, logistics has a direct impact on every consumer in the

United States. This direct impact is evidenced by the timely availability of a wide range of products with reasonable prices. These products include primary, secondary, and domestically produced products, as well as imported products.

Logistics costs are estimated to be 21 percent of a firm's sales revenue (LaLonde, Grabner, and Robeson, 1970) and (Stock and Lambert, 1987). The absolute magnitude of logistics costs makes it an ideal area to investigate for cost containment. This desire to minimize logistics costs and at the same time maximize customer service resulted in the development and application of the concept of total systems and cost analysis. The total cost concept has been the major motivation in the advancement of logistics management from merely traffic management to executive level policy establishment and decision making.

LOGISTICS STRATEGIC IMPORTANCE

The role and acknowledged importance of logistics has increased throughout the last decade. The activities required to accomplish the logistics functions are becoming more important in the development of each firm's strategic plan. Historically, firms have developed strategic plans which take advantage of competitive strengths in the areas of product, price, or promotional elements of the marketing mix. Firms have historically used these marketing mix

elements either by selling better products, offering products at a lower price, or through more effective advertising and promotion. However, with today's technologies, it is becoming easier for competitors to match the market offerings of firms using only these marketing mix elements. In response to this, firms are beginning to look to the logistics function to provide a strategic advantage. This advantage can be gained through better customer service, wider product distribution, greater product availability, better post-sale support, or closer product proximity to provide examples of the benefits provided through better logistics. In addition, due to the capital and organizational requirements, it is often easier to maintain a competitive differential advantage anchored in the logistics marketing mix element. With the increased logistics awareness and the need to identify, implement, and protect competitive position, the logistics activities are seen as an important aspect of strategic planning. As a result, it is important for firms to consider logistics when developing the firm's strategic plan.

INTERNATIONAL LOGISTICS PERSPECTIVE

As firm's have sought out new markets in their search for increased profits, U.S. firms have begun to target increased international penetration. This increase has resulted in an increased need for international logistics.

While there is much similarity between domestic and international logistics practices, there are also some differences due to changes in the economic, political, social, geographical, technological and regulatory environments as well as the longer logistics channels. In order to provide a more detailed understanding of this impact, the following sections define a scope for international logistics, document the size of the international logistics expenditures, and discuss its strategic importance.

INTERNATIONAL LOGISTICS SCOPE

As United States firms attempt to expand their markets, the role of logistics requires a concomitant expansion. Firms merged, purchased other firms, eliminated competition and eventually recognized that the extent of their markets was limited by the geographical boundaries of the United States. This expansion was driven by marketing desires and the logistics function was called on to perform effectively using the total system analysis and cost concept. Domestic logistics is in the process of becoming its own distinct function at the executive level. As firms expand into the international arena they expect that the logistics function should service the chosen markets as was the case in domestic logistics.

Depending upon the size of the firm and its commitment to international business, the logistics function development is significantly influenced by the sophistication of the firm with international marketing. It was the normal course of action for the domestic logistics manager to be responsible for international logistics. The assumption was made that international logistics was merely a slight extension of domestic logistics. As a result, the field of international logistics became an area of ad hoc planning. The marketing department would decide on a product and a market and the logistics department would then act as the international logistics department and proceed to move the product to the market. The planning which was normally performed for domestic logistics would be circumvented and all international logistics functions would be performed on a 'as needed' basis.

The requirement for international logistics grew in importance as the domestic firm became more involved in international business. The role of international logistics expanded as domestic firms continued to increase their international markets. As the importance of international marketing increased for the firm, the role of the international logistics manager increased in importance and firms realized that international logistics presented a significant area of cost savings. In a 1980 survey of its members, NCPDM (CLM) found that 30.5% of its logistics

managers had full international logistics responsibility as compared to 9.5% in 1974 (Stock, Lambert, 1982). This indicates that firms are placing more importance on international logistics along with a concomitant increase in authority to the domestic logistics manager, who must learn international logistics on an 'ad hoc' basis.

While international logistics has not been defined in any literature, it has acquired a working definition as an extension of domestic logistics. This research defines international logistics in the following way: International logistics is not merely a marketing support system, but it is an integral part of the marketing mix which helps create and develop the international marketing process. International marketing success depends extensively upon the efficiency and practices employed by international logistics to ensure economic distribution of goods especially as competition intensifies from developed and developing nations.

International Logistics Size

As international marketing grew, the size of the international logistics problem has also grown and has not been fully appreciated. There are approximately thirty thousand United States firms which export their products to foreign buyers (U.S. Dept. of Commerce 1983). The dollar amount of exported products is known and becomes part of the

balance of trade computations. In 1981 exports from the United States firms totaled more than $245 billion. This equates to over 4.6 million export related jobs and further it represents one manufacturing job in six (Caetora, 1983).

International Logistic's Strategic Importance

The requirements and opportunities for international logistics bring the same strategic importance as has been experienced by domestic logistics. The importance of customer satisfaction is paramount in strategic planning for the United States firm. When a firm decides to export, the importance of customer satisfaction does not decrease. The fact that the customer may be geographically removed places an additional burden on the achievement of customer satisfaction. The sale of products internationally becomes part of the firm's strategic planning and therefore it is only logical that international logistics is axiomatically part of the firm's strategic planning. The importance of international logistics has lagged behind domestic logistics because of the domestic firm's development approach for international marketing. Traditionally, the domestic firm has initially used an exporting intermediary to act as its international agent. The domestic firm would merely deliver the product to the intermediary and lose all product control from that point. At this time in a firm's international development it did not perceive the need for its own

international logistics function. As a firm's exports increased and it realized the need for channel control, an ad hoc international department was often formed. Usually this department consisted of an executive of each of the firm's major departments. If the firm did not go on to joint ventures with foreign manufacturers, or license agreements, or build a foreign facility then its international department may have not developed any further. However, with increased exports and increased foreign sales the importance of the international department was recognized along with a simultaneous recognition of international logistics.

BUSINESS PROBLEM

International logistics is not merely a marketing support system, but an integral part of the marketing mix which helps create and develop the international marketing process (Slater, 1980). International logistics adds time and place utilities to products by placing the product where the customer desires it and extending the market, thus enabling better scale economies. This more effectively offers possession utilities and maximizes customer satisfaction. Logistical management's objective is to provide competitive customer service levels at a minimum cost level. The firm's required cost/service mix varies

between the international markets, thus placing additional strain on international logistics management.

DELEGATION OF INTERNATIONAL LOGISTICS TO THIRD PARTIES

International logistics provides the means by which the customer receives the products, and the credibility of the whole company image may depend upon the way in which the logistics process is planned and executed (Slater, 1980). Industry has been slow to recognize the importance of logistics and even more slow to recognize the importance of international logistics. The majority of planning and execution has been allotted to third party specialists, such as freight forwarders, so many firms have not taken maximum advantage of the opportunities presented in international trade. Firms which utilize freight forwarders do not retain channel control. Channel control becomes more necessary as firms expand into foreign markets due to the necessity to protect the firm's image and market share.

L. Soorikian stated that "international logistics dramatizes some of the homegrown problems...and that...in no other function is there as much waste, duplication and indifference as there is in moving goods from one country to another" (Soorikian, L., 1974). The increased desire of domestic firms to export has exacerbated the problem as stated by Soorikian. Domestic firms have varied reasons for expanding their markets: the desire to extend product

lifecycles, increase sales, gain competitive advantages, escape domestic business cycles, counter demographic changes in other areas of operations, benefit from technological differences between countries, enhance political posture, gain economies of scale from increased production due to increased sales, to dispose of excess inventories, gain tax advantages offered by other countries, create research opportunities for new products, and to establish a progressive image while enhancing political image through the patriotic stance of foreign earnings contributing to the balance of payments of the United States (Norvell and Raveed, 1980).

MAJOR INTERNATIONAL LOGISTICS PROBLEMS

Increased export activity has increased the demand for efficient international logistics which, in turn has placed additional burdens on logistics systems which are already strained due to their relatively 'ad-hoc' nature. Alan Slater identified the following nine major problem areas in international logistics. The problems identified suggest the lack of individual status of international logistics within the firm, the lack of knowledge about international logistics, the lack of international business knowledge within many firms, and the lack of adequate information for international logistics to function effectively.

First, many senior managers maintain that exports should be sold FOB-source. In addition, they feel that any transportation problems should be the responsibility of the customer or the freight forwarder acting upon the customers instructions.

Second, the planning activities for international logistics is generally non-existent or short-term at best. As a result, much of the activity takes place in an 'ad-hoc' manner with the resulting inefficiencies.

Third, there is a lack of current information regarding the policies, procedures, and status of international shipments. This is particularly evident in the elements of additional costs, changes in customs policies and duties, changes in tax laws, and laws regarding products movements.

Fourth, the communication channels to support international logistics operations are more difficult than domestic channels due to distance, culture, language, time zone, and variations in action priorities.

Fifth, while technology offers opportunities for addressing many of these international logistics problems, it has introduced problems of its own. The lack of consistent technologies between countries introduces added problems for communicating information about material handling hardware.

Sixth, international payment systems and currency regulations are complex. As such, they conceal numerous

pitfalls for the non-specialist and expert advice is often needed particularly when "buying currency forward."

Seventh, there is a wide range of skill capabilities and information for material handling individuals who must process the orders and move the products.

Eighth, there is a significant problem with security and safety as the shipment moves through a wide range of environments over extensive distances. The security problems are often demonstrated through pilferage, theft, or damage. The safety issues are evidenced through the extended liabilities for products which spill or damage the environment while in transit. The wide range of liability requirements and resulting consequences make this a difficult problem.

Finally, the costs incurred for international logistics are continually rising and difficult to control. Overseas contracts are often signed months or even years before shipment. For some products the logistics costs may have risen more than fifty percent during that time period (Slater, 1980).

The above problem discussions suggests a need for a deeper understanding along with some suggestions for addressing them. Although some of these problems are internal to the firm, many of them are external and therefore somewhat uncontrollable for the firm.

RESEARCH PURPOSE

The formulation of an international logistics strategy is an integral part of international business planning. Various barriers are encountered by the logistics executive while attempting to achieve satisfactory international logistics results. The barriers encountered represent both controllable and uncontrollable elements. The controllable barriers can be managed with adequate logistics planning. The uncontrollable barriers can be adapted to by logistics executives provided they are anticipated.

The purpose of the research is to identify the controllable and uncontrollable elements which are barriers to international logistics. The controllable elements have been analyzed in previous literature. The resolution to the controllable elements has also been suggested by previous authors (Stock and Lambert, 1982). The uncontrollable elements have not been analyzed nor completely discussed. It is not known whether other unknown uncontrollable elements exist. This research seeks to fully identify, classify, and prioritize all of the uncontrollable elements and suggest approaches to minimize their impact. For these reasons only the uncontrollable elements are investigated and resolved in this study. The factors underlying each of the uncontrollable elements will be analyzed to determine their effect upon the uncontrollable elements. Any cross

effect the factors may have on the other elements are evaluated and discussed.

RESEARCH QUESTIONS

This research seeks to identify the barriers to international logistics created by uncontrollable elements and that these elements have underlying factors which make up the uncontrollable element. Further it will be shown that each of these factors has a different significance to the uncontrollable element of which it is a part. Each of these factors may act alone or in concert with another factor. Each uncontrollable element may be somewhat influenced by a firm's management and therefore may be subject to some form of control. The controllable elements will not be discussed nor analyzed because of prior research which has addressed the issues raised in this study using the controllable elements.

The research initially seeks to determine the barriers to international logistics. After the barriers are identified they will be classified into controllable and uncontrollable elements. The uncontrollable elements are those which can only be indirectly influenced by the logistics executive. Current literature suggests that these uncontrollable elements include: geography; social and cultural elements; political and legal elements; economics; competition; and technology (Caetora, 1983). The individual

factors which underlay the uncontrollable elements only have been briefly discussed in business literature (Caetora, 1983; Cundiff and Higler, 1984; Kahler and Kramer, 1977; Kirpalain, 1985). Whether there are other uncontrollable elements has not been determined and this study will seek to discover any other unidentified uncontrollable elements.

The strategies for adapting to uncontrollable elements have not been extensively analyzed in business literature. Firms have traditionally reacted to the uncontrollable elements with little advance planning. The possibility of modifying the uncontrollable elements has been explored by U.S. firms only recently. It may be possible for management to indirectly effect and perpetrate a change in the uncontrollable elements, such as suggested in the following examples. Competition can be overcome with adequate information systems. Technology can be obtained and/or altered by adequate information systems. Technology can be obtained and/or altered by adequate research facilities. It can also be purchased. Legal and political systems can be influenced by the amount of business potential a firm, consortium of firms, or another country has to offer the foreign country. Cultural and social elements can be modified by adequate information dissemination. Geography can be overcome by modern transit and materials handling equipment. Economic conditions can be altered through the intercession of third parties, such as the World Bank.

The amount of modification and involvement depends upon the exporting firm and whether its exported product commands enough demand either by the host or domestic government to gain assistance from those governments. The majority of exporting firms do not receive any aid from governments or third parties and are therefore alone in their effort to modify the uncontrollable elements. The amount of modification to the uncontrollable elements by an independent firm is limited to its management skill. Management must be able to adapt to the uncontrollable elements and modify them where they are able.

The questions to be answered by this study are:

1. What are the uncontrollable elements.
2. What are the factors underlying each of the uncontrollable elements.
3. What are the relative priorities of the factors underlying the uncontrollable elements.
4. What resolutions to the barriers created by the uncontrollable elements and their underlying factors have been used.
5. What resolutions to the barriers created by the uncontrollable elements and their underlying factors should be used.

RESEARCH SCOPE

The study includes the perceptions of barriers to international logistics from logistics executives involved in international trade for their respective firms. The study did not have the advantage of an extensive body of prior research into uncontrollable elements. The firms chosen for information were selected from among the 30,000 firms in the United States which export and are registered with The World Trade Institute at the World Trade Center.

POTENTIAL CONTRIBUTIONS OF THE RESEARCH

For marketing literature this study represents an investigation into an area which has not had significant investigation. Obtaining an understanding of the roles of the uncontrollable elements should enhance the ability of domestic exporting firms to engage in international trade. Knowing the barriers created by the uncontrollable elements and confirming the known existing uncontrollable elements should allow domestic exporting firms to plan around them. The research examines and explains the role of management in overcoming the barriers created by the uncontrollable elements in international logistics, in addition, it suggests strategies for addressing these problem areas. The domestic firm should then be able to make an informed choice about the potential benefits of international trade and costs of overcoming the barriers to that trade.

RESEARCH LIMITATIONS

The study is limited in application to United States firms which export. The population for the study was all firms in the United States which export and are registered with the World Trade Center. The barriers which surfaced were those of domestic exporting firms and may not be generally applicable to other firms.

DISSERTATION ORGANIZATION

The remaining chapters of this dissertation present the results of research on the barrier to international logistics created by the uncontrollable elements. Chapter 2 reviews the literature and discusses the causes of international trade, barriers created by uncontrollable elements, factors underlying the uncontrollable elements, and managements' influence on the uncontrollable elements. Chapter 3 describes the hypotheses and research methodology. Chapter 4 contains the results of the analysis of the information gathered. Chapter 5 presents the conclusions of the study.

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CHAPTER TWO

Literature Review

INTRODUCTION

Chapter Two reviews the literature describing international logistics. The chapter is divided into ten sections. Following the introduction the sections are:

1) International Trade Theory
2) Barriers to International Trade
3) Uncontrollable Elements in International Trade
4) Factor Interaction of Uncontrollable Elements
5) Uncontrollable Element Interaction
6) Logistics Requirements for International Trade
7) International Logistics Model
8) Motivation for Trade by Domestic Firms, and
9) Dissertation Purpose

INTERNATIONAL TRADE THEORY

International trade is a special case of international exchange (Liodakis, 1980). International exchange includes all transfers between countries regardless of the motive for the exchange. Traditional international trade theory assumes perfect competition (Hwang, 1983). There has been a growing awareness that many international trade phenomena may be explained better on the basis of theories which assume imperfect competition. Traditional trade theory has

not adequately integrated international trade with other forms of the increasing internationalization of capital; primarily international investment.

The traditional trade theories of absolute and comparative advantage assume perfect competition. They suggest that the basis and pattern of international trade is determined by the levels of labor productivity and the structure of the different spheres of production of the economies involved in trade. These theories do not integrate the other forms in international trade which are based on transfer of capital in the form of investments. These transfers can be politically motivated and therefore an analysis of the international balance of payments theory is presented.

INTERNATIONAL TRADE CAUSES

The basis of all trade, domestic or international, is economic; and, unless purely politically inspired, nearly all debates which for centuries have surrounded the topic of international trade have been argued in economic terms (Kimball, 1978). The international executive must understand the basis of trade in order to develop a viable international business and logistics strategy. The understanding of international economic theories and policies results in better strategy when planning for international trade. A country's trade policies

traditionally develop from one of the more important uncontrollable environmental elements which is economics.

Since economics is the basis for all international trade it is only logical to limit the reasons for international trade to economic theory. Any reason propounded for international trade can be explained by economic theory. There are numerous theoretical analyses of international economic theory. The primary are those of welfare economics, which are the concepts of absolute (Smith, 1778) and comparative advantage (Ricardo, 1817). Propounded by Adam Smith and David Ricardo, respectively, they are known as the classical trade theories. These concepts are concerned with the gains which may be achieved by nations, groups, or individuals from international trade. It is the comparative or absolute advantage which is the basis for these gains.

Another area of theoretical analysis for international economic theory is concerned with monetary equilibrium and international balance of payments. The desire for a balance in a nation's trade account causes it to intervene in the trading process. This is also the case for monetary equilibrium (Caetora, 1983). Any interference in international trade by a government effects the basis of trade between the parties directly involved in the trade. A government may use political or economic persuasion to influence trade. The use of government influence modifies

the cause of international trade. The reasons for trade may be changed because of government involvement. The products traded and the distribution of those products may be changed by government involvement in the trading process.

REQUIREMENTS FOR INTERNATIONAL TRADE

In order for international trade to take place certain economic requirements must be perceived by the trading partners. The partners must be convinced that there is a gain to be made. It is not necessary that each party to the trade perceive that the other party(s) also gain from the exchange. The perceived gain must be believed by the individual trading partners about their own status.

The classical theories concerning the economic gain are commonly entitled the theories of relative advantage. The term 'relative' is applicable whether there is an absolute or comparative advantage (Klaus, 1977). The theory of absolute advantage is often cited but reference is infrequently given to the author. There may be some confusion about the actual author but for purposes of this study, Adam Smith is cited as the author of the theory of absolute advantage. The concept appeared in his publication, Wealth of Nations, in 1776. The theory of comparative advantage suffers partially from the same fate. The use of the term comparative advantage in international trade has become generic. In any event, David Ricardo is

given credit as the author (Ricardo, 1817). The theory is known as the Law of Comparative Advantage, and sometimes referred to as the Law of Comparative Costs.

Absolute Advantage

When a product can be produced less expensively in one country than in another, the former country is said to have an absolute cost advantage. This absolute advantage lends itself to an easy analysis of the basis for trade in this situation. The country with the absolute advantage is eager to trade to profit from the advantage it has in the world's marketplaces. A country which can produce the same product, but at a cost in excess of the open market price, would seek to purchase it on the open market. This, of course, assumes that the price of transportation does not increase the cost of the product above the production cost of the purchasing country. It is at this point that the cost of international logistics is considered in the theory. If the cost of foreign production and international logistics exceeds the cost of domestic production and logistics then the product will be produced domestically.

The theory of absolute advantage is most readily understood using as an example a country which can produce two products. One of the products is produced with an absolute price advantage in world markets. This country is the price leader for the production of this product. The second product is not produced with the same price

advantage. Another country is able to produce the second product less expensively. The second country, however, cannot produce the first product as inexpensively as the first country. The first country has an absolute advantage in trade for product one and the second country has an absolute advantage in trade for product two. In this case trade would occur between the two countries each using the product wherein they enjoy an absolute advantage and trading for the products wherein they do not.

Comparative Advantage

The principle of comparative advantage is applicable when one country can produce both products (or all products) more inexpensively than another country. International trade can still take place beneficially even though one country produces both products less expensively. A significant amount of world trade takes place daily where there is a comparative advantage rather than an absolute advantage. A country with a comparative advantage will trade in an effort to further its comparative advantage in the product where it has the most comparative advantage. If product one generates the greatest comparative advantage and therefore the highest profit then country one will trade product one in the world markets. Country one's production of product two will be reduced and it will then trade to obtain product two. Country one generates more profits from

emphasizing its trade of product one than it would from producing and trading both products.

The reasons that nations trade can be applied to individuals, groups, or businesses. Whether individuals, groups, or businesses are able to trade depends on the political/legal, economics, and cultural/social philosophies and the competitive, technological, and geographical environments of the countries where they desire the trade to occur. The reason for trade, whether it is by a nation or a business, is economic. Trade takes place because the parties involved intend to profit from it.

International Balance of Payments

Balance of payments, balance of trade, and exchange fluctuations all relate to the basic process of recording and adjusting international financial relationships. These are important considerations which underlie international trade. These relationships influence whether a country will trade and what that country will trade. A nation's influence on internationally traded products from within its borders has a direct relationship on the products that the nation's businesses will trade. Certain products which are preferred for trade by the nation will have economic benefits attached to them which will influence a firm's trading decision. This governmental influence alters the classical theories of trade because the products traded may

not be those wherein the firm or nation has a relative advantage without the government's subsidy.

The system of accounts which records a nation's international financial transactions is called its balance of payments. A nation's balance of payments statement records all the financial transactions between its residents and those of the rest of the world during a given time period. The balance of payments record is made by double entry bookkeeping and therefore it must always be in balance. A nation's balance of payments reflects an overall view of its international economic position. The balance of payments is an important economic measure used by governmental agencies such as, treasuries, central banks, and other departments who responsibility it is to maintain external and internal economic stability. The overall state of a country's balance of payments has an effect on its worldwide trade policies. A country's worldwide monetary value is affected by its balance of payments. The balance of payments also affects a country's domestic policies such as, wages, employment, and investment. A country's balance of payments affects the relative value of its currency and its ability to acquire the currencies of other country. In international trade, countries continually assess the external positions and currency prospects of the countries with which they trade. As a consequence, a country's

balance of payments also influences decisions of international businesses (Caetora, 1983).

A balance of payments represents the difference between receipts from foreign countries and disbursements to them. A balance of payments deficit occurs when international payments are greater than receipts. Deficits can be eliminated by increasing a country's international receipts, or reducing expenditures in other countries. The balance of payments statement has three major accounts: the current account which includes a record of all imports, exports and services, plus all unilateral transfers of funds; the capital account which includes direct investment, portfolio investment, and short-term capital movements between countries; and the official reserves account which includes exports and imports of gold, changes in foreign exchange, and changes in liabilities to foreign banks (Henning, Pigott, and Scott, 1978).

The current account has the most significance to international businesses because it includes international trade and service accounts. These are the accounts which have the value of all merchandise and services imported and exported by a country. The relationship between imports and exports is frequently referred to as the balance of trade.

The current account is generally the largest account in the balance of trade statement. Generally when a country has a negative balance of trade it also has a negative

balance of payments. External factors, over which a country does not have any control can affect the balance of trade and payments. National inflation and oil prices caused rapid changes to the balance of trade and payments for many countries during the 1970's. These factors eventually require adjustments in the balance of payments through changes in exchange rates, prices, and/or incomes. As a country's exchange rates, prices, and/or income change, its ability to trade internationally is affected. This results in changing trade policies, which affect the individuals, groups, or businesses within that country which are involved in international trade.

The capital account provides another area of governmental interference in international trade (Keegan, 1980). It is also the source of theoretical questioning of the adequacy of classical trade theory. The capital account includes foreign investment which is not part of classical trade theory because classical trade theory does not include internationalization of capital. As capital is redistributed between countries the demands for the products on international trade are modified by governmental concerns. By using the capital account a government can limit or encourage foreign direct and portfolio investments and short-term capital flows. The government can also adjust a country's economic policies. This can be accomplished through an adjustment in interest rates,

government spending, programs to restrain inflation, programs to restrict and limit domestic demand, and programs to encourage improvements in productivity and international competitiveness. In an extreme move, the government can devalue its currency.

Any government involvement alters classical trade theory and the resultant products traded and their logistics. As a country's desired international product mix changes the domestic firm which exports must rely on its international business expertise and logistics capability to profitably distribute the products. The logistics system must be flexible to adapt to quickly changing international markets. International logistics allows a firm to overcome the barriers to international trade created by governments, market imperfections, market locations, and other firms.

BARRIERS TO INTERNATIONAL TRADE

Barriers to international trade can be caused by known and unknown elements which can be controllable or uncontrollable. The uncontrollable elements, whether known or unknown, present the majority of problems for domestic exporting firms. The potential barriers to international trade have not been fully analyzed and compiled. A review of the international business literature yields logistically oriented barriers to international trade (see Table 1), including both controllable and uncontrollable elements.

Table 1

CONTROLLABLE & UNCONTROLLABLE BARRIERS
TO INTERNATIONAL TRADE

	Controllable	Uncontrollable
1. Channels of logistics	X	
2. Communications	X	X
3. Competition		X
4. Customer Service	X	
5. Documentation	X	
6. Economic Development		X
7. Forecasting	X	X
8. Geography		X
9. Intermediaries selection & capability	X	
10. Inventory	X	
11. Labelling	X	
12. Packaging	X	
13. Political & legal systems		X
14. Port availability & capability	X	
15. Research	X	
16. Social & cultural status		X
17. Technology		X
18. Transportation	X	
19. Warehousing & storage	X	

There is an overlap between the controllable elements of communications and forecasting. This is because the domestic firm can control its communications and forecasting, but not that of the foreign country. The controllable elements are resolved by the application of domestic logistics techniques to their international counterpart. Recently there have been more solutions based on international logistics research which has served to offer more realistic resolution to international logistics problems. The controllable elements have received the majority of the attention in international logistics literature and therefore, this study will concentrate on the uncontrollable elements. Table 2 shows each uncontrollable element and authors who have written about them.

Table 2

ELEMENTS BY CONTRIBUTING AUTHORS

Cultural/Social	Cundiff & Hilger, 1984 Dichter, 1962 Douglas & Dubois, 1977 E.T. Hall, 1977 Hirsch & Petters, 1974 Markim, 1974 Norvell & Morey, 1983 Schooler, 1984
Political/Legal	Business International, 1980 Choi, 1979
Geography	Cateora, 1983 Stogaugh, 1981
Economic	Cateora, 1983 Daly, 1971 Engel Henning, Pigott, & Scotti, 1978 Keegan, 1980 Kimball, 1978 Ricardo, 1871 Smith, 1778
Competition	Alderson, 1957 Hwang, 1983 Rapp, 1973
Technology	Cateora, 1983

The underlying factors of the uncontrollable elements include many dimensions which create barriers to international logistics. Uncontrollable elements are those external conditions which exist in the firm's international business environment over which the firm does not have any direct control. The domestic exporting firm can only influence the uncontrollable elements in an indirect manner through the management of its international business strategy.

UNCONTROLLABLE ELEMENTS IN INTERNATIONAL TRADE

The uncontrollable elements of international trade can be known or unknown. There are not any definitive studies which attempt to classify all of the uncontrollable elements. The known uncontrollable elements have significant interactions. Each of the uncontrollable elements is composed of underlying factors. The underlying factors form a composite of the uncontrollable element. These underlying factors have additional interactions which are reflected in the uncontrollable element.

To understand the nature of the uncontrollable elements it is necessary to understand the underlying factors of the elements. When the underlying factors are understood, domestic exporting firms are able to manage the uncontrollable elements more effectively. For those uncontrollable elements which may be unmanageable it will be

easier to develop plans which circumvent them after their underlying factors are understood.

Each of the six uncontrollable elements has factors from which it is composed. In this section of Chapter 2 the underlying factors of each uncontrollable element are discussed.

FACTORS UNDERLYING CULTURAL/SOCIAL ELEMENT

The cultural/social element contains six underlying factors. These underlying factors have been extensively examined by the literature of several different areas of study. This will become more evident as these factors are individually examined. The underlying factors of the cultural/social element are:

1) language
2) religion
3) cultural institutions
4) class structure and social mobility
5) aesthetics, and
6) social patterns

Culture is defined as a group of people's learned responses to various stimuli (Edward T. Hall, 1977). The responses are interrelated and learned rather than innate. Culture is acquired through association with other members of the same group. Different cultures may have similar characteristics, however, each culture possesses unique

traits which set it apart and allow its identification as a separate culture. Every culture has a number of important factors which interact to determine its cultural and social patterns. The social part of the element refers to the interaction of the individual with the group. Further, the social portion of the element is combined with the cultural portion because of the tendency of groups to band together and form cooperative and interdependent relationships. It is the interaction of the six underlying factors of the cultural/social element which determine cultural/social patterns.

Language

Language is the primary means of communication between civilized people. It is the most important single cultural input. Translation of ideas from one language to another must be performed with great care to insure that the correct idea is transmitted. Improperly used words can distort the message which was intended. Misuse of words has created many international business problems. Verbs in English may translate with different meanings in other languages. A dictionary translation is not the same as an idiomatic translation. Carelessly translated advertising statements may lose their intended meaning and in fact imply something very different than the original meaning. Language may be the most difficult factor in the social/cultural element to

overcome. A translator is generally used by international businesses to minimize any unwanted translations.

Religion

Religion establishes moral codes and taboos for the behavior of its adherents, and consumption behavior is one such aspect (Cundiff and Hilger, 1984). Certain religions may disfavor various businesses or business practices. Participants within those religions may refrain from purchasing certain products or entering into negotiations for them. The major religions of the world vary dramatically in their philosophies. Their impact on their individual societies may effect the social behavior, dress codes, manners of doing business, and relations between people in the religion. Even within the same religion there can be differing impacts on different groups.

Religion also reflects the principal values of a people. Social mobility, work ethic, family life, and business morality are all established by religion. Religion can be expressed through the institutions of a society. The church is an expression of religion in a society, as are value systems, both secular and non-institutional. The moral values that a culture derives from a combination of these sources may be in conflict or concert.

Cultural Institutions

Institutionalized bases are developed by each culture to determine the relationships between individuals for daily living. To understand and predict buyer behavior the international marketer needs to understand these relationships. The institutions include the family, the educational system, the influence and place of peer groups and peers, and the role of women in society (Douglas and Dubois, 1977).

The family is the central social institution in every society. It nurtures the children and passes on the values of that society. In primitive or rural societies the family is an essential social focal point. The family provides food, clothing, shelter, education, acculturation, and a social center. In more sophisticated societies, the family may only provide food, shelter and basis acculturation. All other family roles are provided by other groups within that society. In more advanced societies the family role is superceded by other groups, peers, and institutions. Family contact may be limited to a few hours daily. The family may lose input over the traditional buying decisions and marketing strategies must be adjusted accordingly. The traditional areas of important family influence are in transmitting saving-verses-spending ethics and in establishing the importance of consumption as it reflects personal goals and status (Markim, 1974).

Every culture has a method by which it educates its young. The organized educational systems of established societies are used as the means by which societies important values are passed on to its members. The major goal of education is to prepare the younger members of society for roles they will have to assume to continue that society. Education is not limited to schools of more advanced societies. In more primitive societies education elders and oral historians transmit traditions and values to the young people. Whatever the form of the education it has a significant impact on international marketing and logistics.

Formal education has a direct relationship with literacy levels in a society. Literacy levels are highest in those societies which have a broad educational base and mandate education for some specified period of time. The better educated people are, the more they demand sophisticated information about products. The better educated people are, the more sources of information they use when making purchase decisions.

Class Structure and Social Mobility

Every society has a class structure which relegates individuals to different levels of social status and power. Each social class has distinct differences in consumption patterns (Hirsch and Petters, 1974). These differences are apparent in housing, clothing, education, automobiles, food

choices, home furnishing, and entertainment choices.

The degree of social mobility varies greatly with different societies. Western societies exhibit more social mobility than eastern societies. The degree of social mobility is important to the international marketing and logistics efforts of domestic firms. Any product which is consumed in view of the general public carries with it an element of social statement. Depending on the degree of social mobility in each society, the same product might require different marketing and logistics strategies to succeed in different markets.

The relative size and number of distinct classes within a society is a significant indicator of class structure. An interesting observation about the upper classes of each society is that they exhibit more similarity to each other than they do to the rest of their own society (Dichter, 1962). Lower classes seem to be more culture bound because they are less aware of other cultures and of these cultures' solutions to the problems of life. They are, therefore, more distinct from each other in the ways they dress, the food they eat, and how they spend leisure time and discretionary income. Middle classes are more prone to cultural borrowing. This is a method of social mobility from lower to middle class and within the middle class. Therefore, the larger the upper and middle classes, the more likely a market is to buy products and services that are not

culture bound - food, clothing, household items, personal care products (Dichter, 1962).

Aesthetics

Aesthetic values differ greatly between societies. The differences in preferences in music, arts, and design are the most noticeable to the casual observer. Each individual's culture teaches him how to look and feel, and this is apparent in their taste for art, color, design and music. Modern communication has increased the understanding and appreciation of aesthetic values from other cultures in most parts of the world.

Social Patterns

A society dictates how its members should behave in many kinds of personal relationships. A pattern of traditions and rules of behavior evolve in each society, and people who ignore these rules are considered naive, crude, or uncaring. These patterns of social usage vary from society to society, but they all have the common purpose of facilitating and structuring communication between individuals (Douglas and Dubois, 1977). In many societies the rules between social and business relationships are separate. In others the rules of social usage are the same for personal and business relationships. Adjusting to the

local rules is essential for success in international business.

FACTORS UNDERLYING POLITICAL/LEGAL ELEMENT

There are four factors underlying the political/legal element, they are: 1) laws; 2) regulations; 3) systems stability, and; 4) public policy. These factors have extensive influence over the manner in which a domestic exporting firm is able to conduct business within a country. These laws and public policies which govern business activities within a country are an integral part of a country's social/cultural environment. A country's social/cultural environment effects its political/legal systems. There is in fact an interaction between the cultural/social and political/legal elements. The political/legal environment of each country is important in international business since each country's laws and governmental policies have an effect on the ability of the domestic exporting firm to conduct business within that country. Laws and policies vary between countries, although certain similarities can be observed throughout geographic regions or within trading groups or partners.

Regulations

Trading groups or partners often adopt common regulations for trade which is used for their mutual

benefit. Each country has the power to permit or refuse a company to conduct business within its territorial boundaries and obtaining trading permission can be politically difficult for the foreign firm. A further complexity arises when a company transacts business which involves two or more countries. In the event of a dispute it can be very difficult to determine which country's legal system is applicable to the dispute. The use of regulations between the trading partners offers an alternative to litigation. The regulations include the prescribed penalty in the event of the default of any party to the agreement. Since the parties to the agreement have developed or hope to develop a long term trading relationship the regulations serve to codify the agreement between the parties.

Laws

A listing of the potential legal problems for international marketing and logistics includes:

1. Rules for competition on
    (a) collusion
    (b) discrimination against certain buyers
    (c) promotional methods
    (d) variable pricing
    (e) exclusive territory agreement
2. Retail price maintenance laws

3. Cancellation of distributor or wholesaler agreements
4. Product quality laws and controls
5. Packaging laws
6. Warranty and after-sales exposure
7. Price controls, limitations on markups, or markdowns, and
8. Patents, trademarks, and copyright laws and practices (Business International, 1980)

Common law or civil law are the factors underlying a country's legal system. Common law is derived from English law and is prevalent in countries which have an English influence in their history. Civil or code law is derived from Roman law and found in the majority of the countries of the world. Both common and civil law are modified by the political influence of a country. The politics of a country are influenced by the cultural and social elements of that country. The laws of a country are the embodiment of that country's cultural/social history. Laws are more formal than regulations and the violation of a law is treated more seriously than the violation of a regulation. Laws are used when the trading partners desire the ability to enforce their agreement through the court system of a country. Regulations can have the effect of a law because governments can draft regulations. Laws always involve governments, whereas regulations may involve governments or may be the

embodiment of an agreement between the parties. Laws always carry the weight of government, whereas regulations which are privately drafted are first attempted to be resolved between the parties and then litigated as a last resort.

System Stability

The stability of a country's political/legal system is very important for the continual transaction or international business. Frequent or unexpected political or legal changes create uncertainty in the trading environment. System stability is judged by the length of time that a country's political and legal systems have continuously functioned without drastic interference in international trade. Since all political and legal systems are dynamic there is always change in their environment. The question is not whether there is change in the system but whether the change drastically interfered with international trade.

Public Policy

A country's public policy will address the issue of whether it is open or closed to trade. Public policy addresses the position of a country on a given issue. Matters of public policy are generally developed from the perceived position of knowledge about those things that a country's population desires. The matters of public policy can be obtained in a democratic manner, at one end of a

spectrum, or in an autocratic manner, at the other end of the spectrum. The manner in which the public policy was determined has some bearing on the system's stability. More important, however, is the realization that public policy is the embodiment of a people's or government's attitude towards something. International trade is something that is effected by public policy.

FACTORS UNDERLYING GEOGRAPHY ELEMENT

Geography is the study of the earth's surface and its underlying factors are: 1) climate; 2) topography; 3) natural resources; 4) locations of population centers; and 5) natural barriers. The geography of a nation is perhaps the principal and broadest determinant of both the characteristics of a society and the means by which that society undertakes to supply its needs (Cateora, 1983).

Climate and Topography

Climate and topography are the most important elements of geography. Altitude, humidity and temperature extremes are all climate features of interest to international marketers. Products may have to be altered to function as designed in various climates. Topography influences the infrastructure of a country which in turn affects logistics. The ability to develop roadways, ports, and railways is directly affected by topography.

Climate has a direct effect on the suitability of a country for various products. The demand for products drives the demand for international logistics. The climate of any particular country practically determines the demand for goods and services by the country's population. Climate also affects the packaging of products for international shipment.

Natural Barriers

Geography affects the character of a nation's economy and its economic and social development. This directly affects international marketing and logistics. South America, for instance, presents a geographical picture of natural barriers that inhibit national growth, trade, and communication.

A country's natural barriers must be considered for market development. Coastal cities or those on navigable waterways have historically developed prior to inland cities due to the ease of logistics. The coastal or water cities become the trading centers for the country wherein they are located. Cities which are not located near transportation routes generally are isolated form each other even when they are in the same country. It would be unwise to assume that one logistics point within a country could serve the entire country or any significant portion of it.

Natural Resources

Natural resources are essential for the development of any society. The location of natural resources are geographical accidents. Nations are not equally endowed with natural resources, nor does a nation's demand for particular resources necessarily coincide with its supply of those resources. Energy, which is the by-product of resources, is essential for modern production techniques and economic prosperity. The principal supplements to human energy are: animals, wood, fossil fuel, nuclear power, oceanic tides, geothermal power, and the sun.

The location, quality, and availability of resources will affect the pattern or world economic development and trade for at least the remainder of this century (Stogaugh, 1981). International logistics requires that the location, quality, and availability of resources be considered when making logistics decisions.

Location of Population Centers

The location of population centers is a result of geography. The population centers are rarely homogeneous in their desires. This requires separate marketing efforts and logistics channels for the domestic firm which exports.

The population factor of geography influences exporting decisions and international logistics. The number of people in particular areas has an impact on marketing and logistics

decisions. Factors such as current population figures, rates of growth, age levels, and rural/urban population distribution are all closely related to demand for various products and the resulting logistics required. This influences product export decisions and the logistics of these products.

Geography influences world trade because the imbalance caused by the factors of geography must be balanced through world trade in order for the world's populations to receive the various products from different parts of the world. World trade allows a society to balance its needs and wants against its supply of goods. International trade is the result of differences among countries and the desires of those countries populations to have other products which are not available in their own countries. There are three major reasons countries differ in what they trade for and produce:

1. Difference in culture and skills
2. Differences in the stages of economic development, and
3. Differences in the availability of natural resources (Cateora, 1983).

A country offsets its geographic disadvantage through world trade. World trade routes have developed between advanced societies throughout history. The routes are modified depending upon the societies involved at a particular time. As societies develop, world trade also develops to accommodate those societies. World trade routes

serve to bind the world together, minimizing distance, natural barriers, lack of resources, and the fundamental differences between peoples and economies. The historical development of trade routes has been, first overland, later by sea, and in present times, by air. Trade routes present a vivid picture of various countries attempting to overcome economic and social imbalances created in part by the influence of geography.

FACTORS UNDERLYING THE ECONOMIC ELEMENT

The factors underlying the economic element are: 1) population; 2) income; 3) national controls; and 4) employment. International business and logistics require that the exporting firm understand the dimensions of the economic development of the countries with which it desires to do business. It is important to understand the origins and destinations of exports and imports and the reasons that these trade flows between nations occur. It is also essential to understand the nature of changes occurring in the world marketplace.

Population

There are over four billion people in the world today. Population and capital have been growing exponentially. there are limits to the supply of food and energy; as well as the amount of pollution that can be absorbed by the

environment. From a marketing standpoint, it is obvious that the system in its current form cannot continue growing indefinitely at historic rates. This has led to research into the relationship between population and capital growth (Daly, 1971). From an international business viewpoint the population factor is very important because the size of the market is one of the determining factors in the decision making process of where to trade. The relationship between population and its economic position (per capita income, national income, employment level, and consumption) is a vital strategic decision for international business.

Income

Income and its location are key factors for the economic element. Income influences the timing of trade and is the single most important variable for the trading of most products. World markets are located in income and population centers. Income is not a precise measure of market potential; it is only a gross indicator. By coupling income with population, a more accurate indicator of market potential can be rendered. Gross national product (GNP) and other measures of national income converted to U.S. dollars should be calculated on the basis of purchasing power (i.e. what the currency will buy in the country of issue) or through direct real product comparisons. This will allow the exporter to have an actual comparison of the standards

of living in the countries of the world.

The concentration of wealth in a few large industrialized nations is the most striking characteristic of the global economic environment. This characteristic appears when one examines the world regions and again if one examines the logistics of wealth and income within countries. An examination of the logistics of wealth within countries reveals patterns of income concentration. These patterns are important for market analysis purposes for the exporter.

The relationship between income level and consumption patterns is very important to marketers. This relationship allows marketers to use income segmentation to define a market. The nature of income elasticity for food was first observed by Ernst Engel. Engel's Law observes that as income grows above a certain minimum level, expenditures on food as percentage of total income decreased, although the absolute amount of food expenditures was maintained or increased. This phenomena has been confirmed by empirical budget studies. One such study was conducted by the United Nations Food and Agricultural Organization in Rome, 1955.

In general, as the underlying factor, national per capita income, increases product saturation (the percentage of potential buyers or households who own a particular product) increases. In any particular economy, income is a major determinant of ownership of consumer durable goods.

As national income per capita increases demand patterns are changed. Firms which export need to be cognizant of these changes. As demand changes the channels of logistics change to meet the new demand. The exporter must be aware of these changes also.

National Controls

An important underlying factor of the economic element is national controls which the nation-states exercise over a broad range of international transfers. National controls include goods, services, money, technology, and rights. All of these national controls are important to international marketing and must be considered by the exporting firm. The major reason for exercising national controls is to accomplish economic goals. The initial economic goal of controls over international transfers is revenue production. As societies have progressed this goal has yielded to the goals of protection of local industries and fostering local enterprise. These three goals can be combined and a country can increase revenues by increasing tariffs and duties on transfers of goods and at the same time can provide protection for infant industries and local enterprise.

Employment

Employment is another factor of the economic element. The goal of full employment influences a country's controls over its international business policies. Tariffs, quotas, quality of goods, and quantity limits are typical control devices. In the event that local employment is endangered by international trade then local governments may use economic controls to restrict trade.

The underlying factors of the economic element cause countries to respond to international trade in various ways. Countries may seek to protect their indigenous resources and industries by using controls. The per capita income level affects demand patterns, and the location of the population can determine where the demanded goods and services are required. This affects international logistics and the exporting firm.

FACTORS UNDERLYING COMPETITION ELEMENT

The underlying factors of competition are: 1) entity survival; 2) market access; 3) profitability; and 4) differential advantage.

Entity Survival and Profitability

Competition arises in international business for the same reasons that it does in domestic business. The underlying major factor in competition is survival of the

entity. This is accomplished by generating profits. Firms seek to enter a market because they believe that the desired market will allow them to generate revenue in excess of the cost of entering that market with a resulting profit. The access to foreign markets is viewed as an opportunity to increase revenues. Due to the absolute size of foreign markets, international trade provides domestic exporting firms the opportunity to insure survival into the indefinite future.

Market Access

The ability to enter a market and sell a product internationally is a driving force behind domestic firms which export. The state of competition within a foreign market is a determining factor of the ability to enter that market. Market access is desired by exporting firms for many reasons, including a desire to use foreign markets to alter life cycles of existing products, additional product and market segmentation, to improve cost-volume relationships, and use existing products to innovate in new markets (Rapp, 1973).

The competitive element in international business and logistics is exacerbated for the domestic exporting firm because of the ease with which unlimited foreign firms can enter and exit markets, that is their access to the country's markets. The potential competitor is usually

unknown except for very large firms. Since the potential competitor is unknown and their country of domicile is equally unknown it is difficult for the domestic firm to adopt a specific strategic plan to fend off the invasion of a newly established market. It is more difficult to use international logistics to compete when the unknown competitor may already have an established logistics base in the country wherein the domestic firm is doing business. Competition is an uncontrollable element because any number of firms can enter and exit the market. It is not possible for the domestic exporting firm to control a foreign market.

Profitability

U.S. domestic firms operate within a free market system which allows them to be rewarded by profits from successful competition within the marketplace. Profits are essential for the continuation of the firm. While an entity can survive at the point where revenues equal expenses it cannot return anything of financial value to its owners or stakeholders. In this event, they do not have any incentive to continue to invest or be involved in the business.

The quest for profits has created a desire by some U.S. domestic firms to export. The increased competition in the domestic markets has decreased domestically earned profits and the foreign markets are viewed as avenues to increased profitability. Profitability is the method by which

domestic firms are judged by their shareholders, stakeholders, and competition.

Differential Advantage

The competing firm has its survival as its main goal. The nature of its competition is for a differential advantage through which it may enter the market and earn a profit. The competitor is an unknown and uncontrollable element because of the ease of market entry and often the competitor is another domestic exporting firm. Differential advantage allows the domestic exporting firm to enter a market and survive within that market without being neutralized by another firm before it has an opportunity to generate a return on its capital deployed in that market (Alderson, 1957).

Differential advantage is the key element to successful penetration of a foreign market. The nature of the differential advantage will determine the period of time that the domestic exporting firm will remain profitable in the foreign market. While maintaining the differential advantage the domestic exporting firm will experience higher than normal profits. These abnormal profits will bring additional competitors into the market.

FACTORS UNDERLYING TECHNOLOGY ELEMENT

The factors underlying the technology element are: 1) research and development; 2) industrial development; and, 3) technology transfer. The technology and its developmental state influence international trade and have a resultant influence on international logistics.

Research and Development

The basis for technology is frequently a firm's own research and development. It is necessary to utilize the correct technology for the state of development of the society wherein the domestic exporting firm will market its product. Research and development in the domestic exporting firm can create products which are highly desirable in foreign markets. It is necessary to determine, through thorough research the type of product necessary for the foreign market. It is often the case that products developed by a domestic firm are not appropriate for the foreign market. Domestic firms often export products which are in a later stage of product life cycle to foreign markets which are not as technologically advanced.

Industrial Development

The degree of industrial development attained by the recipient country will partially determine whether the domestic exporting firm can successfully do business there.

Perhaps the most significant environmental factor affecting the market for goods is the degree of industrialization. The degree of economic development is an inaccurate but useful proxy for the degree of industrialization. Regardless of the degree of industrialization, demand for products exists, but different levels of development typically result in changes in demand and kinds or quality of products sought.

The most significant area for technology differences is in industrial products. There are five basic stages of development for countries: (1) Preindustrial;(2) Primary manufacturing; (3) Growth of manufacturing for nondurables; (4) Well-industrialized; and (5) Complete industrialization (Cateora, 1983). The stage of development will help a domestic exporting firm determine where it desires to sell its product. The stage of development also influences the stage of logistics development. The product sold should be able to flow through the purchasing country's channels of logistics. A domestic firm with advanced logistics techniques should not expect to fully utilize those techniques in a country which purchased outdated technological products from it.

Technology Transfer

Technology can be transferred, and therefore the domestic exporting firm needs to be cognizant of the extent of its technology's transferability as it develops its foreign markets. It is possible for other firms to duplicate the technology and displace the domestic exporting firm. Since there is not any form of international patent, the copying of technology is clearly not illegal. Once a product is developed and placed in a foreign market it is available for other firms to duplicate. This problem becomes circular because the solution to it leads back to market entry and differential advantage. A domestic exporting firm may obtain differential advantage by using a new technology and then maintain it through market segmentation and market control.

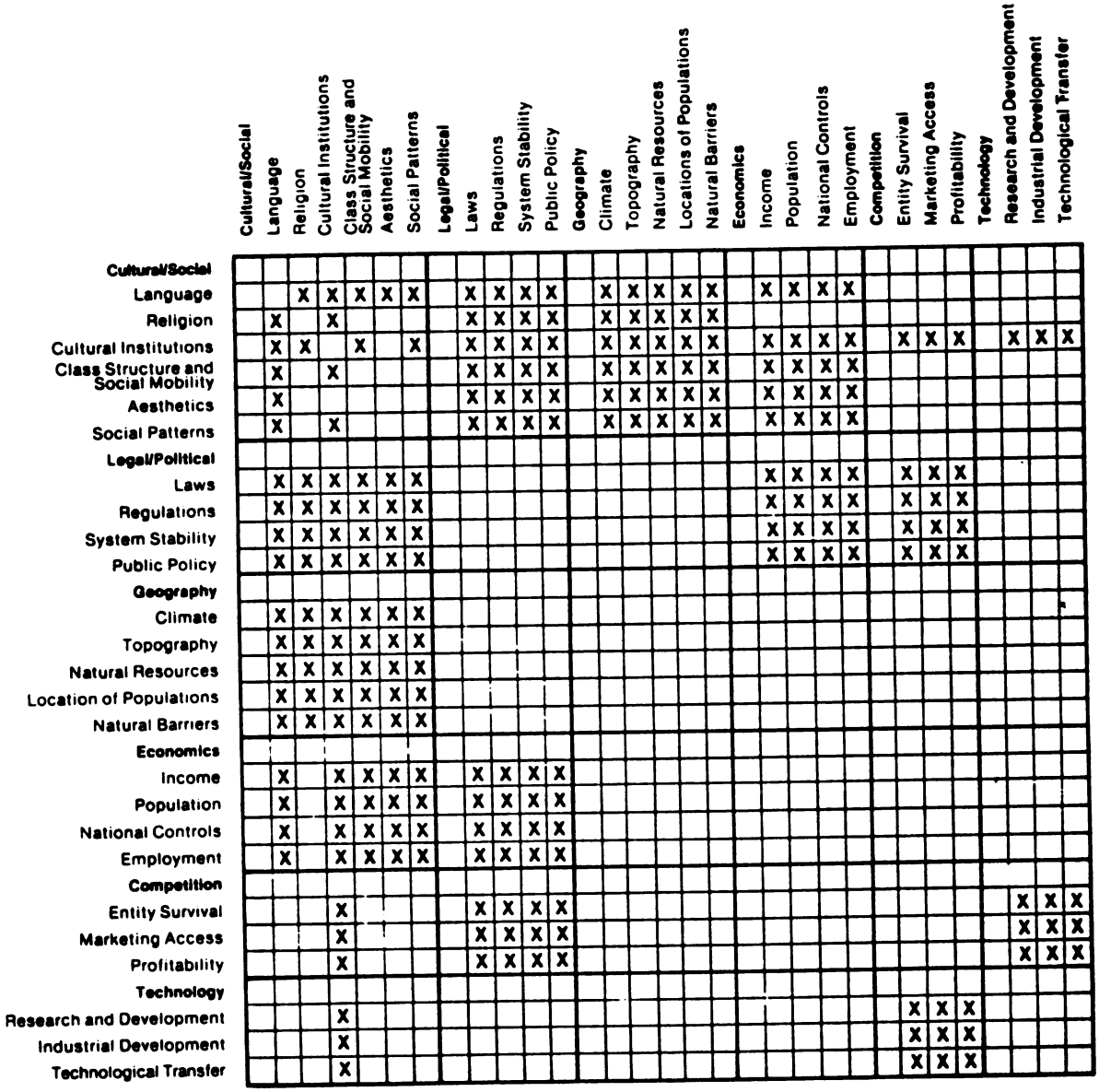
FACTOR INTERACTION OF UNCONTROLLABLE ELEMENTS

There are interactions which take place between the factors which underlay the uncontrollable elements, and there are also interactions between the uncontrollable elements. The interaction between the factors and the interaction between the elements need to be examined in order to comprehend their dynamic nature. This examination allows management to make informed decisions about the factors and elements allowing for more effective control. Any decision made by an international logistics executive

which concerns any of the uncontrollable elements could cause an interaction with another uncontrollable element and its underlying factors. Any interaction among the underlying factors has an effect on its uncontrollable element. Therefore an examination of the interaction of the factors of each uncontrollable element is necessary to understand and control the effect of the interaction. Since the uncontrollable elements are a composite of their underlying factors it is necessary to understand the interactions of the underlying factors in order to properly comprehend and model the interaction between the uncontrollable elements. The factor interactions are summarized in Table 3.

Table 3

INTERACTION OF FACTORS UNDERLYING UNCONTROLLABLE ELEMENTS



CULTURAL/SOCIAL FACTOR INTERACTION

The factors which underlay the cultural and social element are:

1) language
2) religion
3) cultural institutions
4) class structure and social mobility
5) aesthetics, and
6) social patterns

Each of these factors may interact with the factors of other uncontrollable elements as well as with each other. The interaction will be examined on a factor by factor basis.

Language, because it is the basis of oral communication, indirectly interacts with all the factors underlying the legal/political and economic elements. Its direct relationship is limited to its own element, cultural and social. The cultural and social element is one of the very few to have anything written about it in the business literature. The literature about the cultural and social element has centered around language and its use in advertising. It is frequently suggested that the domestic exporting firm use a local advertising agency in the foreign market which understands the local language and customs (Schooler, 1984). The factor of language was carried further and applied to ethnodomination which was concerned

with the domination of certain ethnic groups in various functional areas of business. In international logistics ethnodomination was concerned with domination of the channels of logistics in certain foreign markets by various ethnic groups. The ethnic dominators can supply expertise for international marketing and logistics and provide effective communication skills for use in marketing and advertising programs (Norvell, Morey, 1983). The main impact of language occurs within the context of the cultural and social element.

Religion directly interacts with cultural institutions in its own social and cultural elements. Religion also interacts with the political and legal element. Numerous rules and regulations are the result of religious influence. Many countries have political systems which are influenced by religion (Cundiff, Higler, 1984). Laws are frequently based on religion, especially those concerned with morality or ethics.

Cultural institutions interact with the factors of social mobility and social patterns. The most important part of the cultural institutions factor is the educational system. The educational system interacts with the political and legal element, economic element, and technological element. In fact, the education subfactor of cultural institutions is at the very heart of the social and cultural element. The education factor interacts with the factors of

the elements of political and legal, economic, technology, and competition.

Class structure and social mobility interacts with the economic element. In particular the income and employment factors of the economic element interact with class structure and social mobility. Social patterns are closely aligned with social mobility and class structure. Social patterns interact with the economic element's factors of income, population, and employment. Aesthetics are also closely aligned with social patterns, class structure and social mobility. The aesthetic factor has an interaction with the economic element and its underlying factors of income, population and employment (Dichter, 1962).

POLITICAL/LEGAL FACTOR INTERACTION

The factors which underlay the political/legal element are: 1) laws; 2) regulations; 3) public policy, and 4) system stability. The factors of the legal and political element interact with all of the factors of the cultural and social element. There is also a complete interaction of the factors of the legal and political element with the national controls factor of the economic element. The political element has received the most attention in literature due to political instability in some countries. The subject of political risk is frequently cited when international marketing and logistics are considered by domestic exporting

firms. "Political risk includes actions that limit the freedom of a foreign firm to operate in a give host environment and actions that result in the actual takeover of enterprise assets" (Choi, 1979). The legal and political element also interacts with the competitive element. The very essence of competition is protected by the legal and political systems in the United States and numerous other countries whether they practice capitalism or other economic forms of government.

GEOGRAPHICAL FACTOR INTERACTION

The factors which underlay the geographical element are: 1) climate; 2) topography; 3) natural barriers; 4) natural resources; and 5) locations of population centers. The factors which underlay the geographical element interact with the factors of the cultural and social element, economic element, technological element, and competitive element (Cateora, 1983). For international logistics the geographical element has significant importance. The location of the final destination of products designated for export by the domestic exporting firm can greatly effect the efficiency, effectiveness, and cost of international logistics. In the event that unique shipping routes, special packaging, different destination transportation systems, and/or delivery to unique locations are required,

then the cost, efficiency, and effectiveness of international logistics are affected.

ECONOMIC FACTOR INTERACTION

The factors of the economic element are: 1) income; 2) population; 3) national controls; and 4) employment. These factors interact with the factors of class structure, social mobility, aesthetics, and social patterns of the cultural and social element. All of the factors of the economic element interact with all of the factors of the political and legal element. The factors which underlay the technological element interact with the factors of the economic element; and all of the factors of the competitive element interact with the factors of the economic element (Daly, 1971).

TECHNOLOGY FACTOR INTERACTION

The factors of the technology element are: 1) research and development; 2) industrial development; and 3) technology transferability. The factors of technology interact mainly with the factors of the economic and competitive elements. There is also an interaction with the cultural institutions of the cultural/social element. The interaction is with the educational system. The factors of the legal and political elements also interact with the factors of the technological element.

COMPETITION FACTOR INTERACTION

The factors which underlay the competitive element are: 1) survival of the entity; 2) access to markets; 3) profitability; and 4) differential advantage. These factors interact with the factors of the technological element, economic element, political and legal element, and with the educational system factor of the cultural and social element.

UNCONTROLLABLE ELEMENT INTERACTION

The interaction of the uncontrollable elements is determined by the interaction of their underlying factors. Based on the interactions, as stated in the above section, the following uncontrollable elements have interactions:

1. Cultural/Social with Political/Legal and Economic
2. Political/Legal with Economic, Competition, and Cultural/Social
3. Geography with Cultural/Social, Economic, Technology, and, Competition
4. Economic with Cultural/Social, Political/Legal, Competition, and Technology
5. Technology with Competition and Economic
6. Competition with Political/Legal, Technology and, Economic

In order to manage the uncontrollable elements it is necessary to understand their interactions. In order to understand the uncontrollable elements and their

interactions it is necessary to understand their underlying factors and their interactions. The factors and their interactions and the elements and their interactions have now been explained. The methods to control factor and element impact will now be analyzed.

METHODS TO CONTROL FACTOR AND ELEMENT IMPACT

Factor impact results when two or more factors interact. This interaction can take place between factors within the same element or between factors among different elements. Uncontrollable element impact is the result of the interaction of two or more uncontrollable elements. Uncontrollable element interaction only takes place when the underlying factors of the respective elements have an interaction. This is because the uncontrollable elements are the composite of their factors.

The methods to control factor and element impact include: public policy changes, education, and management interaction. The uncontrollable factors can be influenced and the impact of their uncontrollable elements altered through education, public policy changes, and management interaction. There may be additional methods for altering the uncontrollable elements which will be discovered through this dissertation. The management of the domestic exporting firm is relatively powerless to alter the underlying factors by changing public policy. Education is a very broad term

and refers to altering the underlying factor by making the domestic exporting firm and the foreign importing firm aware of the underlying factor's existence. This is often an insurmountable task for a small or medium sized exporting firm. This leaves companies with only the tools of management to alter the uncontrollable elements and their underlying factors. The methods most often used by management are the finance, production, and/or marketing/logistics functions.

USE OF INTERNATIONAL LOGISTICS TO OVERCOME BARRIERS

The interactions of the factors and results on the elements have an effect on international business and logistics. The factors and uncontrollable elements create barriers to international trade. Identification of the factors and elements will allow for improved control of them by international business executives. Knowledge of the elements and their underlying factors in the international logistical area makes it possible for the international business executive to overcome the barriers to international trade. International logistics is an enabling power for management to use to expand their exports. Through international logistics, management is better able to control the impact of the underlying factors and their uncontrollable elements.

LOGISTICS REQUIREMENTS FOR INTERNATIONAL TRADE

International logistics enables international trade and is subject to many of the same barriers as international trade. In addition any barrier which is an impediment to international logistics is a barrier to international trade. International logistics can aid in the resolution to some of the barriers of international trade. This section will discuss the role, function, and application of international logistics.

The demand for logistics is a function of the reciprocal demand for a continual supply of goods and services. The interregional differences in prices of goods and services causes a demand for them and when the cost of logistics plus the cost of the goods and services is less than that prevailing in the demanding regions then the goods and services are traded. International logistics has forced management to be aware of the total costs of logistics, not just the cost of moving goods (Davies, 1983). It is the total cost of logistics which is the final determining factor of whether the product can be profitably traded.

International logistics enables the theories of relative advantage to become reality for the trading nations. During the trading process it is assumed by the parties to the trade that the products or services traded can be delivered as specified by the terms of trade. Until the last two decades very little thought has been given to

the position of international logistics within the firm or its structure and function within the firm. International logistics was perceived as only transportation without regard to the extensive ramifications of the role of international logistics. Attempts to determine the actual effect of international logistics on international trade were not made until 1956 when Lewis, Culliton, and Steele published their now famous article about air freight (Lewis, Culliton, and Steele, 1956).

The late emergence of the study of international logistics is directly related to the late start of the study of domestic logistics. In 1922, the role of logistics in marketing was identified by Fred Clark in his book, Principles of Marketing, and in 1927 the term logistics was first used in a text by Ralph Borsodi entitled The Logistics Age. The study of logistics did not further develop until World War II began, when logistics were further developed and refined by military strategists. After the end of World War II, logistics became part of the marketing concept used by the corporate culture of the 1950's. Then in 1956, as previously stated, the study of international logistics commenced.

The literature concerning international logistics can be divided into three parts: 1) Role of international logistics within the firm; 2) Functions of international logistics; and

3) Application of international logistics techniques either by case example or suggestion.

ROLE OF INTERNATIONAL LOGISTICS

International logistics role within the firm has been suggested and described in many articles. The size of the firm, the nature of the business and the firm's involvement with international marketing are significant factors in the amount of responsibility given to the logistics departments (anonymous, 1981). The more international business that a firm has, the larger the role of its international logistics department. In the typical firm, the larger the amount of sales volume from international business, the larger the role of international logistics. In this situation, sales volume is controlling logistics. International logistics capability is not considered prior to making international sales.

As an aid to determining the role of international logistics within the firm, many articles used surveys to obtain opinions from management about the role of international distribution. The role is divided among lower, middle, and upper management. There is a minority of persons in larger companies with decision-making responsibility in export shipping and this indicates the cross-functional role for international logistics managers (Gray and Davies, 1981). As a multinational sales and

marketing organization is established and production, logistics and other functions are centralized a strategy of integrating manufacturing, product development, and marketing should be followed. This strategy results in the decentralization of the firm (Anonymous, 1984). The decentralized strategy results in the autonomy of the international logistics function because it must serve diverse markets. These two articles represent the diversity of organizational structure for international logistics. There is not a consensus about the role of international logistics and therefore it has been developed on an ad hoc basis. The literature on international business has just recently commenced analyzing the role of international logistics within international trade.

A reason given for the slow development of the role of international logistics has been the increasing competitive international environment and the preoccupation of multinational businesses with strengthening business in their own nations (White, 1984). As domestic exporting businesses react to additional pressures from international competition they tend to apply techniques with which they are familiar in domestic markets, rather than attempting to expand further into international trade. Governments, however, decided that it was in the best interest of their countries to become involved in increasing international trade. Increased involvement in international trade was

perceived as a strong force in the eradication of various domestic problems, such as a reduction in the deficit in the balance of payments (Stoner and Arora, 1983). The involvement of governments into international trade serves to increase the amount of international logistics with a concomitant increase in the role of international logistics.

United States companies which export were generally viewed as too slow, too narrow, and too half-hearted. Foreign customer service problems had created this situation. Since customer service was within the realm of domestic logistics it was a natural solution to the problem to utilize international logistics to resolve the problem; however, since the majority of the domestic exporting firms lacked international logistics expertise, the problem was not solved. This resulted in an increased emphasis on international logistics by domestic exporting firms. A survey which rated the exporters to six major countries on the basis of ten service components ranked United States firms as number six in international trade (Lancioni, Christopher, Gattorna, 1983). The lack of a definite role for international logistics was causing a problem in foreign markets. The problems created in foreign markets forced United States exporting firms to establish a more permanent form of international business which created a larger and more autonomous role for international logistics.

Establishing a permanent role for international logistics requires that firms place the international logistics function within the corporate organizational structure. The application of the concept of integrated logistics to international business necessitates a number of modifications of the concept traditionally used in domestic business. A separate logistics concept is suggested for international logistics. This concept emphasizes the movement of the export order rather than the movement of goods, and it ignores the movement of materials into and within the firm. The internal movement of materials remains a part of the domestic logistics system (Davies, 1983). The changing role of international logistics requires that firms recognize the difference between domestic and international logistics. The primary differences are in three areas: 1) documentation; 2) order processing; and 3) the presence of a freight forwarder for the domestic exporting firm. In addition, there is another area of concern which arises for the domestic exporting firm. This is the area of channel control into the foreign countries. It can be argued that the integrating of export sales and logistics allows extended channel control for better customer service.

A study of the logistics organization of forty multinational firms was made by Jacques Picara in 1983. The study revealed two possible models for solving the international logistics problem. The first solution is the

decentralized full-profit approach in which complete authority over domestic and international logistics operations affecting the subsidiaries is given to their managers. The second approach is the "centralized" approach in which a centralized domestic and international logistics staff reports to the executive who is responsible for the profitability of foreign operations. There are arguments for both centralization and decentralization of international logistics. Centralization of functions, such as warehousing and order-processing at the divisional or corporate level results in cost reducing economies of scale. While combining warehousing throughout the entire company might reduce storage costs, the cost of shipping would increase. Decentralization of international logistics could result in maintaining full inventories at each subsidiary to offer a high level of customer service. The result from decentralization would be an increased cost for inventory. The extent to which a firm choses to centralize or decentralize is linked to the achievement of the overall corporate goals (Picard, 1983). Neither approach has been proven to be superior to the other, such a determination depends partially on other elements of the firm's organizational philosophy and on the nature of the firm's activities and characteristics.

In the largest of companies the total logistics structure receives limited attention. The minority of

persons in larger companies with decision-making responsibility for international logistics indicates the cross-functional role for international logistics management. The overall management of international logistics is accomplished by senior and middle management personnel (Gray, Davies, 1981).

The increasing rate of multinational business growth and international trade require that logistics management become more involved in corporate strategy and structure for multinational organization. More emphasis has to be placed on the adapting of specific structures and processes for the management of logistics activities to complement the company-wide logistics strategies adopted for the firm. There is a need for people who can fill the integrative roles essential to the successful performance of many logistics organizations and the procedures, such as coordinative and decoupling devices, to facilitate the integrative process. Only by serious effort on all these fronts will multinational firms relying heavily on logistics achieve the structures and processes necessary to support their strategies (Heskett, Mathias, 1976).

Since the publication of this article in 1976 there has been substantial progress on the integration of the international logistics function to a role in the corporate structure. This progress has been predominate in larger corporations which export as well as maintain foreign

facilities. The role of international logistics is increasing in importance. However, the highest corporate offices are not involved in international logistics. Over 40 percent of international logistics decisions are made by middle managers. While domestic logistics departments have little involvement in international logistics affairs, they are often asked to take care of international logistics problems without any additional staff (Lancioni, 1984).

Process of International Logistics

There has not been a clear definition of the role of international logistics management within the majority of companies. The lack of an adequate description of the international logistics process serves to further exacerbate this problem. Three basic stages are found in the international logistics process: 1) order to dispatch time-from receipt of the customer's order to dispatch of the order complete from the factory or warehouse; 2) dispatch to arrival time-international transit operations; and 3) arrival to receipt time-customs clearance, payment, and movement to the customer's premises. The role of international logistics management is to ensure that the large number of tasks for each of these stages are all completed correctly and at the right time. The amount of international logistics effort in international marketing is a function of the channel strategy adopted and the stage of

the development of the international marketing strategy. A planning approach is suggested for international logistics and international marketing. The plan should include: a logistics strategy, organization structure, costs, operating procedures for the strategy, information system, and continual audit process. Successful and efficient international physical logistics involves adopting a wide conceptual view of the system together with an extensive detailed analysis of operational activities (Slater, 1980).

Exporting Firms Initial Process of International Logistics

Firms which become involved in international business by exporting tend to be smaller firms with revenues less than $250 million (LaLinde and Czinkota. 1981). They have not established permanent forms of international logistics, and therefore their process of international logistics is to make extensive use of export agents for product movement. Their knowledge of international logistics is limited to transportation modes. It is not until their international business expands or they experience product problems in the foreign countries where their products are located that they begin to understand the function of international logistics. The learning of international logistics and its role in corporate planning are functions of the amount of revenue a domestic firm has in international markets compared to its total annual revenue.

As the revenue from foreign markets increases, the emphasis placed on those markets increases. Efforts to contain costs and increase sales are made. This increased emphasis on foreign markets highlights the need for improved international logistics.

FUNCTION OF INTERNATIONAL LOGISTICS

The function of international logistics is to enable the international marketing process. The total cost concept involves minimizing the sum of transportation, warehousing, inventory, order processing and communication, and production lot quantity costs while achieving a desired level of customer service (Kraofel, Mentzer, Williams, 1981). This allows for the effective and efficient utilization of international logistics at the lowest cost to the domestic exporting firm. International logistics when used with the total cost concept, will allow for the efficient movement of finished products from the end of the production line to the consumer, and in some cases this will include the movement of raw materials from sources of supply throughout the world to the beginning of the production line (CLM,1982).

Domestic firms have long recognized that customer service efforts directed at domestic customers enlarge market shares and increase profits. Customer service is an integral part of the logistics function and it is the

preferred method of non-price competition. However, domestic firms which export have their customer service problems handled by third parties, with the result that foreign customers very often do not receive quality service. This problem is caused by the use of export agents that perform sales and shipping functions only (Lancioni, Christopher, Gattorna, 1983) and do not have any permanent role in the domestic firm.

The initial function of an international logistics department in a firm which commences exporting is generally limited to using foreign agents to ship product. As previously mentioned, the international logistics function is truncated in firms which have recently begun exporting and, further, the international logistics department is non-existant. For a domestic exporting firm, entering a foreign market is much like expanding domestic sales into new geographical areas. The issues that must be addressed include how the product will be delivered and serviced and how money is to be collected.

For exporting firms there are two basic methods for selling their products: direct and indirect exporting both of which are effected by international logistics.

Direct Exporting

In the direct method of exporting, the domestic firm is responsible for the contract and overseas shipment of the product and all phases of its international logistics. Intermediaries for direct exporting are: 1) foreign sales representatives; 2) foreign sales agents; 3) stocking and nonstocking agents; 4) end users; and 5) state-controlled trading companies (Walvoord, 1983). Direct exporting allows the domestic exporting firm to have greater control over their product(s) in the foreign markets. The domestic exporting firm has more presence in the foreign market because their products are represented by agents that they retain. The agents selected represent the domestic exporting firm and not an intermediary, which is the case in indirect exporting.

When either direct or indirect exporting is used, market control is an important issue. The company image and reputation are created and maintained in foreign countries by their representatives. The customer service offered in foreign countries affects the companies sales and profitability (Walvoord, 1983). International logistics is a function which enables a domestic exporting firm to maintain positive contacts in foreign markets.

The selection of international intermediaries for the domestic exporting firm is a crucial decision which has profound impact on the firm's international logistics and

its success in foreign markets. The criteria for selecting an international intermediary should include: 1) market knowledge, 2) market coverage, 3) sales force management, and 4) international logistics ability. These criteria have a direct relationship to the exporting firms sales performance in foreign markets. Several studies have indicated that intermediaries are motivated by manufacturers who provide them with attractive remuneration, support, and effective two-way communication. These factors need to be combined to enable the domestic exporting firm to select the proper intermediary (Shipley, 1984).

Indirect Exporting

In the indirect method of exporting, the foreign sales contract and product delivery are given to an intermediary, who takes control of the product and international logistics. Such agents are: 1) commissioned buying agents, 2) country-controlled buying agents, 3) export management companies, 4) export merchants, or 5) export agents. In the indirect method the exporting firm loses product control when it reaches the possession of one of the above five above mentioned institutions.

Exporting Considerations

There are eleven functional areas of exporting involving product movement and international logistics that

the international logistics executive must coordinate. These eleven areas are:

1) selection of a common carrier to the port
2) aerial port
3) ocean port
4) air carrier
5) ocean carrier
6) freight forwarder
7) consolidator
8) export packing
9) insurance
10) banking, and
11) outside consultants (Virdrick, 1983).

When the domestic firm decides to utilize direct exporting all eleven functional areas must be considered in conjunction with an international logistics strategy.

When the domestic firm decides to export it must consider the functions of the export agent it chooses in order to be assured that the export agent can fulfill the firm's international business and logistics strategy goals. In the event that the domestic firm decides to select a foreign distributor the selection should include the following criteria: 1) financial stability, 2) technical competence, and 3) ability to provide needed sales support (Blake, Gagliano, Babson, 1983). In effect, the foreign distributor should appear to be an extension of the domestic

exporting firm. The foreign distributor is the domestic exporting firm's presence in the foreign country and therefore part of its international business and logistics presence in the foreign market.

It is generally recognized that major foreign market opportunities are available to a wide range of domestic exporting firms. The difficulties in establishing an effective and profitable foreign logistics system form a substantial barrier to market penetration. It is important to anticipate and minimize the business and logistics problems involved in the establishment, operations and termination of a foreign logistics system. The methods to enter foreign markets, in addition to exporting are: licensing, joint ventures, and operation of foreign facilities (Berlew, 1984). This study is limited to exporting and therefore the other methods of conducting business internationally and their concomitant international logistics systems will not be discussed.

Exporting includes market planning, package design, sales negotiation, financial monitoring, banking, insurance, and consular documentation. It is essential that the international logistics executive and department be familiar with all of these. negotiating the final terms of the sale is the most significant part of successful exporting and this process directly includes the functions of international logistics. The responsibilities of

international logistics for the exporting firms changes dramatically with the terms negotiated in the sale. Negotiating the final terms should not be left with any one department, but should instead be a combined effort of all departments effected and coordinated by the international logistics executive (Foster, 1980). The documentation of an export is at the very heart of the negotiating process. The documentation reflects the terms as negotiated between the parties to the sale. The documentation flow is an extremely important part of the export program and it is essential that the international logistics department is fully aware of the progress of the documentation. When a domestic exporting firm uses a shipper for documentation, it is important that the firm be cognizant of its status and progress in order for the international logistics function to be fulfilled. Export financing is closely associated with the document flow, with the letter of credit being the most frequently used document for export financing. Since shipping arrangements specified in the letter of credit must be followed exactly, it is crucial that the international logistics department be in contact with other departments effected by the document flow, the negotiating process, and the documentation itself.

The international logistics department has a distinctive role in the planning of exports for the domestic firm. The extremely important channel decision is only one of a series

of decisions that must be made in international logistics. The international logistics function must also consider:

1) logistics strategy
2) logistics organization
3) logistics costs
4) logistics operating procedures
5) logistics information systems, and
6) continual logistics audits and evaluation

(Slater, 1980).

Successful and efficient international logistics involves adopting a wide conceptual view of the system together with an extensive detailed analysis of operational activities.

International logistics strategy should have a planning framework that allows a global planning perspective on a corporate basis and therefore allows the benefits of the systems approach of the logistics concept. Further, the international logistics strategy should allow for the identification and classification of trade barrier costs (Cook, Burley, 1985). An integrated international logistics strategy is preferred, followed by an identification and measurement of the major trade barriers and their costs and an identification of the stages through which the firm will distribute its products to international markets. The stages through which the firm will distribute its products follow the stages of its development in international marketing from indirect exporting to foreign facilities.

APPLICATION OF INTERNATIONAL LOGISTICS

The application of international logistics has been described most frequently in various literature by the case study method, wherein, the international logistics methods of individual firms are studied. Johnson Wax Company has been studied several times from both marketing and international logistics strategy viewpoints. The strategy discovered was that Johnson Wax Company begins new product sales and logistics from an exporting position and gradually changes to a locally produced products strategy. A multinational sales and marketing organization is established and production, sales and marketing functions are centralized (Anonymous, 1984).

The case study articles are descriptive of the methods which are used by the companies under study. The application of these methods to other exporting firms is a matter of extrapolation. Thomas Foster describes, in his article "Worldwide Logistics: The Global link", that Avon Corporation receives approximately one half of its income ($1.3 billion) from international sources. Avon maintains its own logistics system in each country wherein it conducts business.

The international logistics application literature includes articles which describe problems in exporting but do not attempt to resolve them. Exporting problems are

created by the barriers to international trade and quite frequently the barriers are logistics oriented. Some of the barriers were described by Denis Davies in 1980 as: "1) labor troubles, 2) container repositioning charges, 3) equipment unavailability, 4) outdated legislation, and 5) "red-tape hassles." At the same time that this article was published Joe Barks (1980) was analyzing the Hershey Company and its success in international marketing and logistics. In fact Hershey sold more than $150 million of its product overseas in 1980. The bulk of Hershey's international logistics is with a single freight forwarder. Hershey still maintains personal contact with its customers to further enhance its international business reputation.

A great proportion of the international logistics literature is transportation oriented. The great distance between United States exporting firms and international markets (except Canada, Central and South America) has placed an inordinate pre-eminence on transportation. The transportation literature pre-dates international logistics oriented literature and describes in detail the problems with containerization, mode selection, port of entry, intermodal difficulties, bunker availability and costs, and other transport related subjects. This area of the literature is descriptive and does not offer solutions to the problems raised; instead the problems are raised as caveats for those desiring international transportation.

The descriptive nature of the transportation articles has led to a blurring of the division between international logistics and international transportation. In his article, "International Logistics Strategies for the 1980's", David L. Anderson effectively merges both international logistics and international shipping. He states that there are "broad changes underway in the international logistics operations of many companies. Several key trends are: 1) the deregulation of the U.S. ocean liner industry, 2) the increasing importance of intermodal flows in US trade, 3) the development of improved flow control technologies, and 4) the effect of world trade policies on international logistics. Logistics managers will need to turn to transportation as a primary source of future cost and service improvements for international logistics operations". At a time when international logistics is just beginning to make its way to the executive offices, logistics executives are being admonished to give more authority to international shipping.

One of the most effective of the application oriented articles is "International Marketing: The Role of Logistics Management" written by Alan Slater in 1980. The article is very encompassing and can be used in the organizational and functional areas of international logistics as well as in the application area. The article has excellent application in this dissertation because of its all encompassing

description of the various roles of international logistics. The amount of international logistics effort in international marketing is a function of the channel strategy adopted and the stage of development of the international marketing department. There are ten major problems in international marketing which have a direct effect on international logistics, they are:

1) attitude
2) planning
3) information
4) communications
5) technology
6) payment and currency regulations
7) competition
8) security
9) safety, and
10) costs

Successful international logistics involves adapting a wide conceptual view of the system together with an extensive detailed analysis of operational activities. The extent of development of the international business of a domestic firm has a direct effect on the development of the international logistics department. The channel strategy chosen will determine the extent of the foreign market development of the domestic firm. When these are coupled together the nature of the firm's international logistics

department is determined. The greater the amount of the foreign markets and products, when coupled with a greater degree of channel control, then the greater the need for an international logistics department.

The articles in the application area of international logistics literature give examples of methods used by firms in international logistics or describe how to proceed in international logistics. They contain caveats and suggestions but offer very little in the way of resolution or description of problem solving techniques for the uncontrollable elements. All of the literature addresses the known controllable elements which are barriers to international logistics. The controllable elements most frequently written about are: 1) customer service, 2) inventory, 3) packaging, 4) transportation, and 5) warehousing and storage (Lambert, Stock, 1982). The uncontrollable elements and their underlying factors have been infrequently addressed in marketing literature and when they have been addressed it has been on an item specific basis.

From a review of the literature it was determined that the uncontrollable elements have not been resolved by any research oriented studies, and in fact, they have not been addressed for resolution in the literature. In addition to the existing literature, eleven executive interviews were conducted with international logistics executives to

determine the methods by which the uncontrollable elements have been resolved. These executives have suggested that the barriers caused by the cultural/social, legal/political, competitive, and geographic elements can be resolved or partially resolved by the marketing/logistics function. Further, they suggested that the barriers caused by the competitive and technological elements can be resolved or partially resolved by the production function. Finally, they suggested that the barriers caused by the economic element can be resolved or partially resolved by the finance function. The objective of this dissertation is to systematically investigate these elements, and their underlying factors, and categorize the approaches used to overcome barriers. The barriers created by the elements often overlap and can occur simultaneously, that is, the occurrence of a barrier is not necessarily an isolated event and any of the barriers created by the elements can occur together. The resolutions of the barriers are also not isolated and can occur simultaneously to resolve any or all of the barriers which have occurred. On the basis of this literature review and the identified interactions, a hypothesized model of the barriers and underlying factors are presented in Exhibit 1.

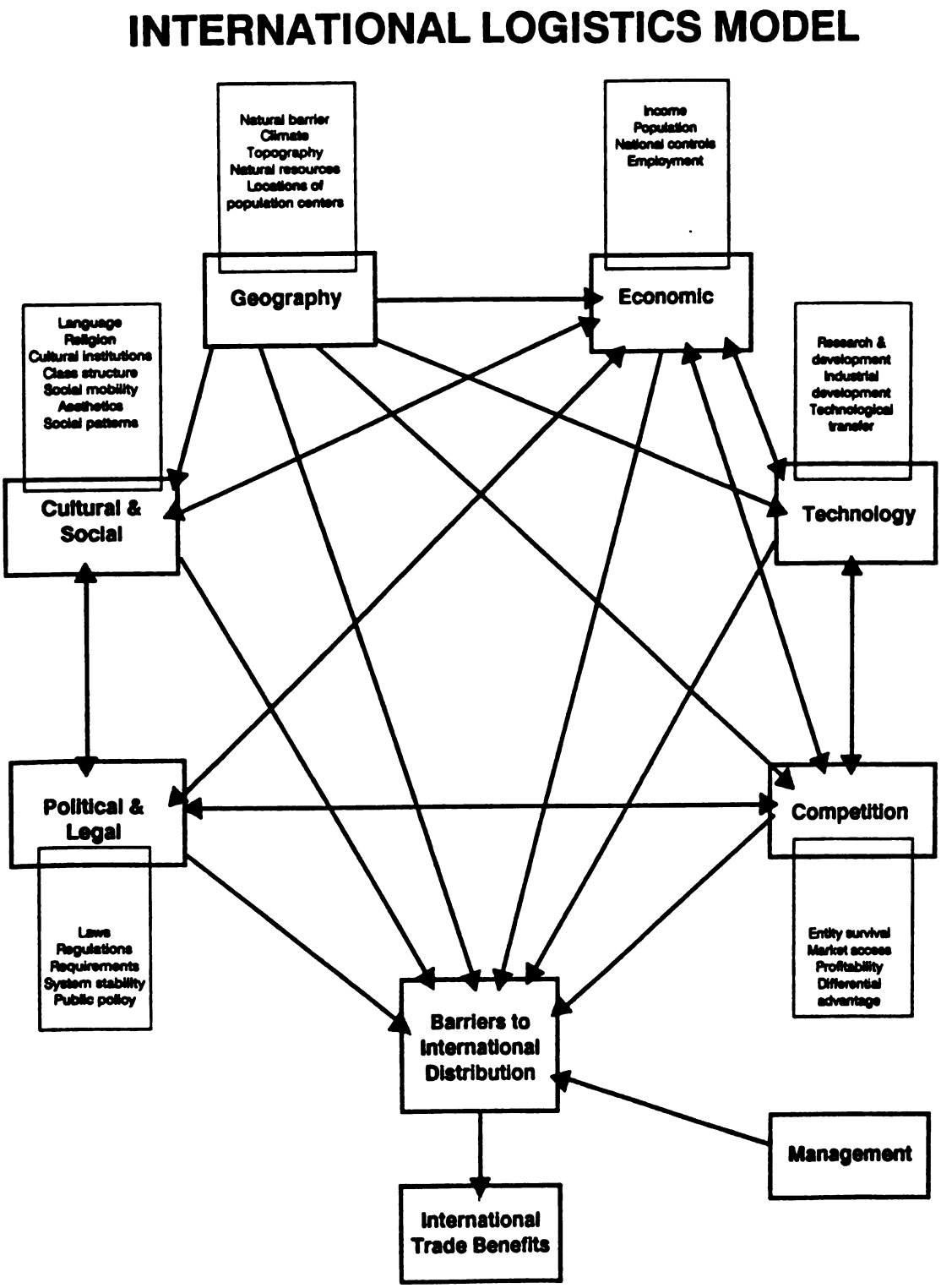
The model is derived from the relevant literature. The underlying factors form a composite of their resulting uncontrollable element. The interaction between the

uncontrollable elements is also derived from the literature and the eleven executive interviews. The uncontrollable elements create barriers to international trade which can deter the benefits of international trade. From the executive interviews it is know that marketing/logistics, production, and finance are the methods that management uses to overcome the barriers to international trade.

It is known from the literature that the uncontrollable elements and their underlying factors create barriers to international trade and it is believed that international logistics can be used as a resolution to some of the barriers. The uncontrollable elements and their underlying factors need to be analyzed and their possible resolutions analyzed and discussed. The model proposed is for the known uncontrollable elements and their underlying factors. As further uncontrollable elements are discovered throughout the course of this study the model will be expanded.

The model is based on the interactions between the uncontrollable elements and their underlying factors with other elements and their underlying factors. All the uncontrollable elements have an impact on the domestic exporting firm and act as barriers to international logistics. Management may be able to influence and therefore alter some of the uncontrollable elements and their underlying factors. The reason international trade

Figure 1


INTERNATIONAL LOGISTICS MODEL
Natural barrier
Climate
Topography
Natural resources
Locations of population centers
Geography
Income
Population
National controls
Employment
Economic
Language
Religion
Cultural institutions
Class structure
Social mobility
Aesthetics
Social patterns
Cultural & Social
Research & development
Industrial development
Technological transfer
Technology
Political & Legal
Laws
Regulations
Requirements
System stability
Public policy
Competition
Entity survival
Market access
Profitability
Differential advantage
Barriers to International Distribution
Management
International Trade Benefits

takes place, and that international logistics is required is that the domestic firm which exports receives benefits in excess of the costs of international trade and logistics.

Each uncontrollable element has various factors which have an impact on it. It is the interaction between the underlying factors of the various uncontrollable elements which must be understood for management to have any influence on the uncontrollable elements. The uncontrollable elements either alone, or in combination, act as barriers to international logistics. In the event that management can overcome the barriers created, it will do so only if the gain from overcoming the barriers exceeds the cost of overcoming them. The interaction between the six uncontrollable elements creates an environment which has continuing change for domestic exporting firm. To receive the benefits of international trade the domestic exporting firm's management must be able to function within the constantly changing environment of the uncontrollable elements. Management is able to function successfully within this changing environment by using the internal functions of marketing, logistics, production, and finance. These are the functions over which management has control and can therefore use to influence the uncontrollable elements. These functions allow management to compete in an unstable environment which is dominated by the uncontrollable elements.

Management's influence over the uncontrollable elements is limited to indirect methods. Since management can only control those functions within its own business, any effect it has on the uncontrollable elements is of only a secondary nature. Overcoming the barriers to international trade requires that management understand the nature of the barriers. The understanding of the barriers will allow management to gain greater control over the uncontrollable element. This increased control will enable the firm to increase its profits from international trade and concomitantly the firm will increase its international business. After the barriers are understood management can apply the logic of marketing/logistics, production, and finance to offset the impact of the uncontrollable elements and thereby reduce the barriers to international trade to resolvable problems.

MOTIVATION FOR TRADE BY DOMESTIC FIRMS

The domestic firm which exports does so in the belief that it can gain from such an exchange. The nature of the gain is usually in a monetary reward in the form of profit for the firm. The firm seeks a differential advantage from which it can earn a profit in a foreign market. The domestic firm is in competition for differential advantage (Alderson, 1957) with other domestic firms and firms from foreign countries. In determining whether to compete

internationally a firm analyzes the cost of competing internationally. During the process of its analysis the firm should consider the cost and benefits of international logistics. If the potential benefits received from international trade including the cost of international logistics exceed the potential costs of such trade then international trade will take place. When the costs of international trade and logistics exceed the potential benefits then international trade should not take place.

During the search for differential advantage the domestic firm should consider international logistics as a potential haven of advantages which have gone virtually unused. International logistics can aid the domestic exporting firm to overcome the uncontrollable barriers in a cost effective manner. The various uncontrollable elements have differing degrees of impact upon the international logistics function of the domestic firm. Each of the uncontrollable barriers requires a different strategy to overcome it. The domestic exporting firm must determine which barrier or barriers it desires to overcome and then devise a strategy to overcome it based upon its internal strengths without losing sight of its internal weaknesses.

Overseas markets offer many opportunities to domestic firms, despite the risks involved. International business opportunities cannot be undertaken safely without adequate planning (Crinkota, 1980). These plans include an

international logistics plan which is essential to assist the firm in obtaining the potential profit from international business. Product and marketplace are the basic catalysts of international business and international logistics is the link between them. The underlying essential element of international logistics is transportation. Transportation currently represents 7 - 15% of the total landed cost of an international order. An effective export program must include the cost of transportation in the planning stage to minimize the costs of the plan and maximize the potential profit from international business (Virdick, 1980). Effective utilization of the cost savings available in international logistics will allow the domestic firm to maximize its profits.

To further increase profits it is know that there are potential benefits to be realized from standardizing the various elements of marketing programs used to export to different countries. Areas which lend themselves to standardizing include: 1) packaging, 2) pricing, 3) distributing (logistics), 4) advertising, and 5) the product (Sands, 1979). Standardization will allow the firm to minimize its costs and therefore the potential gain can exceed the costs of international marketing and logistics.

PURPOSE OF DISSERTATION

The dissertation is aimed at identifying, classifying, and analyzing the uncontrollable elements and their underlying factors. After the uncontrollable elements and their underlying factors are discovered, classified, and analyzed, resolutions to the barriers created will be addressed. An attempt will be made to justify the model, previously introduced, through the research conducted for this dissertation. Any unknown uncontrollable elements and their underlying factors discovered will also be classified, analyzed, and resolved. The barriers to international business which are created by the uncontrollable elements and their underlying elements which are capable of being influenced by international logistics will be brought forth and the methods for their resolution will be discussed.

By classifying the uncontrollable elements and their underlying factors, and then categorizing their resolutions, management will be better able to become involved in international trade. International trade will allow the domestic exporting firm to increase its sales and profits. This leads to more employment and increased gross national product with all of its concomitant benefits as previously discussed. It is believed that international logistics can assist in the process of overcoming the barriers to international trade which are created by the uncontrollable elements and their underlying factors.

The importance of international business is becoming more apparent as the U.S. trade deficit increases and the capital markets react to the growing budget deficit. Internationalization of domestic businesses is receiving more attention from government agencies and universities. The trend towards increased international trade has manifested itself in campaigns to 'buy American' and decrease the trade deficit with more exporting. Government agencies are available to aid the domestic business with its international business planning. This trend towards increased international business makes it imperative to understand the impact of the uncontrollable elements and their underlying factors. Methods to influence the uncontrollable elements become extremely important for successful international trade. To influence the uncontrollable elements it is necessary to understand the interactions of their underlying factors and the impact they have on the uncontrollable elements.

International logistics is a method by which the uncontrollable elements and their underlying factors can be influenced. This dissertation offers a methodology by which international logistics can be used by the domestic exporting firm to successfully compete in international markets. The contribution to international trade offered by this dissertation fills a void which has not been previously addressed.

The existing literature combined with the executive interviews will be used to formulate a methodology for the study of the questions raised in Chapter 1 and confirmed in Chapter 2. In Chapter 3 the methodology will be discussed and implemented.

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CHAPTER THREE

Methodology

INTRODUCTION

The research questions in this study as defined in Chapter One are designed to: (1) identify barriers to international logistics encountered by U.S. firms which export: (2) classify barriers discovered into controllable and uncontrollable elements: (3) identify factors which comprise these barriers and the interaction between the elements of these barriers: (4) identify influences that management has on uncontrollable elements; and (5) suggest resolutions to uncontrollable elements and barriers they create.

The literature review revealed that barriers to international logistics created by controllable elements have been extensively discussed. The barriers to international logistics created by uncontrollable elements have only been mentioned in the literature but not discussed for resolution. Uncontrollable barriers identified through the literature are: competition, geography, legal and political environment, cultural and social environment, technology, and economic environment. Other uncontrollable elements which act as barriers to international logistics have not been significantly investigated.

RESEARCH METHODOLOGY

The research methodology is designed to obtain specific information from international logistics executives through the use of a survey questionnaire. Questionnaire contents were determined through a review of the relevant literature, interviews with five logistics professors, and in interviews of eleven international logistics executives.

PROCESS

Conceptualization of information necessary for a successful study of international logistics commenced with discussions of the proposed research with five professors. They were: Professors 1) Donald Taylor of Michigan State University, 2) John Hazard of Michigan State University, 3) Andreas Faulkenberg of the University of Norway, 4) Johann Arndt of the University of Norway; and 5) Professor Arieh Goldman of Hebrew University in Israel. Following these discussions, a framework for initiating the study was conceived. This framework became the basis for eleven in-depth interviews of international logistics experts.

After the executive interviews were completed and the information obtained was analyzed, it was determined that the uncontrollable elements of international logistics were an area which required further investigation. The World Trade Institute at the World Trade Center was contacted for additional information about domestic firms which export.

Based upon the academic and executive interviews, the literature review, and information obtained from the World Trade Institute, a questionnaire was designed. The questionnaire requested specific information about uncontrollable international logistic barriers encountered by the answering firm and the manner in which that firm resolved the barriers. The questionnaire also provides demographic information about the answering company.

SAMPLE DESIGN

There are more than 30,000 businesses in the United States which are involved in exporting to foreign countries (U.S. Department of Commerce, April 1983). For purpose of this study, a sample of executives identified by either the World Trade Institute or The Council of Logistics Management was selected and a questionnaire was used as the research instrument.

The sample was chosen from the lists of export executives provided by the World Trade Institute at the World Trade Center and the Council of Logistics Management. These lists do not discriminate by geographical location of exporting firms nor place of destination of the export. Further, these lists do not indicate whether the exports are direct or indirect. A simple random sampling technique was used.

SAMPLE SIZE

Sixteen thousand (16,000) invitations were initially distributed to each of the persons identified in lists provided by the World Trade Institute (11,000 persons) and the Council of Logistics Managers (5,000 persons). The invitation served as a recruiting and data collection device. Persons indicating their willingness to participate in the study were sent a cover letter outlining the study objectives, copies of sanctioning letters from the World Trade Institute and Michigan State University, and a copy of the questionnaire (See Appendix). Persons who did not return a questionnaire in 30 days were sent a second cover letter calling them to action and a second copy of the questionnaire. Persons who did not respond to the second questionnaire within 20 days were telephoned to remind them to respond. A total of 186 completed questionnaires were returned, which is approximately one percent.

In order to generalize the results of the sample to the population of all exporters, a confidence interval must be calculated for each sample estimate of the unknown population parameter. The confidence interval is mathematically given by the sampling error multiplied by the t value for the acceptable error. For alpha=.05 or the 95% confidence level, the t value is 1.96. Kish gives the formulation for sampling error as:

$$\text{Sampling Error} = (1 - \frac{n}{N})^{1/2} \; S/ \; (n^{1/2})$$

(Kish, 1965)

This formula was calculated for each rating scale question to generate confidence intervals about the mean. For example, the confidence interval for the mean of the first question which deals with the importance of suitable transportation networks was calculated as follows:

Mean = 3.82

t value 1.96

$$\text{Sampling error} = (1 - \frac{186}{30,000})^{1/2} \; 1.16/(186^{1/2})$$

$$= .9968 \cdot .0850$$

$$= .0848$$

$$1.96 \cdot .0848 = .166$$

$$3.82 \pm .166$$

$$= 3.65 \text{ to } 3.98$$

QUESTIONNAIRE DESIGN

The rationale for a mail questionnaire is the fact that the information requested is too complex for a telephone interview and that personal interviews are too time consuming and costly. The questionnaire in this case requires the survey participant to provide a minimum of 131 data points up to a maximum of 223 data points. Given the low response rates to mailed questionnaires, great care must be given to questionnaire design and presentation. A draft of the questionnaire was field tested prior to actual use to

determine the perceived level of difficulty and estimated time for completion. Traditional low response rates to mailed questionnaires and differences between responding and non responding persons present a bias to the analysis of the data collected. Further, there is not any assurance that the proper person answered the questionnaire. However, questionnaires allow for the gathering of information from many more executives than would be possible with personal interviews. The ability to obtain more responses to the same questions allows for more accuracy in the analysis of the information gathered.

Through the use of rating scales, the questionnaire was designed to determine perceived levels of importance and controllability of previously identified barriers to international logistics. Items rated were derived from the six uncontrollable elements and their underlying factors previously discussed. Table 4 outlines questionnaire items and the specific element and underlying factor each item represents.

In addition, the questionnaire was designed to identify means of resolving barriers. It was proposed that resolutions to the uncontrollable elements which may be barriers to international logistics could be derived from the functional areas of marketing/logistics, production and/or finance. These categories were determined from the

literature review and the initial personal interviews of logistics executives.

The marketing/logistics resolution to an international logistics barrier is based on the exporting companies ability to penetrate a market despite barriers to marketing and logistics in the foreign country. The barriers caused by cultural/social, legal/political, competition, and geographic factors could all be resolved or partially resolved by improving or increasing marketing/logistics efforts. The barriers caused by competition and technology are production based and could be resolved or partially resolved by production adjustments. Further, the barriers caused by economics are financially based and could be resolved or partially resolved by the more efficient use of financial resources. In some cases, more than one type of resolution is employed to resolve a single barrier. Therefore, the questionnaire allows for multiple responses to the resolution questions.

The questionnaire also elicited respondent demographic information, such as company size, and number of employees. In addition, the original request to participate included information on geographic areas served and product characteristics. This information was used to determine if there were different levels of perceived importance and controllability as a function of respondent company characteristics.

Table 4

CROSS REFERENCE TO QUESTIONNAIRE

BY

QUESTION NUMBER

Question Number	Format of Question	Elements	Underlying Factors
	suitability of...		
1	transportation netwks.	tech	ind dev
2	labor pool	cul/soc	cul/inst
	issues concerning...		
3	collusion	leg/pol	law
4	discrimination	leg/pol	law
5	pricing	leg/pol	requiremnt
6	trade agreements	leg/pol	sys stab
7	import/export	leg/pol	requiremnt
8	trademarks, copy-rights & patents	leg/pol	sys stab
9	warranty	leg/pol	public pol
10	environmental protection	leg/pol	regulation
	conditions related to...		
11	language	cul/soc	language
12	religion	cul/soc	religion
13	education level	cul/soc	cul/inst
14	per capita income	eco	income
15	location of population centers	geo	population
16	topography	geo	topography
17	climate	geo	climate
18	natural resources	geo	natural resources
19	competitive environment	compe	entity sur
20	use of current R&D in foreign countries	tech	R&D
21	access to information	comp	dif adv
22	market entry	comp	mkt access

Table 4 (cont'd)

Question Number	Format of Question	Elements	Underlying Factors
23	social mobility	cul/soc	class struc/soc mobility
24	natural barriers	geo	nat barriers
25	demographics	eco	population
	compatibility of...		
26	distribution networks	comp	market access
27	material handling systems	tech	ind dev
28	communication systems	tech	ind dev
29	product servicing	tech systems	ind dev
30	work ethic	cul/soc	soc pattern
	finding...		
31	insurance	eco	profit
32	appropriate warehousing	tech	ind dev
33	agents/brokers	comp	market access
	forecasting...		
34	currency values	eco	nat controls
35	labor costs	eco	employment
36	tariffs	eco	nat controls
37	consumer preferences	cul/soc	soc patterns
38	product demand	comp	profit
	practices concerning...		
39	informal business	cul/soc conduct	soc pattern
40	promotional methods	cul/soc	aesthetics

ANALYSIS PLAN FOR EACH RESEARCH QUESTION

The following sections describe the analysis that was completed for each research question.

What are the uncontrollable elements?

The exporting companies were asked to rate their ability to control the influence of each of 40 potential barriers (from literature review and in depth personal interviews). Each potential barrier was rated on a 1 to 5 scale, where 1 was stated to mean completely controllable and 5 was stated to mean completely uncontrollable. Those barriers with an average rating of 3.5 or higher were considered to be uncontrollable.

What are the factors underlying each of the uncontrollable elements?

An exploratory factor analysis of the controllability ratings was conducted to identify the dimensions of the underlying perceptions of control of the 40 potential barriers to international logistics. An exploratory analysis is preferred over confirmatory analysis in this study since there is currently no theoretical basis for specifying the dimensions of controllability. Instead, this study attempts

to discover those dimensions, therefore making an exploratory analysis appropriate.

What are the relative priorities of the factors underlying the uncontrollable elements?

One measure of the relative priorities of the underlying factors is the amount of variability accounted for by that factor. Within a factor analysis, the proportion of variance accounted for by any factor is specified as the relative size of the eigenvalue associated with each factor of the original unrotated principal component solution. The sum of eigenvalues of selected factors divided by the number of variables was used as one indicator of the relative importance of the set of factors.

A second indicator of the importance of the factors was derived by averaging the importance ratings for the barriers that served as indicators of the underlying controllability factors.

What resolutions to the uncontrollable elements and factors have been used?

The study has permitted the responding firms to select resolutions that they actually used from general items that

originated from three possible categories: (1) Marketing/logistics resolution, (2) Production resolutions, and (3) Financial resolutions. The analysis was conducted at the category level in that percentages are provided that indicate which proportion of the total resolutions are categorized as Marketing/Logistics, Production, and Financial.

What resolutions of the uncontrollable elements and factors should be used.

This research question was not addressed in the questionnaire, but instead is addressed by a review of the answers from the questionnaire. It becomes part of the conclusions contained in the final chapter of this study.

FACTOR ANALYSIS

Factor analysis is a class of statistical procedures designed to either: 1) reduce a large number of variables into more usable components, or 2) identify or specify the structure of a set of variables, allowing an inference about the components which underlay responses to a variety of questions. In the first part, the data is merely reduced, usually into orthogonal factors. In this form they can be used as convenient input into other statistics. Orthogonal factors are by definition uncorrelated which obviates the

'multicollinearity' problem associated with the use of correlated input for 'regression-based' statistical techniques (Morrison, 1976).

Another purpose of factor analysis is to identify (as is the case with exploratory factor analysis) or specify (as is the case with confirmatory factor analysis) the nature of the components underlying responses to a set of questions. By identifying or specifying the structure of the responses, the researcher infers the 'factors' or 'causes' for the observed responses. This purpose in factor analysis can be viewed as model specification purpose, where a measurement model is either discovered or confirmed. The analytical distinction between the data reduction and the model specification purposes of the factor analysis is that for data reduction an attempt is made to faithfully reproduce all the variance during the reduction; while in model specification an attempt to remove all measurement error is made. Measurement error is the influence of something that is not of specific concern to the issue at hand (Hair, Anderson, Tatham, Grablowsky, 1979). To achieve this distinction technically for data reduction the input correlation matrix is analyzed with matrices on the diagonal which requires the factor analysis to account for all of the variance. To achieve this distinction for model specification, the analysis is performed with the

'communalities' on the diagonal to remove the measurement error.

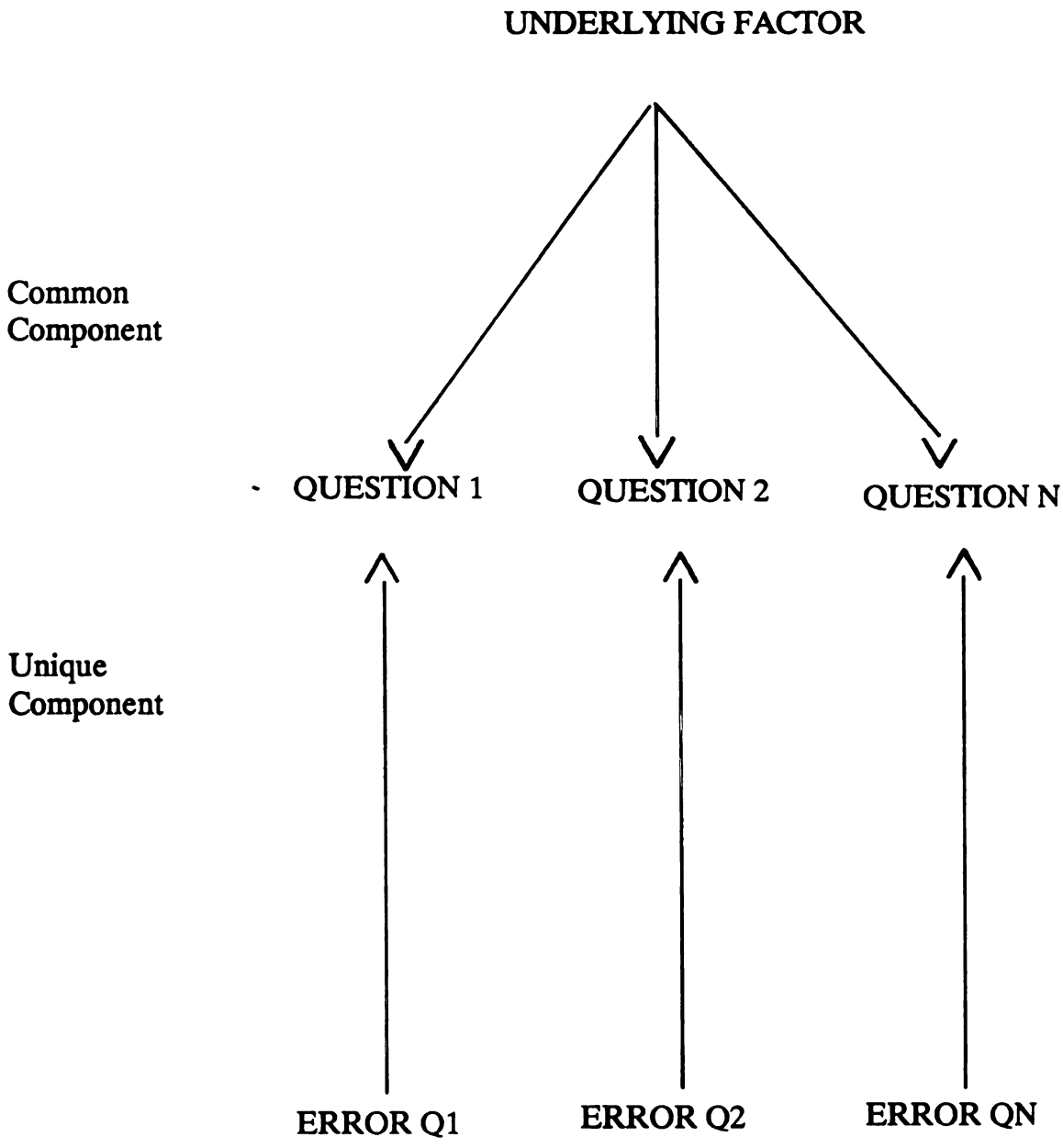
Measurement Model

A principal components analysis was performed because it conforms to a measurement model (see Figure 2) that assumes that the response to any given question is a combination of a common component and a unique component. The common component is that variation shared by one or more questions that results from an underlying factor or dimension. The unique component is that portion of the response that is due to an idiosyncratic response to any given question. This approach will identify those factors underlying the exporting manager's perceptions of control of the barriers presented.

In performing this model specification, or principal factors analysis, there is the additional option of permitting an oblique solution, where the factors may be correlated. This also allows the use of an orthogonal solution where the factors may be forced to be uncorrelated. Since the true structure of the factors is being sought, there is not any reason to restrict the solution to orthogonality. The decision of whether to use an orthogonal or oblique solution was determined after an inspection of the factor structures' intercorrelation obtained from the oblique solution.

Figure 2

MEASUREMENT MODEL



CONCLUSION

The research methodology described in this chapter provides for the gathering and analysis of necessary information to address the research questions posited in Chapter 1. The questions posed in the questionnaire were the result of the literature review discussed in Chapter 2 and in-depth personal interviews of international logistics executives. To facilitate responses and eliminate bias, survey questions were categorized into logical groups. Each category included questions derived from the different elements of barriers of trade. The type of questions used include rating scales and closed multiple response.

The use of exploratory rather than confirmatory factor analysis is based on fact that there is not any compelling theoretical basis for specifying a structure for the data. Confirmatory factor analysis is used when theory dictated that specific structure will be found for the data. Since this is the first study into the area of the uncontrollable elements and their underlying factors in international distribution, and further, since this study analyzed their resolutions, it was anticipated that the data would provide a basis for the groupings of barriers into a model.

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BIBLIOGRAPHY

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CHAPTER FOUR

Analysis of Data

INTRODUCTION

A total of 289 persons were recruited to participate in the study. These persons completed and returned the business reply card including background information on their company. This represents a 1.8 percent response to the invitation mailing. Of these 289 persons, 186 submitted a completed questionnaire or 1.1 percent of the total list. Alternatively, 64 percent of those recruited actually participated in full by completing the questionnaire.

This chapter includes a discussion of the data analysis. Responses to importance and controllability rating scales were examined by mean scores and factor analysis. The focus of this study is on first order factor analyses for importance and controllability rating scales. However, second order factor analyses were conducted for the sole purpose of verifying that the original logistics model could not be confirmed with empirical data. In addition, the intercorrelation analysis of first order importance and controllability factors was conducted to insure that respondents were answering importance and controllability questions independently.

Responses to the resolution questions were analyzed by comparing the percentages of respondents selecting each of

four possible solutions. Multivariate and univariate analyses of variance were used to determine if there were significant differences in responses based on various respondent characteristics.

DATA ANALYSIS

The information provided on the business reply card portion of the invitation and on the questionnaire was stored in a data base for reference and analysis. The original analyses were directed to the reduction of information provided on the 40 factor questionnaire form. The multivariate statistical procedure of factor analysis was utilized to provide a basis for determining the underlying dimensions of respondents' perceptions concerning the barriers to international distribution.

Prior to performing the factor analysis on responses to importance and controllability questions, an inspection of responses revealed a substantial amount of missing data. The amount of missing data ranged from a low of none (all respondents provided an answer) for nine (9) questions to a high of 4.3 percent for questions dealing with the importance of the labor pool and import/export issues. A total of 39 different individuals failed to provide one or more responses to the Importance items. Sixty-one (61) respondents failed to answer one or more of the Controllability items on the questionnaire. Only the first

controllability item was answered by all respondents and six (6) percent of respondents failed to answer items dealing with the controllability of warranties and forecasting product demand. Also, there were several other items where the missing data rate was found to be between four and five percent and higher than the missing data rate for the Importance items.

In view of the substantial amount of missing data and the fact that multivariate statistical procedures will use only complete data records for analysis purposes, it was decided to use a multiple regression procedure to provide estimates for these omitted responses. This is more accurate than simply using averages, since the multiple regression technique takes into consideration how respondents completed other questions, and estimates the missing response by comparing the responses of other questionnaires with similar response patterns. By utilizing the estimates provided by the program, it would be possible to use all returned sets of questionnaire responses in the factor analyses.

Respondents were asked to indicate their actions taken in attempt to resolve the perceived barriers simply by checking a solution if appropriate. Possible solutions include financial, production, and marketing/logistics, derived from interviews with industry experts. The data entry rule of using a check coded as a "one" and a blank

response coded as a "zero" was followed. Using this dichotomous data categorization approach meant that there was no need to worry about missing data. In addition, the dichotomous approach treats each solution independently, allowing comparisons between solutions within each question.

The Principal Components Method for the reduction of intercorrelations between questionnaire questions was utilized with "one's" in the diagonal to provide the initial solution to the factor analysis of each set of items. (The term "questions" is used in place of Questionnaire term "Factors" as descriptors of barriers to international distribution to preclude confusion as to whether the discussion related to the factors as questionnaire items or factors as underlying dimensions of the scale.) The number of factors retained for rotation to oblique solution was based upon the Kaiser criterion of the number of associated eigenvalues greater than one and the inspection of the Scree Plot of eigenvalues. The selected factors were then submitted to a Promax oblique rotation solution to allow for the possibility of correlation between rotated factors. Interpretation of factors will be based upon those questions (barrier to distribution factors) with factor loadings of 0.40 or higher. These factor loadings are considered to represent the correlation with the particular question with the derived factor.

The results of the separate factor analyses are presented in the following section by the focus of the respective question (factor). The next section includes the intercorrelations between factors obtained in the rotated solutions for importance and controllability. The final section provides for organizational comparisons of computed factor scores. Analyses of variance were performed on the factor scores using the respondent supplied organizational characteristics as classification variables.

STATISTICAL ANALYSIS OF IMPORTANCE RATINGS

The means and standard deviation summary statistics of the importance ratings provided by respondents are presented in Table 5. Average ratings for each question are presented graphically as Figure 3. Confidence intervals for mean ratings are also presented in Table 5. The finite population correction, derived from sampling theory, was applied to the estimate of a standard error for calculating 95 percent confidence limits about the mean, (ie finite population correction = $(1 - \frac{n}{N})$) Because N = 30,000 and n = 186, the finite population correction had no effect on changing computed limits of the interval about the mean.

Table 5

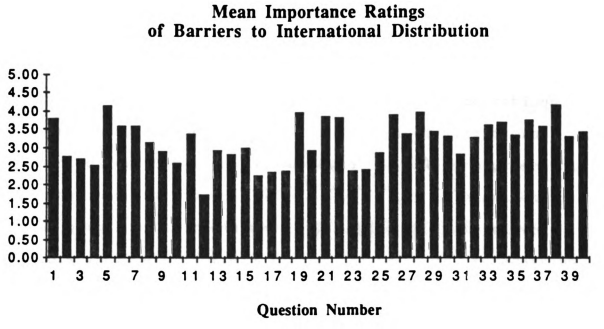
SUMMARY STATISTICS AND 95% CONFIDENCE INTERVAL FOR MEAN IMPORTANCE RATINGS OF BARRIERS TO INTER

	Mean	Standard Deviation	95% Confidence Interval Lower	Upper
Forecasting product demand	4.18	0.95	4.04	4.32
Issues concerning pricing	4.16	0.95	4.02	4.30
Compatibility of comm. sys.	3.98	1.06	3.82	4.13
Conditions related to comp.	3.97	0.93	3.84	4.11
Compatibility of distrib. networks	3.91	1.09	3.75	4.07
Conditions related to information access	3.86	1.04	3.70	4.00
Conditions relating to market entry	3.85	1.06	3.70	4.01
Suitability of Transportation	3.82	1.16	3.65	3.98
Forecasting tariffs	3.77	1.13	3.61	3.94
Forecasting currency values	3.69	1.11	3.53	3.85
Finding agents/brokers	3.65	1.31	3.46	3.84
Issues concerning import/ export	3.61	1.13	3.45	3.78
Iss. concerning trade agreement	3.60	1.20	3.43	3.78
Forecasting preferences	3.59	1.26	3.41	3.77
Compatability of prod. servicing systems	3.47	1.24	3.29	3.65
Practices concerning promotions	3.45	1.08	3.30	3.61
Conditions related to language	3.40	1.18	3.23	3.57
Compatibility of material handling systems	3.40	1.25	3.22	3.58
Forecasting labor costs	3.36	1.19	3.19	3.53
Compatibility of work ethic	3.32	1.22	3.14	3.49
Prac. concern. informal business conduct	3.32	1.08	3.16	3.47
Finding Warehousing	3.30	1.29	3.11	3.48
Issues concerning trademarks	3.16	1.40	2.95	3.36
Conditions related to location of population centers	3.01	1.24	2.84	3.19
Conditions related to foreign R & D	2.96	1.28	2.78	3.15

Table 5 (cont'd)

	Mean	Standard Deviation	95% Confidence Interval Lower	Upper
Conditions related to education	2.95	1.23	2.77	3.13
Issues concerning warranty	2.91	1.30	2.72	3.09
Conditions related to demographics	2.88	1.13	2.72	3.05
Findings insurance	2.86	1.29	2.68	3.05
Conditions related to income	2.83	1.22	2.66	3.01
Suitability of labor pool	2.78	1.21	2.60	2.95
Issues concerning collusion	2.70	1.38	2.50	2.90
Issues concerning environment	2.61	1.33	2.42	2.80
Issues concerning discrimination	2.54	1.33	2.36	2.74
Conditions related to natural barriers	2.43	1.18	2.31	2.66
Conditions related to natural resources	2.41	1.26	2.23	2.59
Conditions related to social mobility	2.40	1.09	2.25	2.56
Conditions related to climate	2.38	1.20	2.21	2.56
Conditions related to topography	2.28	1.26	2.10	2.46
Conditions related to religion	1.75	1.04	1.60	1.90

Figure 3


Mean Importance Ratings
of Barriers to International Distribution
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
Question Number

Two questions (No's 5 and 38) had absolute mean ratings of over 4.0 thus indicating a perception of high importance. These questions related to pricing (No. 5) and to product demand (No. 38). The question related to religion (No. 12) was rated to be the least important with an overall mean of 1.75.

Results of Factor Analysis of Importance Ratings

The original factoring of the intercorrelation of the 40 importance items identified 11 factors for further analysis. Intercorrelations among the importance ratings are presented in the Appendix. The total of 11 factors accounted for 65 percent of the total covariation present in the responses of the 186 individuals to the 40 questions. Three questions that did not load highly in these eleven factors include conditions related to religion, forecasting tariffs, and forecasting product demand. This indicates that these questions were answered independently without significant shared variance. Communalities of the forty questions ranged from a low of 0.51 to a high of 0.77. Application of the Promax oblique rotation to the 11 factor solution resulted in inter-factor correlations ranging from a low of approximately 0.00 to a high of in the 0.50's.

These findings lend support for the decision to provide an oblique solution to the factors based upon Importance item ratings. The resultant factor solution for importance items by factor as Table 6. Each factor was assigned a name to represent the questions of which it is comprised.

Table 6

FIRST ORDER FACTOR ANALYSIS
IMPORTANCE RATINGS

Factor 1: Channels of Distribution

Item	Loading
1. Suitability of transportation networks	.50
6. Issues concerning trade agreements	.67
26. Compatibility of distribution networks	.73
27. Compatibility of material handling systems	.72
28. Compatibility of communication systems	.53

Factor 2: Financial Management

Item	Loading
31. Finding Insurance	.58
32. Finding appropriate warehousing	.74
33. Finding warehousing agents/brokers	.40
34. Forecasting currency values	.62
35. Forecasting labor costs	.74

Factor 3: Social/Cultural

Item	Loading
15. Conditions related to location of population centers	.54
23. Conditions related to social mobility	.71
24. Conditions related to natural barriers	.60
25. Conditions related to demographics	.80

Factor 4: Geography

Item	Loading
16. Conditions related to topography	.77
17. Conditions related to climate	.82
18. Conditions related to natural resources	.60

Factor 5: Law

Item	Loading
7. Issues concerning import/export	.53
8. Issues concerning trademarks, copyrights and patents	.79

Table 6 (cont'd)

9. Issues concerning warranty	.74
10. Issues concerning environment protection	.47

Factor 6: Competition/Marketing

Item	Loading
5. Issues concerning pricing	.54
19. Conditions related to competitive environ.	.72
21. Conditions related to access to information	.81
22. Conditions related to market entry	.52

Factor 7: Labor Support

Item	Loading
2. Suitability of labor pool	.64
20. Conditions related to utilization of current R&D in foreign countries	.65
29. Compatibility of product servicing systems	.51
30. Compatibility of work ethic	.53
35. Forecasting labor costs	.45

Factor 8: Ethics

Item	Loading
3. Issues concerning collusion	.87
4. Issues concerning discrimination	.80

Factor 9: Business Practices

Item	Loading
39. Practices concerning informal business conduct	.80
40. Practices concerning promotional methods	.75

Factor 10: Communications

Item	Loading
11. Conditions related to language	.74
13. Conditions related to education level	.69

Factor 11: Demand Assessment

Item	Loading
14. Conditions related to per capita income	.74
37. Forecasting consumer preferences	.42

The intercorrelations among the 11 oblique factors are presented in Table 7.

Table 7

INTERCORRELATION OF IMPORTANCE FACTORS

	1	2	3	4	5	6	7	8	9	10	11
1	1.00										
2	0.44	1.00									
3	0.22	0.14	1.00								
4	0.22	0.24	0.28	1.00							
5	0.34	0.21	0.25	0.20	1.00						
6	0.34	0.26	0.25	0.20	0.22	1.00					
7	0.12	0.12	0.34	0.16	0.13	0.15	1.00				
8	0.21	0.04	0.25	0.17	0.27	-.03	0.11	1.00			
9	0.27	0.28	0.13	0.16	0.13	0.30	0.22	0.00	1.00		
10	0.01	-.03	0.20	0.15	-.03	0.00	-.10	0.09	0.08	1.00	
11	0.12	0.08	-.07	-.06	0.09	0.07	0.08	0.04	0.12	0.18	1.00

In view of several sizable interfactor correlations, a second order factor analysis was performed on factor scores

obtained from the 11 factor Promax solution. The primary purpose for this analysis was to attempt to reproduce the original six factor model, proposed in Chapter two. The Kaiser criterion was relaxed in this second order analysis to allow for six separate factors. Again an oblique rotation was performed to allow for association among factors.

The six factor higher order solution accounted for 73 percent of the variance among the 11 importance factor scores. The individual barriers comprising factors with high second order factor loadings are listed in Table 8. In addition, the original elements (from the literature search) from which each barrier was derived are listed. As shown, the new factors consist of combinations of barriers from the original elements, thus proving that the original model cannot be validated through primary research.

Table 8

SECOND ORDER FACTOR ANALYSIS
IMPORTANCE RATINGS

	Original Element
Factor 1	
Suitability of transportation networks	Technology
Issues concerning trade agreements	Legal/Political
Compatibility of	
distribution networks	Competitive
material handling systems	Technology
communications systems	Technology
Issues concerning	
import/export	Legal/Political
trademarks, copyrights and patents	Legal/Political
warranty	Legal/Political
environmental protection	Legal/Political
pricing	Legal/Political
Conditions related to	
competitive environment	Competition
access to information	Competition
market entry	Competition
Practices concerning	
informal business conduct	Cultural/Social
promotional methods	Cultural/Social
Factor 2	
Issues concerning	
import/export	Legal/Political
trademarks, copyrights, and patents	Legal/Political
warranty	Legal/Political
environmental protection	Legal/Political
collusion	Legal/Political
discrimination	Legal/Political

Table 8 (cont'd)

Factor 3	
Conditions related to	
location of population centers	Geography
social mobility	Cultural/Social
natural barriers	Geography
demographics	Economics
utilization of current R&D in foreign countries	Technological
Suitability of labor pool	Cultural/Social
Compatibility of product servicing systems work ethic	Cultural/Social
Forecasting labor costs	Economic
Factor 4	
Finding	
insurance	Economic
appropriate warehousing	Technology
warehousing agents/brokers	Competition
Forecasting	
currency values	Economic
labor costs	Economic
Conditions related to	
topography	Geography
climate	Geography
natural resources	Geography
Factor 5	
Conditions related to per capita income	Economic
Forecasting consumer preferences	Cultural/Social
Factor 6	
Practices concerning	
informal business conduct	Cultural/Social
promotional methods	Cultural/Social

The original development of the questionnaire proceeded from a conceptual development that barriers to international distribution could be subsumed under six different categories: (1) Geography; (2) Economic; (3) Cultural and Social; (4) Political and Legal; (5) Competition; and (6) Technology. The finding of the second order six factor solution indicates that the original categorization of barriers does not coincide with the perceptions of respondents. Having determined this, the remainder of this analysis will focus on the eleven factor solution of the first order factor analysis.

STATISTICAL ANALYSIS OF CONTROLLABILITY RATINGS

The means and standard deviation summary statistics of the controllability ratings provided by respondents are presented in Table 9. Confidence intervals for mean ratings for controllability items are also presented in Table 9. Average controllability ratings are presented graphically in Figure 4.

Table 9

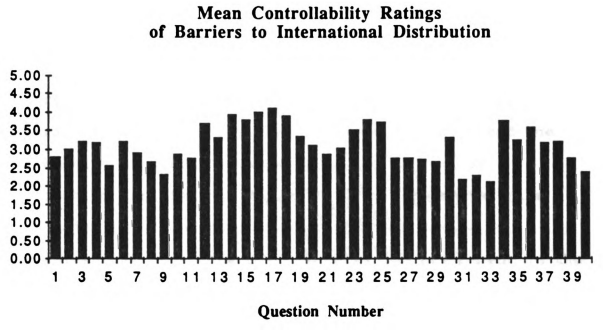
SUMMARY STATISTICS AND 95% CONFIDENCE INTERVAL FOR MEAN CONTROLLABILITY RATINGS OF BARRIERS TO INTERNATIONAL TRADE

	Mean	Standard Deviation	95% Confidence Interval Lower	Upper
Conditions related to climate	4.10	1.29	3.91	4.29
Conditions related to topography	4.03	1.23	3.85	4.21
Conditions related to income	3.93	1.19	3.75	4.10
Conditionss related natural resources	3.90	1.31	3.71	4.09
Conditions related to population centers	3.82	1.35	3.62	4.02
Conditions related to natural barriers	3.82	1.26	3.64	4.01
Forecasting currency values	3.76	1.21	3.58	3.94
Conditions related to demographics	3.75	1.14	3.58	3.92
Conditions related to religion	3.72	1.34	3.52	3.92
Forecasting tariffs	3.61	1.14	3.45	3.78
Conditions related to social mobility	3.54	1.12	3.38	3.70
Conditions related to competition	3.37	0.97	3.23	3.51
Conditions related to education	3.32	1.28	3.13	3.51
Compatibility of work ethic	3.32	1.14	3.15	3.48
Forecasting labor costs	3.26	1.00	3.11	3.40
Issues concerning trade agreements	3.24	1.13	3.07	3.40
Forecasting product demand	3.24	0.86	3.12	3.37
Issues concerning collusion	3.23	1.22	3.05	3.41
Issues concerning discrimination	3.19	1.25	3.01	3.38
Forecasting preferences	3.18	1.03	3.04	3.34
Conditions related to foreign R & D	3.12	1.15	2.96	3.29
Conditions related to market entry	3.05	1.00	2.90	3.19
Suitability of Labor Pool	3.02	1.14	2.86	3.19
Issues concerning import/ export	2.90	1.02	2.75	3.05

Table 9 (cont'd)

	Mean	Standard Deviation	95% Confidence Interval Lower	Upper
Issues concerning environment	2.87	1.11	2.70	3.03
Conditions related to info access	2.87	0.99	2.73	3.02
Suitability of Transportation	2.82	1.09	2.66	2.98
Conditions related to language	2.79	1.21	2.61	2.96
Compatibility of material handling	2.79	1.12	2.63	2.96
Compatability of distribution networks	2.78	1.07	2.62	2.94
Practices concerning informal conduct	2.78	1.09	2.62	2.94
Compatibility of communication systems	2.73	1.05	2.58	2.88
Compatibility of product servicing systems	2.68	1.02	2.53	2.83
Issues concerning trademarks	2.66	1.10	2.50	2.82
Issues concerning pricing	2.56	0.99	2.41	2.70
Practices concerning promotions	2.39	0.97	2.25	2.53
Issues concerning warranty	2.33	1.19	2.17	2.49
Finding Warehousing	2.30	0.95	2.16	2.44
Finding insurance	2.20	1.07	2.05	2.36
Finding agents/brokers	2.14	0.99	1.99	2.28

Figure 4


Mean Controllability Ratings
of Barriers to International Distribution
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
Question Number

Inspection of mean ratings for the 40 controllability questions revealed that 11 had means of greater than 3.5 which indicated high degree of uncontrollability. These factors as barriers to international distribution were considered to be least controllable by business organizations in the United States involved in international trade. These questions (with question number given in parentheses) were related to the conditions of religion (No. 12), per capita income (No. 14), location of population centers (No. 15), topography (No. 16), climate (No. 17), natural resources (No. 18), social mobility (No. 23), natural barriers (No. 24), demographics (No. 25), and the forecasting of currency values (No. 34) as well as forecasting tariffs (No. 36). It is noteworthy that the vast majority of uncontrollability factors relate to variables that cannot be controlled by the government in the country with which trade is to be conducted.

Results of Factor Analysis of Controllability Ratings

The original factoring of the intercorrelation of the 40 controllability questions again resulted in the decision to retain 11 factors for further analysis. The intercorrelations among the 40 controllability ratings are included in the Appendix. The 11 factors retained accounted for 68 percent of the total covariation present in the responses of the 182 individuals to the 40 questions. (A

total of 4 individuals were dropped from this analysis because of a failure to answer more than 10 of the questions.) Two questions that did not load highly in these eleven factors include issues concerning pricing and conditions related to utilization of current research and development in foreign countries. This indicates that answers to these questions were not related to or influenced by responses to other questions. Communality estimates for the 40 controllability questions were similar to those observed for the importance questions ranging from 0.49 to 0.80. Application of the Promax oblique rotation to the 11 factor solution resulted in inter-factor correlations ranging from a low of approximately 0.00 to a high in the 0.30's. While these correlations for controllability questions are substantially lower than those obtained from the solution for Importance questions, the decision was to retain the oblique solution to provide maximum comparability to the factor solution based upon ratings for Importance questions. The resultant controllability factor solution and descriptive names for each factor are presented in Table 10.

Table 10

FIRST ORDER FACTOR ANALYSIS
CONTROLLABILITY RATINGS

Factor 1: Geographical/Cultural

	Item	Loading
12.	Conditions related to religion	.67
13.	Conditions related to education level	.69
14.	Conditions related to per capita income	.83
15.	Conditions related to location of population centers	.82
16.	Conditions related to topography.84	
17.	Conditions related to climate	.80
18.	Conditions related to natural resources	.92
23.	Conditions related to social mobility	.66
24.	Conditions related to natural barriers	.85
25.	Conditions related to demographics	.81
30.	Compatibility of work ethic	.40

Factor 2: Channels of Distribution

	Item	Loading
26.	Compatibility of distribution networks	.61
27.	Compatibility of material handling systems	.86
28.	Compatibility communication systems	.87
29.	Compatibility of product servicing systems	.66

Factor 3: Distribution Planning

	Item	Loading
6.	Issues concerning trade agreements	.42
11.	Conditions related to language	.42
31.	Finding insurance	.79
32.	Finding appropriate warehousing	.66
33.	Finding agents/brokers	.61

Factor 4: Financial Management

	Item	Loading
34.	Forecasting currency values	.68
35.	Forecasting labor costs	.73
36.	Forecasting tariffs	.74

Table 10 (cont'd)

Factor 5: Ethics

	Item	Loading
3.	Issues concerning collusion	.85
4.	Issues concerning discrimination	.83

Factor 6: Law

	Item	Loading
8.	Issues concerning trademarks, copyrights, & patents	.67
9.	Issues concerning warranty	.73
10.	Issues concerning environment protection	.53

Factor 7: Business Practices

	Item	Loading
39.	Practices concerning informal business conduct	.80
40.	Practices concerning promotional methods	.72

Factor 8: Marketing/Competition

	Item	Loading
19.	Conditions related to competitive environ.	.62
21.	Conditions related to access to information	.84
22.	Conditions related to market entry	.61

Factor 9: Demand Assessment

	Item	Loading
37.	Forecasting consumer preferences	.73
38.	Forecasting product demand	.75

Factor 10: Law

	Item	Loading
6.	Issues concerning trade agreements	.55
7.	Issues concerning import/export	.81
8.	Issues concerning trademarks, copyrights, & patents	.40

Table 10 (cont'd)

Factor 11: Distribution Implementation

Item	Loading
1. Suitability of transportation networks	.64
2. Suitability of labor pool	.82

Intercorrelation among first order controllability factors are presented as Table 11.

Table 11

INTERCORRELATIONS AMONG CONTROLLABILITY FACTORS

	1	2	3	4	5	6	7	8	9	10	11
1	1.00										
2	0.10	1.00									
3	-.07	0.34	1.00								
4	0.20	0.17	0.13	1.00							
5	0.20	0.09	0.07	0.00	1.00						
6	0.34	0.06	0.06	0.26	0.10	1.00					
7	0.18	0.11	0.09	0.10	-.12	-.05	1.00				
8	0.14	0.28	0.25	0.17	-0.02	0.06	0.23	1.00			
9	-.09	0.12	0.12	-.11	0.04	0.05	-.27	0.01	1.00		
10	0.13	0.22	0.21	0.18	-.03	0.16	0.16	0.10	-.01	1.00	
11	0.04	0.15	-.24	-.09	-.14	0.10	0.24	0.02	-.25	-.18	1.00

The second order factor analysis allowed for a six factor oblique solution utilizing the Promax rotation criterion. Again the Kaiser criterion of only selecting

eigenvalues greater than one was relaxed in order to examine the validity of the proposed six factor model of controllability factors.

The final solution accounted for 72 percent of the variance in the controllability factor scores. The individual barriers comprising factors with high second order factor loadings are listed in Table 12. In addition, the original elements (from the literature search) from which each factor was derived are listed. As shown, each second order factor solution is made up of combinations of the original elements, indicating, again, that the original model cannot be confirmed through primary research.

Table 12

SECOND ORDER FACTOR ANALYSIS
CONTROLLABILITY RATINGS

Factor 1	Original Element
Compatibility of	
distribution networks	Competition
material handling systems	Technology
communications systems	Technology
product servicing systems	Technology
Issues concerning trade agreements	Legal/Political
Conditions related to language	Cultural/Social
Finding	
insurance	Economic
appropriate warehousing	Technology
agents/brokers	Competition
Conditions related to	
competitive environment	Competition
access to information	Competition
market entry	Competition
Factor 2	
Practices concerning	
informal business conduct	Cultural/Social
promotional methods	Cultural/Social
Forecasting	
consumer preferences	Cultural/Social
product demand	Competition
Suitability of	
transportation networks	Technology
labor pool	Cultural/Social
Factor 3	
Conditions related to	
religion	Cultural/Social
education level	Cultural/Social
per capita income	Economic
location of population centers	Geography
topography	Geography
climate	Geography
natural resources	Geography
social mobility	Cultural/Social
natural barriers	Geography
demographics	Economics
Compatibility of work ethic	Cultural/Social

Table 12 (cont'd)

Issues concerning	
trademarks, copyrights,	
and patents	Legal/Political
environmental protection	Legal/Political
Factor 4	
Issues concerning	
trade agreements	Legal/Political
import & export	Legal/Political
trademarks, copyrights, & patents	Legal/Political
Factor 5	
Forecasting	
currency values	Economic
labor costs	Economic
tariffs	Economic
Issues concerning	
trademarks, copyrights, & patents	Legal/Political
warranty	Legal/Political
environmental protection	Legal/Political
Factor 6	
Issues concerning	
collusion	Legal/Political
discrimination	Legal/Political

COMPARABILITY OF ROTATED FACTOR PATTERNS FOR IMPORTANCE AND CONTROLLABILITY FACTORS RELATED TO INTERNATIONAL DISTRIBUTION

Similarity between factor patterns provided by the importance and controllability questions are noted for several of the factors. A canonical correlation analysis was performed on factor scale scores generated from the original importance and controllability ratings. This process was accomplished by averaging the ratings with high loadings on the importance and controllability factors. In this way, a total of 11 factor scores, one for each dimension determined by the first order factor solution, were available for analysis as opposed to the original total of 40 ratings.

Canonical correlation analysis is a multivariate statistical procedure that determines the maximum correlation that can be obtained between two sets of variables. These joint relationships can be interpreted as correlations between predicted scores of a multiple regression obtained from sets of variables. In the present case, the importance scale scores and the controllability scale scores based upon the responses of the 186 respondents represented the two sets of variables used for input into the canonical correlation analysis.

The intercorrelations of importance and controllability factor scores are presented in Table 13.

Table 13

CORRELATIONS BETWEEN IMPORTANCE AND CONTROLLABILITY FACTOR SCORES

	Controllability Factors										
Importance Factors	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
I1	-.08	-.11	.11	-.01	-.03	-.13	-.14	-.11	-.04	-.13	.06
I2	-.08	-.05	.03	.00	-.05	-.12	-.09	-.09	-.01	-.15	-.04
I3	-.08	-.23	-.01	-.05	.09	-.11	-.11	-.12	-.10	-.14	-.02
I4	-.13	-.21	-.03	-.08	.02	-.03	.00	-.06	-.05	-.18	-.08
I5	.01	-.07	.10	-.03	-.04	-.09	-.07	-.13	-.18	-.15	.00
I6	.01	-.10	.01	.12	.08	-.16	-.18	-.12	.08	-.06	.04
I7	-.16	-.16	.04	-.14	-.06	-.26	-.23	-.07	-.09	-.30	-.08
I8	-.02	-.06	.06	-.11	-.02	-.08	-.10	-.06	-.08	-.09	.07
I9	.02	-.04	.08	.06	.13	-.13	-.08	.02	.06	-.17	-.03
I10	.00	-.10	.05	.05	.18	-.02	.01	-.14	.03	-.02	.10
I11	.04	-.16	-.08	.08	.07	-.05	.00	.00	.05	-.14	-.20

The correlations of among scale scores were moderately low with the highest single correlation to be -0.26 between factor 7, Labor Support, of the importance ratings and factor 6, Law, of the controllability ratings. Even though the first canonical correlation of 0.47 was found to be statistically significant at better than the .05 level ($F=1.34$, $df=(121,1272)$), the low intercorrelations indicate that respondents were using substantially different frames of reference in rating the importance and controllability of barriers.

The factor analysis of importance and controllable ratings begin to answer the first three research questions:

1. What are the uncontrollable elements of barriers to international trade?
2. What are the factors underlying each of the uncontrollable elements?
3. What are the relative priorities of the factors underlying the uncontrollable elements?

These analyses indicate that there are more than six uncontrollable elements, and that the underlying factors are grouped and prioritized differently than previously believed. In chapter five, a methodology for identifying the most important uncontrollable elements will be executed. A derivative of this execution will be the identification of the underlying factors and their relative priority.

STATISTICAL ANALYSIS OF ACTION UNDERTAKEN TO OVERCOME BARRIERS

Respondents were also given the opportunity to indicate actions that their organization had taken/not taken to overcome the perceived barriers. The actions possible were None (No Action Taken), Financial Solution , Marketing/Logistics Solution, and/or Production Solution. The percentages of respondents endorsing any of these solutions or no action taken are listed by question in Table 14. The percentage of respondents who reported using one of the solutions in response to a barrier is presented graphically as Figure 5.

Table 14

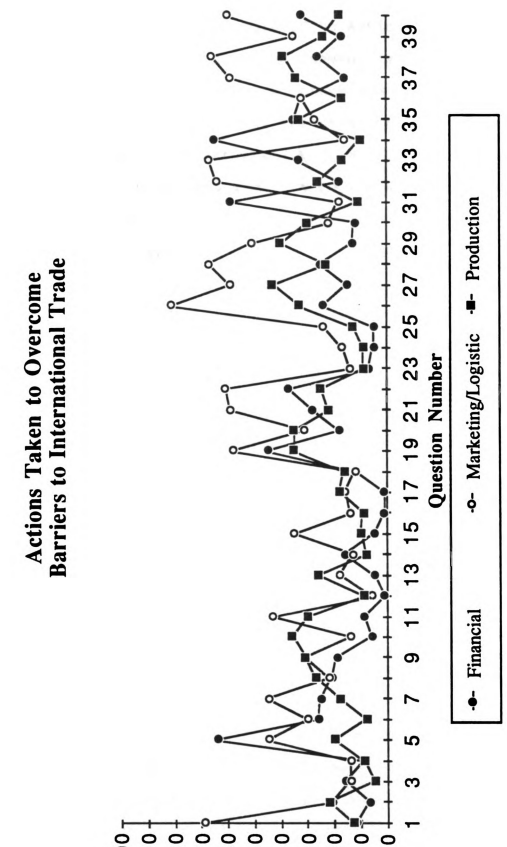
PERCENTAGES OF RESPONDENTS REPORTING ACTIONS TAKEN/NOT TAKEN TO OVERCOME BARRIERS TO INTERNATIONAL DISTRIBUTION

Question	No Action Taken	Finan-cial	Market/ Logistic	Produc-tion
Suitability of				
1. transportation	23	12	69	13
2. labor pool	48	7	21	22
Issues concerning				
3. collusion	64	16	14	5
4. discrimination	70	9	14	9
5. pricing	8	64	45	20
6. trade agreements	47	26	30	8
7. import/export	37	25	45	18
8. trademarks, etc.	41	21	22	27
9. warranty	33	19	31	31
10. environment	54	6	14	36
Conditions related to				
11. language	34	9	43	30
12. religion	81	1	6	9
13. education	58	5	18	26
14. income	66	16	13	8
15. pop. centers	60	5	35	10
16. topography	76	1	14	9
17. climate	70	1	16	18
18. nat'l resources	4	12	12	16
19. competition	20	45	58	35
20. foreign R & D	42	18	31	35
21. info access	24	28	59	22
22. mkt. entry	22	37	61	25
23. soc. mobility	76	7	14	9
24. nat'l barriers	75	5	17	9
25. demographics	66	5	24	13
Compatibility				
26. distrib. netwks.	11	24	81	33
27. mat'l handling	22	15	59	43
28. comm. systems	18	25	67	23
29. prod. svcing.	28	13	51	40
30. work ethic	54	12	22	30
Finding				
31. insurance	28	59	18	11
32. warehousing	22	18	64	26

Table 14 (cont'd)

Question	No Action Taken	Finan-cial	Market/ Logistic	Produc-tion
33. agents/brokers	19	33	67	17
Forecasting				
34. currency values	22	65	16	10
35. labor costs	33	35	27	33
36. tariffs	41	32	32	17
37. preferences	27	16	59	34
38. product demand	16	26	66	39
Practices concerning				
39. informal conduct	50	17	35	24
40. promotions	24	32	60	18

Figure 5


Actions Taken to Overcome
Barriers to International Trade
%
100
90
80
70
60
50
40
30
20
10
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
Question Number
Financial
Marketing/Logistic
Production

It is clear that low levels of No Action Taken responses are related to high endorsement levels of one of the proposed solutions. Using a percentage endorsement of over 50 percent as an arbitrary criteria for a commonly followed solution for a perceived barrier, it can also be noted that the Marketing/Logistic solution was checked as action taken by over 50 percent of the respondents for the following questions:

1) Suitability of transportation networks
19) Conditions related competitive environment
21) Conditions related to access to information
22) Conditions related to market entry
26) Compatibility of distribution networks
27) Compatibility of material handling systems
28) Compatibility of communication systems
29) Compatibility of product servicing systems
32) Finding appropriate warehousing
33) Finding agents/brokers
37) Forecasting consumer preferences
38) Forecasting product demand, and
40) Practices concerning promotional methods.

Due to their professions, (logistics management) respondents were expected to have biases toward marketing/logistics solutions. Since only those questions that could logically be solved by marketing/logistic

solutions were included in the above list, it appears that respondents are not overly influenced by their biases. Financial solutions were considered the most appropriate approach in only two cases, 5, Issues concerning pricing; and 34, Forecasting currency values. None of the barriers to international distribution were considered to be appropriate for use of a production solution by the majority of respondents. The greatest level of endorsement, 40 percent, for this type of solution was found to be related to the factor in question 29, Compatibility of product servicing systems.

Actions Taken In Response To Uncontrollable Barriers To International Distribution

The average ratings of controllability questions were utilized to identify possible solutions to perceived barriers to international distribution. Individuals who provided a rating of 4 to represent a perception of an uncontrollable factor or 5 to represent an extremely uncontrollable factor were identified for each of the 11 questions with an average uncontrollability rating of 3.5 or greater. Next the solutions reported by each of the individuals in this subset of total responses were tabulated separately by question. These responses are summarized in Table 15.

Table 15

LEVEL OF ENDORSEMENT OF SOLUTIONS
TO PERCEIVED UNCONTROLLABLE BARRIERS
TO INTERNATIONAL DISTRIBUTION

Question	No. of Respondents Endorsing Factor as Uncontrollable	Respondents Endorsing Solutions*			
		NA	Fin.	M/L	Prod
		%	%	%	%
Conditions related to					
12. religion	107	89	1	3	5
14. per capita income	104	73	15	13	3
15. location of population centers	112	67	3	3	4
16. topography	122	86	0	9	3
17. climate	130	78	0	12	12
18. natural resources	116	79	4	9	8
23. social mobility	87	86	1	7	1
24. natural barriers	108	81	4	11	4
25. demographics	101	72	3	22	4
Forecasting					
34. currency values	114	23	67	15	4
36. tariffs	99	50	28	26	10

*Respondents were invited to make more than one solution response thus allowing for possibility of more than 100 percent for total responses.

The barriers perceived as least controllable were normally socio-demographic in nature. The vast majority of these respondents gave a "No Action Taken" response to these identified barriers. In contrast, the respondents were more likely to report having taken action in responding to the two financially related barriers of forecasting currency values and tariffs.

Socio-demographic barriers that a significant number of respondents attempted to resolve include per capita income, climate, natural barriers, and demographics. Over ten percent of respondents reported taking a financial and/or marketing/logistics solution to the per capita income perceived barrier while 12 percent of the respondents reported solutions of marketing/logistics and/or production to the climate barrier. The solution to natural barriers was reported to be marketing/logistics in nature by 11 percent of respondents reporting that factor to be uncontrollable while 22 percent reported a similar solution in response to the demographic barrier to international distribution.

The respondents perceiving forecasting currency values to be a barrier to international distribution were most likely to attempt a financial solution while roughly equal percentages reported making a financial and/or marketing/logistics solution in response to the barrier associated with forecasting tariffs.

In response to the research question, "What resolutions have been used to overcome the uncontrollable elements of international trade?" primary research indicates that most barriers are resolved using marketing/logistics solutions. Financial and production solutions were used relatively infrequently. However, respondents indicated that no actions are taken to overcome the barriers perceived as

least controllable. This is an area where additional research would greatly benefit logistics managers. The last research question, "What resolutions should be used to overcome the uncontrollable elements of international trade?" will be discussed in Chapter five after identifying the new uncontrollable elements.

RELATIONSHIP OF ORGANIZATIONAL CHARACTERISTICS TO IMPORTANCE/CONTROLLABILITY FACTORS

Organizational characteristic information was obtained from survey participants in two separate instances. The original invitation contained a business reply card which asked participants to provide information on regions of the world served, the types of products/services exported, and the type of product. Also, on the survey questionnaire itself, there was space for the respondents to report on characteristics of the organization, such as size, sales, and numbers of products, all broken down by total and export alone. Finally, the survey respondent was asked to indicate the organizational level at which the survey form was being answered and also, whether international distribution concerns were incorporated into long term planning.

The amount of information collected as part of this survey precluded an inspection of the relationship of all organizational characteristics to the factors derived from the questionnaire. Also, the request for organizational characteristics was made optional with the result that some

respondents left certain items blank or did not respond at all. In contrast to the situation of the questionnaire where statistical techniques existed to obtain estimates of omitted responses, no such procedure exists for the case where data represents a categorical variable such as obtained from the organizational characteristics questions.

The decision was made to select four characteristics of companies, two from the business reply card and two from the survey form, to provide contrasts of perceptions of factors to barriers to international distribution as measured by the importance and controllability factor scores generated from the factor analysis. These four variables were utilized as classification variables in analyses of variance in order to determine if the perceptions of such barriers varied systematically as a function of the organization characteristics selected for study in this report. Since these analyses represent a preliminary investigation of the relationship between company characteristics and importance and controllability ratings, differences at the .10 level of significance were considered to be meaningful. The analysis results are presented in the following sections.

Product Versus Service Organization Perceptions of Importance and Controllability

The business reply card asked respondents to indicate if their company exported products or services. An inspection of the responses of those organizations which

returned questionnaires revealed that some respondents checked both products and services. Therefore, three classifications of responding companies were included as a measure of export focus for the comparison of factor scores: (1) Products only, (2) Services only, and (3) Provided both Products and Services. The results of the multivariate analysis of variance on Importance scale scores and Controllability scale scores and associated means are presented in Tables 16 and 17, respectively.

A statistically significant difference related to export focus was identified for the importance factor 7 (see Table 16), which is comprised of barriers associated with labor support. It appears that companies exporting both products and services are significantly more likely to rate barriers in factor 7 as very important (mean = 3.73) than companies exporting products (mean = 3.12) or services (mean = 3.33) alone.

Three statistically significant differences between respondents were identified for the controllability factors (see Table 17). Respondents exporting services only were less likely than others to rate barriers in factor 1 (associated with geography and cultural issues) uncontrollable, but they were more likely than others to rate barriers in factor 11 (associated with distribution implementation) uncontrollable. Further, respondents exporting both products and services were less likely to

rate barriers in factor 7 (relating to business practices) as uncontrollable.

Table 16

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEAN IMPORTANCE FACTOR SCORES FOR PRODUCT VS. SERVICE EXPORTING FOCUS

Factor	Between MS	Within MS	F (2,167)	Group Mean 1 (n=130)	2 (n=22)	3 (n=8)
1	0.40	0.66	0.60	3.73	3.77	4.05
2	0.38	0.65	0.59	3.49	3.64	3.72
3	0.25	0.80	0.31	2.69	2.84	2.62
4	1.88	1.01	1.85	2.27	2.63	2.71
5	1.77	0.81	2.19	3.14	2.98	3.75
6	0.51	0.50	1.02	4.00	3.79	3.81
7	1.71	0.71	2.40	3.12	3.33	3.73*
8	3.06	1.50	2.03	2.58	2.75	3.46
9	1.58	0.85	1.87	3.45	3.04	3.50
10	0.43	1.00	0.43	3.10	3.09	3.44
11	0.79	0.95	0.83	3.27	3.01	3.44

Multivariate F(22,314)=1.43*

*p<.10

Table 17

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF CONTROLLABILITY FACTOR SCORES FOR PRODUCT VS. SERVICE EXPORTING FOCUS

Factor	Between MS	Within MS	F (2,163)	Group Mean 1 (n=137)	2 (n=21)	3 (n=8)
1	2.68	0.90	2.99	3.83	3.30	3.60*
2	1.00	0.74	1.34	2.72	3.04	2.75
3	0.75	0.35	2.16	2.50	2.78	2.62
4	0.26	0.74	0.36	3.58	3.50	3.33
5	0.05	1.29	0.04	3.18	3.23	3.09
6	1.02	0.71	1.43	3.76	2.60	2.17
7	1.84	0.78	2.35	2.60	2.80	2.00*
8	0.39	0.50	0.77	3.30	3.11	3.04
9	0.73	0.63	1.16	3.24	3.19	2.96
10	0.26	0.64	0.40	3.06	2.90	2.88
11	2.04	0.81	2.51	2.87	3.22	2.42*

Multivariate F(22,306)=1.16
*p<.10

Type of Product and Perception of Importance and Controllability Factors

In view of the significant effect for several factors in the product versus service comparison and because the largest number of participant companies reported exporting products, it was decided to contrast importance and controllability factor scores for type of good produced. Companies were categorized into one of three groups for the purpose of this analysis. The groups were used to designate companies that exported (1) durable goods; (2) non-durable goods; and (3) both durable and non-durable goods. The results of the multivariate and univariate analyses of variance are presented in Tables 18 and 19.

The results of the analysis of variance did not reveal any statistically significant differences in importance ratings based on the type of goods produced. However, significant differences were identified for controllability ratings. Respondents producing durable goods were significantly less likely than others to rate barriers in factor 1 (associated with geography and cultural issues) and factor 3 (associated with distribution issues) uncontrollable.

Table 18

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF IMPORTANCE FACTOR SCORES FOR TYPES OF GOODS EXPORTED

Factor	Between MS	Within MS	F (2,156)	Group Mean 1 (n=82)	2 (n=72)	3 (n=5)
1	0.29	0.66	0.44	3.68	3.77	3.96
2	0.04	0.65	0.06	3.49	3.52	3.60
3	0.50	0.76	0.66	2.70	2.70	2.25
4	1.38	1.01	1.36	2.20	2.42	2.73
5	0.56	0.81	0.50	3.20	3.06	3.42
6	0.03	0.50	0.07	3.96	3.95	3.85
7	0.24	0.77	0.31	3.12	3.13	3.44
8	3.02	1.46	2.08	2.54	2.74	3.60
9	0.57	0.81	0.70	3.33	3.46	3.70
10	0.99	0.97	1.02	3.05	3.22	2.70
11	0.90	0.92	0.98	3.13	3.32	3.50

Multivariate F=(22,292)=1.09

Table 19

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF CONTROLLABILITY FACTOR SCORES FOR TYPES OF GOODS EXPORTED

Factor	Between MS	Within MS	F (2,156)	Group Mean 1 (n=82)	2 (n=72)	3 (n=5)
1	2.87	0.83	3.45	3.60	3.99	3.93**
2	0.76	0.64	1.17	2.90	2.83	2.64
3	0.87	0.31	2.82	2.39	2.60	2.68*
4	0.45	0.79	0.59	3.49	3.02	3.80
5	1.19	1.23	0.96	3.08	3.32	3.00
6	1.03	0.67	1.52	2.47	2.70	2.48
7	1.55	0.76	2.03	2.43	2.71	2.43
8	0.61	0.47	1.27	2.99	3.15	3.32
9	1.20	0.64	1.87	3.13	3.36	3.50
10	0.10	0.63	0.17	2.87	2.90	3.07
11	0.61	0.85	0.72	2.91	2.93	2.42

Multivariate F=(22,284)=0.98
* p<.10
** p<.05

Perceptions of Importance and Controllability by Size of Organization

The survey requested respondents to provide company characteristics in addition to their ratings of importance and controllability. Data collected regarding company characteristics included total number of employees and/or the number of employees associated with exports of goods, annual sales from exports, number of products and services produced, and number of products and services produced for export.

It was decided to use total number of employees alone as a proxy for company influence in exporting. The respondent companies which provided an answer to this

question of size were categorized into 3 levels: (1) 100 or fewer employees; (2) 100 to 1000 employees; and (3) more than 1000 employees. These categorizations served as the classification variable in the multivariate analyses of variance for the importance and controllability scale scores. The results of these analyses are presented in Tables 20 and 21.

This analysis identified a significant difference in the way respondents rated the importance of barriers in factor 7 (associated with labor support issues). Small companies with less than 100 employees were more likely than others to rate these barriers important.

There was also a significant difference in the way respondents from different size companies rated the controllability of barriers in factor 11 (associated with distribution implementation issues). Larger companies of 1,000 employees or more were significantly less likely than others to rate these barriers uncontrollable.

Table 20

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF IMPORTANCE FACTOR SCORES FOR SIZE OF COMPANY

Factor	Between MS	Within MS	F (2,156)	Group Mean 1 (n=82)	2 (n=72)	3 (n=5)
1	1.48	0.78	1.91	3.88	3.54	3.81
2	0.24	0.82	0.29	3.55	3.40	3.44
3	0.00	0.91	0.01	2.68	2.66	2.66
4	1.46	1.17	1.24	2.43	2.17	2.49
5	0.07	1.02	0.07	2.95	3.01	3.03
6	0.54	0.60	0.89	4.00	3.91	4.13
7	3.37	0.84	3.99	3.52	2.97	3.14**
8	0.75	1.56	0.48	2.61	2.40	2.63
9	0.23	1.00	0.23	3.42	3.27	3.31
10	1.06	1.13	0.94	3.42	3.14	3.12
11	0.09	1.08	0.09	3.14	3.12	3.20

Multivariate F(22,236)=1.03
** p<.05

Table 21

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF CONTROLLABILITY FACTOR SCORES FOR SIZE OF COMPANY

Factor	Between MS	Within MS	F (2,156)	Group Mean 1 (n=82)	2 (n=72)	3 (n=5)
1	0.19	0.94	0.20	3.65	3.72	3.79
2	0.82	0.78	1.06	2.85	2.60	2.59
3	0.55	0.36	1.52	2.61	2.52	2.37
4	0.32	0.70	0.45	3.67	3.62	3.51
5	0.57	1.28	0.45	3.37	3.21	3.12
6	0.06	0.81	0.08	2.56	2.63	2.63
7	0.16	0.92	0.17	2.57	2.56	2.67
8	0.64	0.60	1.07	3.05	3.02	3.24
9	0.80	0.69	1.16	3.30	3.10	3.34
10	0.29	0.68	0.43	2.82	2.91	2.99
11	2.62	0.80	3.25	3.04	3.02	2.59**

Multivariate F(22,232)=1.17
** p<.05

Perceptions of Importance and Controllability by Export Sales

The survey form also requested respondents to provide company sales in total and for export as a separate category. It was decided to consider the effect of the importance and controllability factors on the export sales alone since this was the focus of the study. An inspection of listed sales indicated that company export sales ranged from in the thousands to the billions of dollars. Companies were then categorized as to whether they reported having sales in the (1) thousands of dollars; (2) millions of dollars; or (3) billions of dollars. These categorizations served as the classification variable in the multivariate analyses of variance for the importance and controllability scale scores. The results of these analyses are presented in Tables 22 and 23.

Two statistically significant differences between respondents based on level of export sales were identified, one each for importance ratings and controllability ratings. Respondents reporting export sales in the thousands were significantly more likely than others to rate barriers in factor 10 (associated with communication) as important. In addition, companies with sales less than one billion dollars were more likely to rate barriers in factor 7 (associated with business practices) uncontrollable.

Table 22

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF IMPORTANCE FACTOR SCORES FOR AMOUNT OF EXPORTS

Factor	Between MS	Within MS	F (2,156)	Group Mean 1 (n=82)	2 (n=72)	3 (n=5)
1	0.41	0.73	0.56	3.53	3.67	3.94
2	0.32	0.77	0.41	3.79	3.49	3.62
3	0.41	0.89	0.46	3.04	2.72	2.58
4	0.80	1.11	0.72	2.76	2.26	2.43
5	0.01	0.89	0.01	3.04	3.05	3.10
6	0.25	0.53	0.47	4.32	4.02	4.08
7	1.07	0.85	1.25	3.69	3.12	3.34
8	1.01	1.54	0.66	3.08	2.45	2.65
9	0.12	1.00	0.12	3.25	3.35	3.20
10	2.84	1.03	2.76	4.17	3.30	3.16*
11	0.20	1.09	0.18	3.33	3.14	3.30

Multivariate F(22,172)=0.71

* p<.10

Table 23

MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE AND MEANS OF CONTROLLABILITY FACTOR SCORES FOR AMOUNT OF EXPORTS

Factor	Between MS	Within MS	F (2,156)	Group Mean 1 (n=82)	2 (n=72)	3 (n=5)
1	0.03	1.00	0.03	3.72	3.65	3.71
2	0.55	0.73	0.76	2.42	2.69	2.40
3	0.07	0.32	0.22	2.60	2.47	2.55
4	0.30	0.70	0.43	3.20	3.52	3.52
5	0.09	1.43	0.06	3.25	3.17	3.05
6	1.57	0.71	2.21	3.04	2.19	2.68
7	2.00	0.82	2.56	3.07	2.66	2.08*
8	0.62	0.52	1.23	3.49	3.03	3.13
9	0.54	0.70	0.76	3.45	3.09	3.31
10	0.55	0.70	0.78	2.61	2.99	3.14
11	0.82	0.81	1.01	3.17	2.91	2.55

Multivariate F(22,170)=1.36

* p<.10

It should be noted that the arbitrary classification for level of export sales resulted in the vast majority of companies represented in the second classification where sales were in the millions. It is possible that a greater number of group differences in factor scores might have been obtained if a different classification scheme was utilized which resulted in more nearly equal numbers of companies in each of the groups. It should be noted that this comment is also applicable to the other sets of analyses reported in this report, but that it was particularly noticeable in the export sales results.

Summary

The multivariate and univariate analyses identify a number of statistically significant differences in the way respondents rated barriers based on company characteristics. The importance factor 7, dealing with labor support issues (such as suitability of labor pool and compatibility of work ethic) was rated significantly more important by companies exporting both products and services and by firms with 100 or fewer employees. In addition, the importance factor 10, dealing with communications issues (such as conditions related to language and education) was rated significantly more important by firms with sales in the thousands of dollars.

There were also significant differences in the way respondents rated the controllability of barriers to trade.

Controllability factors with significantly different rating patterns included one, three, seven, and eleven.

Barriers comprising controllability factor 1 deal with geography and cultural issues. These were significantly more controllable to respondents exporting services and durable goods.

Barriers comprising factor 3 deal with distribution planning such as issues concerning trade agreement, finding insurance, and finding warehousing. These were significantly more controllable to respondents producing durable goods.

Barriers comprising factor 7 have to do with business practices such as practices concerning informal business conduct and practices concerning promotional methods. These were more difficult to control for firms with export sales of less than one billion dollars, but firms exporting both products and services had less difficulty than other controlling these barriers.

Finally, barriers comprising controllability factor 11 deal with distribution implementation such as suitability of transportation networks and labor pool. Large firms, with more than 1,000 employees had less trouble controlling these barriers while firms exporting services only had more difficulty than others controlling these barriers.

CONCLUSION

The data collected has been resolved by the statistical procedures indicated to address the five (5) fundamental research issues described in the introduction to Chapter three. Survey questions have been resolved by factor analysis. Second order factor analyses were also conducted in an effort to confirm the original international logistics model. These analyses suggest that the original model proposed (i.e. six uncontrollable barriers) does not agree with conditions operating in the market place from the prospective of respondents in the survey.

Compiled data suggests that there are in fact few barriers to international trade given management's perceived ability to influence the barriers under study. From a competitive perspective even those barriers which are least controllable can still be influenced to some degree by a company's management (ie. as in the case of items specified in Table 15). At the same time, the data shows that product demand and pricing issues are very important to exporting companies especially given inability to forecast currency values and tariffs.

CHAPTER FIVE

Discussion and Conclusions

INTRODUCTION

As previously discussed the objectives of this dissertation were to answer the following questions.

1. What are the uncontrollable elements?
2. What are the factors underlying each of the uncontrollable elements?
3. What are the relative priorities of the factors?
4. What resolutions to the barriers created by the uncontrollable elements and their underlying factors have been used?
5. What resolutions to the barriers created by the uncontrollable elements and their underlying factors should be used?

Both primary and secondary research methods were used to meet these objectives. Secondary research consisted of a complete literature search of international business, logistics, and trade theory. The literature search resulted in the identification of six clusters of uncontrollable barriers to international trade.

The primary research included indepth interviews with logistics experts and a survey of logistics managers in exporting firms across the United States. The indepth interviews served to confirm the need for further research and to assist in the research design. Questionnaires were mailed to managers who had previously agreed to participate in the research project at 289 exporting companies. A

response rate of 64 percent was achieved, resulting in 186 completed questionnaires. The sample appears to be representative of the population of exporting firms.

Forty specific barriers to trade were derived from the six elements identified through secondary research. These barriers were rated by respondents based on the importance and controllability of each. In addition, respondents were asked to indicate the manner in which each barrier was resolved. Importance and controllability responses were then coded and subjected to independent factor analyses in an effort to empirically identify elements of barriers to international trade.

UNCONTROLLABLE BARRIERS TO INTERNATIONAL TRADE

The six elements of barriers to trade identified through secondary research include:

1. Cultural and social
2. Political and legal
3. Geography
4. Economic condition
5. Technology
6. Competition

As discussed previously, each of these elements has underlying factors influencing it and interacting with the underlying factors of other elements (see Figure 1). The barriers rated by logistics managers participating in this

research project were derived directly from these underlying factors. Barriers with average importance ratings of more than 3.5 are listed in Table 24.

Table 24

BARRIERS RATED MOST IMPORTANT

Barrier	Average Importance Rating	Average Uncontrollability Rating
- Forecasting product demand	4.18	3.24
- Suitability of pricing	4.16	2.56
- Compatibility of communication systems	3.98	2.73
- Conditions related to competitive environment	3.97	3.37
- Compatibility of distribution networks	3.91	2.78
- Conditions related to information access	3.86	2.87
- Conditions related to market entry	3.85	3.05
- Suitability of transportation networks	3.82	2.82
- Forecasting tariffs	3.77	3.61
- Forecasting currency values	3.69	3.76
- Finding agents/brokers	3.65	2.14
- Suitability of import/export	3.61	2.90
- Suitability of trade agreements	3.60	3.24
- Forecasting consumer preferences	3.59	3.18

As shown the most important barriers are typically not the least controllable, indicating that respondents have discovered satisfactory means of controlling those barriers most important to them. Barriers with the highest importance ratings are those derived from the Competition element, whereas barriers with high uncontrollability ratings tend to be those derived from the Geography element.

Individual barriers having high ratings for both importance and uncontrollability include forecasting tariffs and forecasting currency values, derived from the economic element. To improve international logistics, these barriers require the most attention. Although there are barriers, such as conditions related to climate, topography, per capita income, and natural resources, that received higher ratings for uncontrollability, these barriers are perceived by respondents as relatively unimportant to international logistics and therefore require less attention.

The majority (65 percent) of respondents reported having resolved the forecasting currency values barrier through the use of a financial solution such as a currency translation formula or a specific accounting procedure. The second most frequent response to this resolution question was no action taken (22 percent), indicating a degree of uncertainty about how to deal with this important barrier.

There was even more uncertainty about how to resolve the forecasting tariffs barrier, with more than 40 percent

of respondents indicating that no action was taken to resolve the barrier. Attempts to resolve this barrier most frequently involved financial or marketing/logistics solutions (32 percent). However the high frequency of no action responses indicates a need to identify more specific means to resolve this barrier.

FACTOR ANALYSIS INTERPRETATION

The factor analyses described in Chapter Four indicate that the underlying factors making up each of the original six elements can be more accurately categorized based on factor analyses of importance and uncontrollability ratings. Each of these analyses resulted in 11 factors which are named in Table 25.

Table 25

NAMED FACTORS FROM IMPORTANCE AND CONTROLLABILITY FACTOR ANALYSES

Factor#	Importance Factor Analysis	Mean	Controllability Factor Analysis	Mean
1	Channels of distribution	3.74	Geography/Culture	3.75
2	Financial management	3.37	Channels of distribution	2.75
3	Social/Culture	2.68	Distribution planning	2.54
4	Geography	2.36	Financial management	3.54
5	Law	3.07	Ethics	3.21
6	Competition/Marketing	3.96	Law	2.62
7	Labor support	3.18	Business practices	2.59
8	Ethics	2.62	Competition/ Marketing	3.10
9	Business practices	3.39	Demand assessment	3.21
10	Communications	3.18	Regulation	3.93
11	Demand assessment	3.21	Distribution implementation	2.92

The names listed describe barriers within each factor. In many cases, factor loading patterns were comparable across analyses, allowing for similar names, but there were instances where patterns were unique to one analysis. Importance factors with unique loading patterns include Social/Culture, Geography, Labor Support, and Communications. Controllability factors with unique factor loading patterns include Geography/Culture, Distribution Planning, Regulation, and Distribution Implementation. Mean scores were calculated for all factors based on the rating scores of barriers making up each factor.

NEW ELEMENTS

Inferring that new elements requiring the most attention are those that are both important and uncontrollable, the mean scores of matching factors were multiplied across analyses to generate an index with which to rank the new elements. The result is seven new elements of barriers to international trade which are both important and uncontrollable. These elements, listed in Table 26, serve to answer the first research question, "What are the uncontrollable elements to international trade?"

Table 26

ELEMENTS OF BARRIERS TO INTERNATIONAL TRADE

Element	Index
Competition/Marketing	12.28
Financial management	11.93
Demand assessment	10.30
Channels of distribution	10.29
Business practices	8.78
Ethics	8.41
Law	8.04

Each new element consists of combinations of underlying factors of the original six elements derived from secondary research. The most important new elements are those with an index of 9.00 or more, indicating average importance and uncontrollability scores of 3.00 or more.

UNDERLYING FACTORS OF NEW ELEMENTS

Barriers (underlying factors) comprising the new elements are listed in Table 27. The method used to derive the index for individual barriers is analogous with the exception that mean scores are added instead of multiplied. This methodology serves to answer two research questions, "What are the underlying factors?" and "What are the relative priorities of the underlying factors?"

Table 27

UNDERLYING FACTORS TO NEW ELEMENTS OF BARRIERS TO INTERNATIONAL TRADE

New Element	Index	Original Element
Competition/Marketing		
Conditions related to		
competitive environment	7.34	Competition
market entry	6.90	Competition
access to information	6.73	Competition
Issues concerning pricing	4.16	Legal/Political
Financial management		
Forecasting currency values	7.45	Economics
Forecasting labor costs	6.62	Economics
Finding agents/brokers	3.65	Competition
Forecasting tariffs	3.61	Economics
Finding appropriate		
warehousing	3.30	Technology
Finding insurance	2.86	Economics
Channels of distribution		
Compatibility of		
distribution networks	6.69	Competition
communication systems	6.71	Technology
material handling systems	6.19	Technology
Suitability of		
transportation networks	3.82	Technology
Issues concerning		
trade agreements	3.60	Legal/Political
Compatibility of		
product servicing systems	2.68	Technology
Demand assessment		
Forecasting		
consumer preferences	6.77	Cultural/Social
product demand	3.24	Competition
Conditions related to		
per capita income	2.83	Economic
Business practices		
Practices concerning		
informal business conduct	6.10	Cultural/Social
promotional methods	5.84	Cultural/Social

Original

Table 27 (cont'd)

New Element	Index	Original Element
Ethics		
Issues concerning		
collusion	5.93	Legal/Political
discrimination	5.73	Legal/Political
Law		
Issues concerning		
trademarks, copyrights, & patents	5.82	Legal/Political
environmental protection	5.48	Legal/Political
warranty	5.24	Legal/Political
import/export	3.61	Legal/Political

As shown, the most important barriers in the new Competition/Marketing element were derived from the original Competition element. However, barriers from the original Competition element also show up in the new Financial Management, Channels of Distribution, and Demand Assessment elements, indicating that the original element was too broadly defined. Issues concerning pricing, an underlying factor from the original Legal/Political, also influence the new Competition/Marketing element.

The most important barriers in the new Financial Management element came from the original Competition and Technology elements also influence this new element.

The new element, Channels of Distribution, is primarily influenced by underlying factors from the original Technology element, indicating that respondents perceive barriers to distribution to be a result of incompatible technologies.

The new element, Demand Assessment, is primarily influenced by underlying factors from the original Cultural/Social element, emphasizing the importance of understanding the importing country's cultural differences to achieve stronger demand.

Business practices is a new, more specifically defined element made up of underlying factors from the original Cultural/Social element. The element includes uncontrollable barriers created by cultural differences in informal business conduct, and promotional methods.

The new Ethics element is derived from underlying factors of the original Legal/Political element. Only issues concerning collusion and discrimination are included in Ethics whereas Legal/Political barriers concerning trademarks, copyrights, patents, environmental protection, warranties, and import/export are included in the new element, Law.

Like the original six elements, it is hypothesized that the underlying factors of the new elements interact within and among elements. The model presented as Figure 6 outlines the probable interactions among the most important new elements. As shown, it is hypothesized that each of these elements interacts with the others.

RESOLUTIONS CURRENTLY EMPLOYED TO OVERCOME BARRIERS COMPRISING NEW ELEMENTS

An analysis of survey responses indicated the solutions used to overcome individual barriers to international trade. In response to the fourth research question, "What resolutions to the barriers created by uncontrollable elements and their underlying factors have been used?", these responses were analyzed for each new element. Current strategies used to overcome the newly defined elements are outlined in Table 28. Recall that NA stands for no action, F stands for financial solution, L/M stands for logistics and/or marketing solutions, and P represents production solutions.

Resolutions most frequently used to overcome barriers within the Competition/Marketing element include marketing/logistic solutions, involving advertising, sales, and order processing. However, approximately 20 percent of respondents took no action to resolve barriers in this element. In fact, respondents were less likely to indicate an action taken with barriers derived from the original Competition element than with those derived from the Legal/Political element, indicating the potential need for better marketing/logistics solutions.

Table 28

SOLUTIONS APPLIED TO NEW ELEMENTS

New Element	Solution Currently Employed			
	NA %	F %	L/M %	P %
Competition/Marketing				
Conditions related to				
competitive environment	20	45	58	35
market entry	22	37	61	25
access to information	24	28	59	22
Issues concerning pricing	8	64	45	20
Financial management				
Forecasting currency values	22	65	16	10
Forecasting labor costs	33	35	27	33
Finding agents/brokers	19	33	67	17
Forecasting tariffs	41	32	32	17
Finding				
appropriate warehousing	22	18	64	26
insurance	28	59	18	11
Channels of Distribution				
Compatibility of				
distribution networks	11	24	81	33
communication systems	18	25	67	23
material handling systems	22	15	59	43
Suitability of				
transportation networks	23	12	69	13
Issues concerning				
trade agreements	47	26	30	8
Compatibility of				
product servicing systems	28	13	51	40
Demand assessment				
Forecasting				
consumer preferences	27	16	59	34
product demand	16	26	66	39
Conditions related to				
per capita income	66	16	13	8
Business practices				
Practices concerning				
informal business conduct	50	17	35	24
promotional methods	24	32	60	18

Table 28 (cont'd)

New Element	Solution Currently Employed			
	NA %	F %	L/M %	P %
Ethics				
Issues concerning				
collusion	64	16	14	5
discrimination	70	9	14	9
Law				
Issues concerning				
trademarks, copyrights, & patents	41	21	22	27
environmental protection	54	6	14	36
warranty	33	19	31	31
import/export	37	25	45	18

As expected, financial solutions are frequently used to overcome barriers of the Financial Management element. However to overcome barriers, such as finding agents and finding warehousing, marketing/logistic (most likely logistics) solutions are used. The percent of no action responses for barriers comprising the Financial management element ranges from 19 to 41 percent, with a median of 22 percent. No action responses are most likely to occur with barriers derived from the original Economics element.

Marketing/Logistics solutions are most frequently used by respondents to resolve barriers of the Channels of Distribution element. This is true for every barrier making up this element except issues concerning trade agreements. These solutions are more likely to involve logistic actions than marketing actions.

Respondents typically took no action to resolve the trade agreement barrier. In general, no action responses range from 11 to 47 percent, with a median no action response rate of 23 percent.

The majority of barriers associated with the Demand Assessment element are resolved using marketing and logistics strategies. However, most respondents (66 percent) did not take an action to resolve the barrier, conditions related to per capita income. This is obviously a barrier that is not easily controlled by the exporting company. No action responses ranged from 16 to 66 percent, with a median of 27 percent.

The predominant action taken to resolve barriers associated with the Business Practice element involved a marketing/logistic solution. However, respondents typically did not act to resolve barriers associated with conducting informal business, indicating some uncertainty about how to resolve this barrier. The average no action response rate for the Business practice element is 37 percent.

Barriers associated with the Ethics element appear to be the most difficult to resolve. The majority (approximately 67 percent) of respondents took no action toward resolving barriers concerning collusion and discrimination.

Barriers making up the Law element were also difficult to resolve, with a median no action response rate of 39

percent. Barriers with highest priority in this element, issues concerning trademarks, copyrights, patents, and environmental protection, also have high proportions of no action responses, indicating the need for more effective resolutions.

RESOLUTIONS RECOMMENDED TO OVERCOME BARRIERS

In response to the fifth research question, the new elements identified suggest that resolutions to barriers require an interdisciplinary skill set. That is, companies engaged in international trade must apply a range of marketing/logistics, finance and production solutions to reduce barriers. To resolve barriers, it is recommended that corporations consider creating a senior level logistics position. The research indicated that most corporations do not have senior logistics executives.

The role of this senior level position would be to direct the activities of an interdisciplinary organization. The organization may be developed as a line or matrix organization on a permanent basis or staffed through a task force in smaller companies. From time to time the organization should be supported by outside specialists to assist in the resolution of case specific problems. In any event, the organization needs a clear centralized direction to effectively resolve identified barriers.

While the survey instrument is not sufficiently sensitive to examine resolutions to be employed on a case by case basis the study can provide suggestions based on a combination of the primary and secondary information gathered. Generalized resolutions are presented in Table 29 categorized by new elements in order of importance. A resolutions matrix derived from Table 29 is shown as Figure 7.

PROPOSED NEW MODEL

Based on the primary research, a new model of international logistics is proposed. This model includes the four most important new elements and their underlying factors. Each new element interacts with all the others to form barriers to international trade. These barriers can be resolved through careful management to result in international trade benefits.

Table 29

Recommendations

Resolutions That Should be Employed

Most Important New Elements

Competition/Marketing

- Respondents endorse logistics/marketing solutions to influence conditions and issues impacting this new element.
- Respondents use financial solutions more often than production solutions to address competitive conditions.
- When faced with price competition, respondents most frequently employ a financial solution.
- Few respondents endorse no action when faced with issues concerning pricing.
- Logisticians should be encouraged to seek production solutions to overcome competitive conditions.
- It is of interest that "no action" would be endorsed as frequently as indicated. Logisticians should seek training or seek the assistance of experts rather than take no action.
- Logisticians should use trade organizations, government agencies and other experts to obtain information about international competition.

Table 29 (cont'd)

Competition/Marketing (cont'd)

- Logisticians should be trained to defend market share against price competition through a full range of organizational tactics. This implies that a senior level logistics position is created within the organization to coordinate actions.
- Given the frequent endorsement of financial solutions, Universities should consider course work aimed at improving the financial skill set of those seeking a career in logistics.
- Trade organizations should sponsor training courses which specifically deal with the following topics:
    - market entry strategies and tactics
    - pricing strategies and tactics
    - information collection strategies and tactics
    - market research techniques aimed at assessment of competitive environments

Financial Management

- Respondents endorse the use of agents/brokers to resolve forecasting issues. Based on the level of endorsement, the role of the agent/broker is assumed to be significant. Exporters should seek the aid of trade groups to help establish criteria by which agents/brokers are selected. Exporters should

Table 29 (cont'd)

Financial Management (con'd)

maintain data about the availability and competence of agents/brokers.

- The high level of no action associated with labor costs suggests a lack of controls. Exporters should establish policies and practices which provide adequate controls. They should analyze trends in tariffs, pricing and labor costs to improve projections.
- Given the high level of no action associated with tariffs, logisticians should seek assistance in forecasting tariffs from economics experts, trade organizations, foreign and domestic government agencies.
- Trade organizations which represent U.S. exporters should take an active roll in assisting member organizations by refining financial techniques and methodologies for over coming forecasting difficulties in the areas of currency values and tariffs.
- U.S. exporter should seek the assistance of commercial banks in developing competitive strategies for reducing the risk associated with an inability to forecast currency values.

Table 29 (cont'd)

- U.S. exporters should seek production solutions to hedge the risk associated with their inability to forecast.

Demand Assessment

- U.S. exporting firms should not have to endorse a no action solution in this area. Exporting firms should be focusing on proactive solutions to forecasting consumer preferences and product demand.
- Proactive solutions include development of comprehensive customer profiles and maintenance of first had information gathering through customer service programs.
- Demand assessment should be considered in the context of long range strategic plans so that information is built up over time and can be refined prior to market entry.

Channels of Distribution

- Endorsements of the various solutions appears balanced, among the various response categories, implying that channels of distribution are controlled through coordination by the logistician/organization.
- While only slightly, solutions tend to favor Logistics/marketing solutions in combination with

Table 29 (cont'd)

Channels of Distribution (cont'd)

production solutions. This may reflect the fact that channels of distribution have been resolved for domestic markets and there has been a transfer of knowledge to the international area. The degree to which the transferred knowledge from domestic to international markets is applicable is unknown and should be studied to see if solutions currently employed maximize competitiveness.

- U.S. exporters should seek to influence favorable trade agreements through industry sponsored lobbing efforts.

Business Practices

- Respondents high level of endorsement for no action for informal business conduct may be interpreted to show and insensitivity to trading partners/buyers or it may indicated that there is a high level of confidence in dealing with trading partners based on knowledge of acceptable business practices.
- Base on the level of endorsement respondents feel very comfortable employing logistics/marketing solutions as they relate to promotional methods.

Table 29 (cont'd)

Business Practices (cont'd)

- Given the above comments, which may be in conflict, U.S. exporters should exercise caution and consult with firms that specialize in providing consulting services which address this area of concern.
- U.S. exporting companies through there trade associations should support cultural exchanges and build profiles of business practices for each of the trading countries of interest. Federal and state agencies should also be encouraged to assist in these areas of concern by providing appropriate introductions and channels of communication.
- U.S. firms should seek to maintain a high level of awareness of target markets cultural and social patterns.
- U.S. firms dealing in international markets should be highly sensitive to the promotional methods and should closely monitor each promotional campaign.

Ethics

- The high endorsement of no action can be interpreted as no action because high standards already exist for U.S. exporters. Conversely, procedures may be lacking and thus no action is taken in which case procedures

Table 29 (cont'd)

Ethics (cont'd)

should be implement at the industry and company level which will ensure ethical performance.

- U.S. exporters should continue to reinforce ethics through training programs.
- U.S. exporting companies through there trade associations should support cultural exchanges and build profiles of acceptable ethical behavior.
- U.S. firms should maintain a high level of awareness about varying practices of discrimination and collusion from country to country. The information should be built up competitor by competitor.

Law

- The high level of no action and conversely the low positive endorsement of logistics/marketing solutions suggests that firms could better coordinate staff functions to maximize their legal position.
- U.S. firms should seek to train logisticians on the competitive enhancements achievable under the law.
- U.S. firms through government agencies and trade associations should seek to establish how import/export laws differ form country to country. They should seek out qualified experts to aid in structuring terms and conditions of sale.

Table 29 (cont'd)

Law (cont'd)

- U.S. firms should choose production methods that are least harmful to the environment.
- U.S. firms should look to warranties which can provide competitive positioning within the context of foreign markets and as a direct method to monitor consumer acceptance.

Figure 6

Model of International Logistics Based on Research

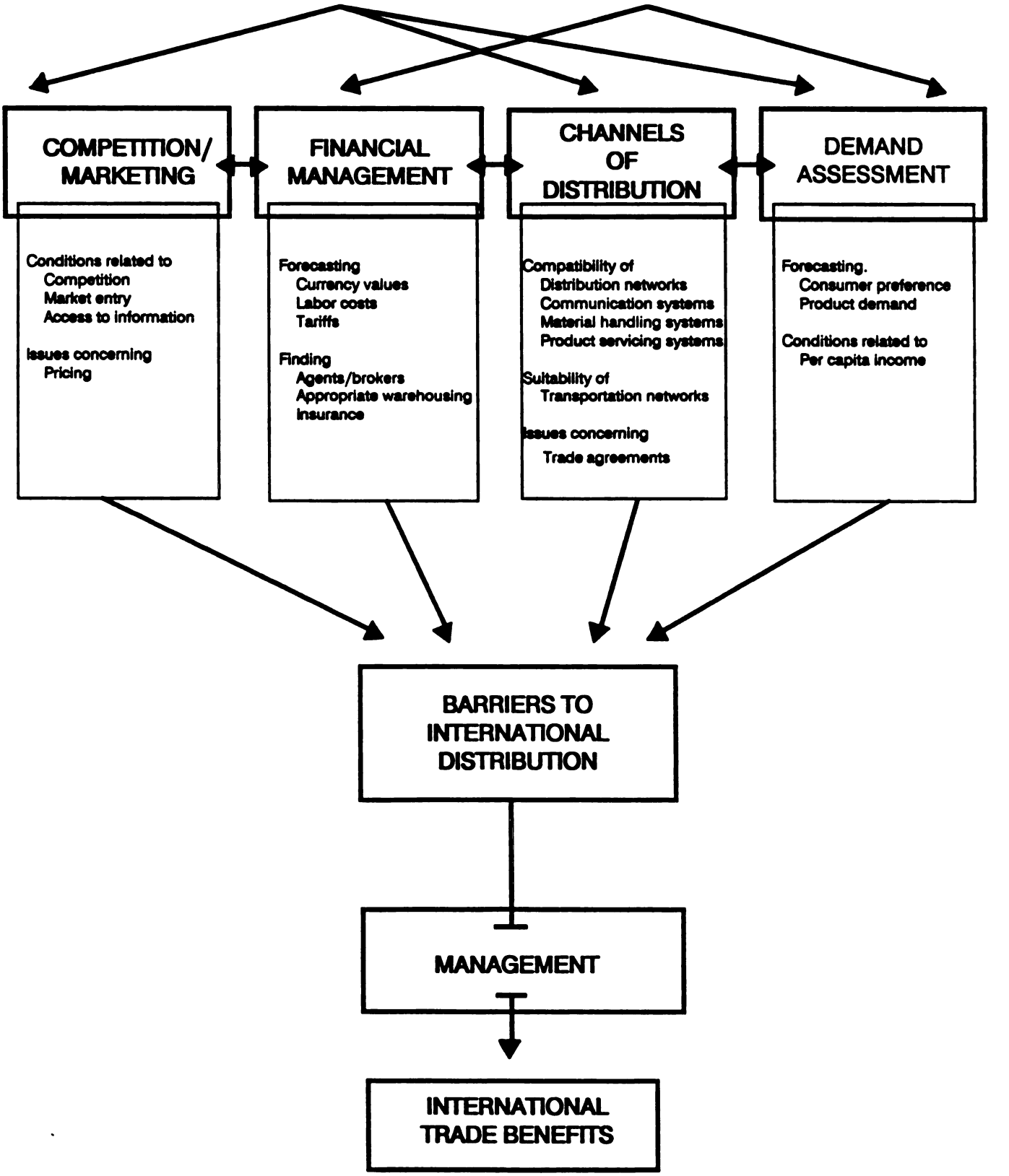


Figure 7

RESOLUTION MATRIX

	Comp. Mktg	Fin Mgmt.	Chan Dist.	Demand	Bus. Prac.	Ethics	Law
Production Solution	*	*					
Consultants	*				*		*
Trade Assoc.	*	*		*	*		
Organization	*	*					*
Training	*		*			*	
Agent /Brokers		*					
Banks		*					
Government	*	*	*		*		*
Planning	*		*	*			

CONCLUSION

Through secondary and primary research, this dissertation has identified uncontrollable barriers to trade and their underlying factors. It has examined the priorities logistics executives place on underlying factors, and how barriers are being resolved in the marketplace today. It was determined that resolutions to barriers are case specific, and only a few general recommendations can be made. Most importantly this dissertation has revealed specific areas requiring additional research to improve international logistics for all companies.

Forecasting is one area requiring additional research to determine how logistics executives forecast tariff rates, product demand, and currency values. If precise methodologies are not currently employed, means of educating logistics managers about these methodologies must be researched.

In addition, thorough research leading to the improved understanding of foreign buyer behavior is necessary. A lucid understanding of cultural differences between foreign markets is important to achieve the most effective marketing results. Further, research into buyers' perceptions of different brands within product categories is necessary for logistics managers to improve their firms' competitive position.

Finally, the barriers addressed in this dissertation were identified through literature and interviews with academicians and industry experts. Additional research is required to determine if other uncontrollable barriers to trade exist, and to identify means of resolving these new barriers. This type of research will lead to increased profits for domestic firms, and in alleviating problems associated with trading, it will positively affect trade imbalances worldwide.

APPENDIX A

Invitation to participate, questionnaire, and cover letter

MICHIGAN STATE UNIVERSITY

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND
TRANSPORTATION ADMINISTRATION

EAST LANSING · MICHIGAN · 48824-1121

Dear Survey Participant:

Thank you for agreeing to take part in this survey regarding practices in international logistics. The anticipated results of this research effort is a deeper understanding of how to successfully complete logistical activities in a global environment. The results should further provide direction regarding the types of strategies that have been used to successfully compete in global marketing situations.

We urge you to take the approximately 20 minutes required to complete the questionaire. It is anticipated that the results suggesting successful strategies may provide a return on your time investment for the future.

Thank you in advance for your participation.

Sincerly,

Dr. David J. Closs
Associate Professor
Marketing and Transportation

The World Trade Institute at The World Trade Center

One World Trade Center 55th floor,
New York, N.Y. 10048

For telephone reply please call
(212) 466-3170

Dear International Shipper:

The attached questionnaire will provide much-needed data for the thorough study of the dimensions of international distribution in U.S. firms. It can provide both practitioners and the academic community with the kind of basic information that will permit U.S. companies to devise more competitive export strategies.

I urge you to take the time to complete the questionnaire and study the findings carefully.

Yours truly,

Eunice Coleman

Eunice Coleman
Sr. Program Manager

IMPORTANT QUESTIONNAIRE INSTRUCTIONS

Thank you for accepting our invitation to participate in this important survey. Please complete and return the questionnaire as soon as possible. You will receive a copy of the survey Executive Summary when it is completed.

Column one of the questionnaire lists factors that can be barriers to international distribution. In columns 2, 3, and 4, please consider each factor as it relates to

- Your major product/service by volume,
- All countries to which your company exports this product or service,
- Your existing capabilities for exporting this product or service.

Fill out the questionnaire as follows:

In column two, rate the relative importance of each factor on a scale of 1 to 5, from "not important at all" to "extremely important." Circle your choice and move to column 3.

In column three, rate your ability to control the factor on a scale of 1 to 5, from "extremely controllable" to "extremely uncontrollable." Circle your choice and move to column four.

In column four, identify the actions you have taken relevant to the factor. Circle one or more of the remedies used:

NP - No Action Taken
F- Financial Solution
(ex: banking, credit, documentation, payment terms, currency translation, accounting practices....etc.)
L- Marketing/Logistic Solution
(ex: advertising, sales, warehousing, order processing, transporation, telecommunication....etc.)
P- Production Solution
(ex: technology, labeling, packaging, training....etc.)

The last page of the questionnaire requests optional background information to help us do a better job of evaluating survey results. Your assistance and cooperation in providing this additional information will be greatly appreciated.

Please complete the block below before completing the questionnaire.

Name and Title	Company
Address	City, State, and Zip Code
Signature and Date	Questionnaire #

If you need assistance in completing the questionnaire, contact Kevin V. McConnaghy at 919-481-3420.

FACTORS	(1) How important is the factor as a potential barrier?					(2) How controllable is the factor?					(3) What actions did you take to resolve the barrier?			
	Not at all Important<-->Extremely Important					Extremely Control-lable<-->Extremely Uncontrol-lable					Please select as many solutions as apply			
	1	2	3	4	5	1	2	3	4	5				
Suitability of...														
• transportation networks	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• labor pool	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
Issues concerning...														
• collusion	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• discrimination	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• pricing	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• trade agreements	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• import/export	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• trademarks, copyrights, & patents	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• warranty	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• environmental protection	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
Conditions related to.....														
• language	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• religion	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• education level	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• per capita income	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• location of population centers	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• topography	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• climate	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• natural resources	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• competitive environment	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• utilization of current	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• R&D in foreign country's	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• access to information	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• market entry	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• social mobility	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• natural barriers	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• demographics	1	2	3	4	5	1	2	3	4	5	NP	F	L	P

FACTORS	(1) How important is the factor as a potential barrier?					(2) How controllable is the factor?					(3) What actions did you take to resolve the barrier?			
	Not at all Important 1	2	3	4	Extremely Important 5	Extremely Control-lable 1	2	3	4	Extremely Uncontrol-lable 5	Please select as many solutions as apply			
Compatability of...														
• distribution networks	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• material handling systems	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• communication systems	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• product servicing systems	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• work ethic	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
Finding...														
• insurance	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• appropriate warehousing	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• agents/brokers	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
Forecasting...														
• currency values	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• labor costs	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• tarriffs	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• consumer preferences	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• product demand	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
Practices concerning...														
• informal business conduct	1	2	3	4	5	1	2	3	4	5	NP	F	L	P
• promotional methods	1	2	3	4	5	1	2	3	4	5	NP	F	L	P

BACKGROUND INFORMATION

This page of the questionnaire is optional. Your assistance and cooperation in providing this additional information will be greatly appreciated.

1. How many persons do you employ? _____

2. Of your total number of employees, how many are assigned to manage and facilitate international distribution? _____

3. What are the annual sales from the export of your major product/service? _____

4. What are the annual sales for your company?_____

5. Is the questionnaire being answered at the _____ division level _____ corporate level?

6. How many products does your company produce? _____

7. How many of the products produced are exported? _____

8. Has your company been able to incorporate international distribution into its long term planning?

   _____ Yes _____ Only on a limited basis _____ No

APPENDIX B

Intercorrelation of Importance Ratings of Barriers

IMPORTANCE RATING MISSING DATA CORRELATIONS

		I1	I2	I3	I4	I5	I6	I7
		1	2	3	4	5	6	7
I1	1	1.000						
I2	2	0.255	1.000					
I3	3	0.273	0.166	1.000				
I4	4	0.218	0.211	0.660	1.000			
I5	5	0.306	-0.035	0.152	0.088	1.000		
I6	6	0.394	0.216	0.313	0.313	0.289	1.000	
I7	7	0.433	0.116	0.203	0.258	0.418	0.373	1.000
I8	8	0.327	0.094	0.183	0.233	0.202	0.254	0.442
I9	9	0.374	0.144	0.249	0.293	0.226	0.173	0.332
I10	10	0.347	0.293	0.283	0.383	0.215	0.353	0.370
I11	11	0.093	-0.019	0.036	0.187	0.078	-0.015	0.136
I12	12	0.046	0.176	0.253	0.366	-0.150	0.114	0.087
I13	13	0.103	0.175	0.037	0.170	0.076	-0.021	0.112
I14	14	0.111	0.103	0.083	0.075	0.193	0.112	0.167
I15	15	0.305	0.174	0.120	0.213	0.170	0.134	0.218
I16	16	0.442	0.342	0.258	0.211	0.218	0.259	0.237
I17	17	0.309	0.307	0.179	0.114	0.196	0.151	0.075
I18	18	0.261	0.328	0.220	0.324	0.144	0.136	0.187
I19	19	0.185	-0.000	0.160	0.072	0.340	0.088	0.206
I20	20	0.208	0.344	0.082	0.195	0.090	0.187	0.101
I21	21	0.186	0.005	0.202	0.152	0.322	0.085	0.153
I22	22	0.198	0.177	0.161	0.216	0.266	0.249	0.266
I23	23	0.250	0.268	0.193	0.279	0.180	0.205	0.251
I24	24	0.346	0.308	0.257	0.364	0.189	0.203	0.257
I25	25	0.304	0.141	0.170	0.342	0.142	0.218	0.257
I26	26	0.463	0.213	0.129	0.108	0.289	0.322	0.317
I27	27	0.492	0.253	0.181	0.185	0.223	0.363	0.340
I28	28	0.425	0.208	0.092	0.121	0.253	0.234	0.368
I29	29	0.342	0.317	0.279	0.219	0.184	0.284	0.236
I30	30	0.342	0.411	0.139	0.236	0.075	0.225	0.191
I31	31	0.363	0.296	0.227	0.240	0.209	0.257	0.255
I32	32	0.440	0.280	0.126	0.142	0.162	0.104	0.260
I33	33	0.296	0.063	0.110	0.069	0.173	0.190	0.189
I34	34	0.304	0.134	0.065	0.089	0.192	0.196	0.219
I35	35	0.197	0.423	0.065	0.100	0.197	0.072	0.103
I36	36	0.343	0.122	0.127	0.115	0.229	0.351	0.227
I37	37	0.211	0.191	0.079	0.098	0.285	0.166	0.139
I38	38	0.285	0.121	0.066	-0.030	0.233	0.136	0.281
I39	39	0.253	-0.021	0.133	0.177	0.145	0.014	0.122
I40	40	0.188	0.080	0.108	0.203	0.120	0.073	0.130

IMPORTANCE RATING MISSING DATA CORRELATIONS

		I8	I9	I10	I11	I12	I13	I14
		8	9	10	11	12	13	14
I8	8	1.000						
I9	9	0.487	1.000					
I10	10	0.307	0.375	1.000				
I11	11	0.204	0.218	0.114	1.000			
I12	12	0.180	0.163	0.194	0.235	1.000		
I13	13	0.134	0.154	0.135	0.422	0.307	1.000	
I14	14	0.248	0.007	0.103	0.182	0.164	0.357	1.000
I15	15	0.192	0.247	0.211	0.247	0.177	0.244	0.304
I16	16	0.133	0.224	0.287	0.218	0.175	0.143	0.202
I17	17	-0.019	0.062	0.267	0.155	0.188	0.200	0.319
I18	18	0.184	0.201	0.346	0.150	0.286	0.294	0.348
I19	19	0.151	0.211	0.204	0.222	0.037	0.245	0.287
I20	20	0.313	0.259	0.319	0.245	0.195	0.272	0.256
I21	21	0.078	0.127	0.155	0.335	0.074	0.175	0.234
I22	22	0.213	0.188	0.253	0.237	0.155	0.169	0.182
I23	23	0.288	0.200	0.337	0.159	0.310	0.314	0.306
I24	24	0.154	0.180	0.367	0.174	0.302	0.181	0.221
I25	25	0.257	0.181	0.211	0.185	0.277	0.261	0.395
I26	26	0.195	0.325	0.265	0.180	0.022	0.150	0.112
I27	27	0.163	0.236	0.291	0.237	0.140	0.174	0.096
I28	28	0.123	0.157	0.160	0.253	0.073	0.260	0.162
I29	29	0.281	0.360	0.285	0.086	0.173	0.214	0.185
I30	30	0.110	0.262	0.384	0.192	0.112	0.270	0.098
I31	31	0.259	0.325	0.271	0.136	0.182	0.106	0.076
I32	32	0.173	0.287	0.277	0.067	0.053	0.098	0.015
I33	33	0.089	0.160	-0.003	0.272	-0.010	0.054	0.092
I34	34	0.104	0.114	0.156	0.053	0.020	-0.014	0.059
I35	35	0.112	0.114	0.138	0.021	-0.084	0.036	0.089
I36	36	0.235	0.254	0.136	-0.041	-0.064	-0.016	0.081
I37	37	0.176	0.140	0.188	0.115	-0.081	0.180	0.282
I38	38	0.212	0.177	0.130	-0.041	-0.149	-0.112	0.042
I39	39	0.248	0.214	0.190	0.222	0.080	0.150	0.152
I40	40	0.217	0.199	0.161	0.270	0.147	0.187	0.216

IMPORTANCE RATING MISSING DATA CORRELATIONS

		I15	I16	I17	I18	I19	I20	I21
		15	16	17	18	19	20	21
I15	15	1.000						
I16	16	0.335	1.000					
I17	17	0.248	0.590	1.000				
I18	18	0.260	0.478	0.514	1.000			
I19	19	0.314	0.146	0.204	0.219	1.000		
I20	20	0.245	0.343	0.267	0.390	0.181	1.000	
I21	21	0.321	0.205	0.301	0.212	0.471	0.140	1.000
I22	22	0.293	0.167	0.188	0.094	0.377	0.230	0.464
I23	23	0.363	0.252	0.229	0.379	0.172	0.303	0.227
I24	24	0.311	0.479	0.404	0.505	0.107	0.322	0.263
I25	25	0.567	0.223	0.231	0.386	0.298	0.307	0.324
I26	26	0.276	0.363	0.291	0.263	0.255	0.262	0.256
I27	27	0.312	0.409	0.314	0.285	0.276	0.352	0.293
I28	28	0.270	0.238	0.177	0.134	0.214	0.198	0.376
I29	29	0.270	0.289	0.165	0.248	0.326	0.390	0.311
I30	30	0.285	0.341	0.321	0.311	0.190	0.341	0.296
I31	31	0.263	0.210	0.211	0.210	0.162	0.210	0.165
I32	32	0.335	0.230	0.184	0.246	0.230	0.148	0.243
I33	33	0.221	0.120	0.127	0.070	0.190	0.045	0.120
I34	34	0.138	0.193	0.087	0.122	0.110	0.187	0.024
I35	35	0.250	0.244	0.156	0.273	0.103	0.292	0.123
I36	36	0.223	0.087	0.046	0.133	0.176	0.122	0.110
I37	37	0.224	0.207	0.293	0.334	0.238	0.268	0.235
I38	38	0.128	0.087	0.062	0.084	0.236	0.156	0.147
I39	39	0.289	0.216	0.149	0.203	0.307	0.094	0.241
I40	40	0.301	0.205	0.234	0.178	0.234	0.195	0.293

		I22	I23	I24	I25	I26	I27	I28
		22	23	24	25	26	27	28
I22	22	1.000						
I23	23	0.327	1.000					
I24	24	0.261	0.517	1.000				
I25	25	0.407	0.502	0.531	1.000			
I26	26	0.362	0.205	0.348	0.318	1.000		
I27	27	0.261	0.219	0.338	0.325	0.583	1.000	
I28	28	0.240	0.249	0.288	0.292	0.443	0.451	1.000
I29	29	0.293	0.364	0.279	0.322	0.510	0.429	0.405
I30	30	0.217	0.366	0.384	0.307	0.377	0.427	0.412
I31	31	0.234	0.205	0.322	0.312	0.348	0.392	0.213
I32	32	0.163	0.278	0.277	0.313	0.352	0.304	0.399
I33	33	0.092	-0.054	-0.037	0.100	0.324	0.243	0.289
I34	34	0.066	0.089	0.082	0.211	0.217	0.268	0.251
I35	35	0.114	0.302	0.274	0.186	0.203	0.281	0.326
I36	36	0.258	0.242	0.215	0.198	0.362	0.357	0.216
I37	37	0.233	0.237	0.245	0.330	0.363	0.350	0.188
I38	38	0.258	0.049	0.100	0.174	0.385	0.319	0.159
I39	39	0.165	0.145	0.204	0.280	0.269	0.198	0.186
I40	40	0.268	0.171	0.267	0.328	0.308	0.189	0.209

IMPORTANCE RATING MISSING DATA CORRELATIONS

		I29	I30	I31	I32	I33	I34	I35
		29	30	31	32	33	34	35
I29	29	1.000						
I30	30	0.493	1.000					
I31	31	0.318	0.298	1.000				
I32	32	0.274	0.381	0.495	1.000			
I33	33	0.191	0.059	0.311	0.361	1.000		
I34	34	0.245	0.260	0.318	0.358	0.176	1.000	
I35	35	0.365	0.411	0.396	0.422	0.079	0.448	1.000
I36	36	0.341	0.275	0.291	0.328	0.229	0.307	0.392
I37	37	0.248	0.339	0.187	0.275	0.228	0.344	0.403
I38	38	0.257	0.198	0.197	0.273	0.142	0.278	0.268
I39	39	0.242	0.273	0.157	0.177	0.189	0.154	0.052
I40	40	0.257	0.274	0.255	0.209	0.266	0.277	0.219

		I36	I37	I38	I39	I40
		36	37	38	39	40
I36	36	1.000				
I37	37	0.368	1.000			
I38	38	0.335	0.454	1.000		
I39	39	0.235	0.235	0.169	1.000	
I40	40	0.184	0.419	0.252	0.542	1.000

APPENDIX C

Intercorrelation of Controllability Ratings of Barriers

CONTROLLABLE RATING MISSING DATA CORRELATIONS

		C1	C2	C3	C4	C5	C6	C7
		1	2	3	4	5	6	7
C1	1	1.000						
C2	2	0.328	1.000					
C3	3	0.101	0.246	1.000				
C4	4	0.116	0.235	0.620	1.000			
C5	5	0.111	0.076	0.001	0.010	1.000		
C6	6	0.056	0.151	0.150	0.163	0.227	1.000	
C7	7	0.188	0.205	0.221	0.181	0.163	0.348	1.000
C8	8	0.126	0.215	0.282	0.288	0.120	0.202	0.470
C9	9	0.112	0.120	0.082	0.160	0.174	0.143	0.307
C10	10	0.138	0.164	0.274	0.337	0.057	0.153	0.258
C11	11	0.053	0.123	0.227	0.123	0.042	-0.132	-0.010
C12	12	0.056	0.255	0.393	0.318	-0.223	0.134	0.139
C13	13	-0.081	0.211	0.229	0.239	-0.146	0.114	0.193
C14	14	-0.125	0.219	0.276	0.212	-0.145	0.174	0.137
C15	15	-0.051	0.220	0.224	0.236	-0.105	0.131	0.177
C16	16	-0.007	0.251	0.293	0.240	-0.126	0.188	0.145
C17	17	-0.036	0.123	0.192	0.142	-0.122	0.155	0.071
C18	18	-0.047	0.242	0.255	0.210	-0.181	0.132	0.102
C19	19	0.026	0.098	0.017	0.028	0.087	0.071	0.191
C20	20	-0.039	0.223	0.164	0.161	0.143	0.219	0.146
C21	21	0.108	0.120	-0.022	0.061	0.061	-0.003	0.082
C22	22	0.023	0.095	0.201	0.180	0.148	0.201	0.106
C23	23	-0.007	0.227	0.342	0.297	-0.124	0.178	0.183
C24	24	0.021	0.219	0.282	0.278	-0.145	0.163	0.154
C25	25	0.004	0.140	0.263	0.267	-0.109	0.078	0.150
C26	26	0.224	0.230	0.125	0.012	0.217	0.137	0.217
C27	27	0.272	0.122	0.158	0.102	0.021	0.136	0.188
C28	28	0.243	0.088	0.140	0.098	0.055	0.105	0.119
C29	29	0.210	0.175	-0.026	-0.002	0.141	0.053	0.135
C30	30	0.164	0.249	0.221	0.101	0.054	0.133	0.215
C31	31	0.197	0.079	0.102	-0.009	0.015	-0.174	0.052
C32	32	0.233	0.077	0.066	0.012	0.071	-0.032	0.153
C33	33	0.073	-0.014	-0.040	-0.110	0.155	-0.051	0.086
C34	34	0.008	-0.004	0.126	0.044	0.091	0.135	0.066
C35	35	0.182	0.226	-0.004	0.085	-0.001	0.112	0.033
C36	36	0.143	0.026	-0.070	0.050	0.006	0.056	-0.016
C37	37	-0.027	0.072	0.087	0.070	0.114	0.098	0.089
C38	38	0.007	-0.057	-0.017	-0.124	0.179	0.080	0.096
C39	39	0.014	0.053	0.110	0.119	0.270	0.242	0.063
C40	40	0.034	-0.041	0.038	0.006	0.119	0.108	0.006

CONTROLLABLE RATING MISSING DATA CORRELATIONS

		C8	C9	C10	C11	C12	C13	C14
		8	9	10	11	12	13	14
C8	8	1.000						
C9	9	0.475	1.000					
C10	10	0.433	0.312	1.000				
C11	11	0.125	0.115	0.126	1.000			
C12	12	0.272	0.050	0.344	0.282	1.000		
C13	13	0.124	0.029	0.294	0.274	0.580	1.000	
C14	14	0.183	-0.012	0.324	0.237	0.635	0.713	1.000
C15	15	0.193	0.007	0.271	0.224	0.553	0.634	0.774
C16	16	0.220	0.107	0.305	0.160	0.545	0.608	0.672
C17	17	0.144	0.110	0.235	0.114	0.404	0.463	0.554
C18	18	0.151	0.057	0.263	0.144	0.609	0.577	0.690
C19	19	0.095	0.143	0.135	0.117	0.028	0.169	0.158
C20	20	0.186	0.315	0.141	0.132	0.132	0.172	0.121
C21	21	0.069	0.163	0.123	0.068	-0.028	0.118	0.089
C22	22	0.134	0.131	0.240	0.091	0.025	0.051	0.060
C23	23	0.156	0.016	0.273	0.127	0.555	0.526	0.629
C24	24	0.248	0.042	0.301	0.087	0.612	0.514	0.635
C25	25	0.229	0.078	0.373	0.212	0.589	0.478	0.632
C26	26	0.148	0.193	0.017	0.179	0.020	0.135	0.104
C27	27	0.104	0.182	0.224	0.107	0.110	0.277	0.151
C28	28	0.089	0.089	0.050	0.090	0.028	0.171	0.060
C29	29	0.134	0.144	0.007	0.119	0.009	0.056	-0.017
C30	30	0.191	0.128	0.188	0.082	0.241	0.381	0.328
C31	31	0.128	0.177	0.068	0.158	-0.037	-0.018	-0.096
C32	32	0.091	0.026	0.037	0.145	0.004	0.056	-0.029
C33	33	0.059	0.073	-0.076	0.136	-0.115	-0.069	-0.136
C34	34	-0.022	-0.010	0.229	0.018	0.252	0.244	0.279
C35	35	-0.083	-0.025	0.063	-0.039	0.191	0.239	0.222
C36	36	-0.007	0.002	0.171	0.041	0.117	0.115	0.232
C37	37	0.068	0.037	0.083	0.086	0.163	0.235	0.217
C38	38	0.035	0.163	-0.062	0.020	-0.066	0.041	0.029
C39	39	0.026	0.084	0.022	-0.052	0.039	0.019	0.043
C40	40	0.116	0.140	0.052	0.010	0.001	-0.054	-0.030

CONTROLLABLE RATING MISSING DATA CORRELATIONS

		C15	C16	C17	C18	C19	C20	C21
		15	16	17	18	19	20	21
C15	15	1.000						
C16	16	0.679	1.000					
C17	17	0.538	0.747	1.000				
C18	18	0.685	0.766	0.745	1.000			
C19	19	0.217	0.142	0.101	0.139	1.000		
C20	20	0.211	0.307	0.246	0.225	0.261	1.000	
C21	21	0.124	0.045	-0.047	0.016	0.294	0.241	1.000
C22	22	0.056	0.035	0.075	0.052	0.293	0.243	0.410
C23	23	0.573	0.565	0.479	0.573	0.181	0.221	0.132
C24	24	0.594	0.681	0.553	0.717	0.071	0.137	0.064
C25	25	0.653	0.589	0.594	0.654	0.192	0.105	0.065
C26	26	0.171	0.082	0.067	0.078	0.278	0.283	0.237
C27	27	0.145	0.215	0.169	0.137	0.157	0.272	0.127
C28	28	0.098	0.109	0.068	0.064	0.233	0.341	0.239
C29	29	0.035	-0.048	-0.045	-0.009	0.210	0.217	0.209
C30	30	0.282	0.368	0.356	0.363	0.297	0.234	0.145
C31	31	-0.081	-0.045	-0.063	-0.042	0.119	-0.069	0.160
C32	32	-0.013	-0.043	-0.043	-0.039	0.186	0.078	0.199
C33	33	-0.032	-0.167	-0.148	-0.162	0.234	0.126	0.237
C34	34	0.248	0.335	0.275	0.285	0.152	0.037	0.070
C35	35	0.198	0.242	0.248	0.196	0.200	0.018	0.050
C36	36	0.199	0.222	0.167	0.216	0.176	0.012	0.116
C37	37	0.268	0.269	0.291	0.263	0.177	0.259	0.037
C38	38	0.049	0.031	0.056	-0.058	0.222	0.253	0.029
C39	39	0.067	0.047	0.003	0.026	0.191	0.129	0.254
C40	40	-0.036	-0.036	-0.003	-0.082	0.123	0.216	0.272

		C22	C23	C24	C25	C26	C27	C28
		22	23	24	25	26	27	28
C22	22	1.000						
C23	23	0.185	1.000					
C24	24	0.083	0.646	1.000				
C25	25	0.074	0.614	0.741	1.000			
C26	26	0.256	0.128	-0.009	0.015	1.000		
C27	27	0.252	0.171	0.099	0.089	0.596	1.000	
C28	28	0.249	0.092	0.031	-0.071	0.603	0.606	1.000
C29	29	0.197	-0.010	-0.083	-0.132	0.459	0.477	0.540
C30	30	0.100	0.397	0.279	0.321	0.359	0.381	0.339
C31	31	0.181	-0.154	0.004	0.013	0.263	0.244	0.213
C32	32	0.314	-0.025	-0.022	0.000	0.286	0.365	0.426
C33	33	0.226	-0.044	-0.065	-0.094	0.373	0.183	0.354
C34	34	0.087	0.281	0.284	0.316	0.050	0.210	-0.045
C35	35	0.051	0.239	0.173	0.217	0.142	0.303	0.129
C36	36	0.110	0.195	0.174	0.221	0.100	0.138	0.080
C37	37	0.155	0.315	0.173	0.188	0.108	0.131	0.077
C38	38	0.164	0.067	-0.026	-0.083	0.236	0.199	0.239
C39	39	0.309	0.091	0.041	0.059	0.333	0.138	0.170
C40	40	0.276	0.021	-0.034	-0.068	0.311	0.269	0.268

CONTROLLABLE RATING MISSING DATA CORRELATIONS

		C29	C30	C31	C32	C33	C34	C35
		29	30	31	32	33	34	35
C29	29	1.000						
C30	30	0.374	1.000					
C31	31	0.272	0.022	1.000				
C32	32	0.329	0.109	0.532	1.000			
C33	33	0.269	0.159	0.380	0.535	1.000		
C34	34	0.108	0.244	0.028	-0.034	-0.040	1.000	
C35	35	0.193	0.233	0.095	0.138	0.007	0.464	1.000
C36	36	0.142	0.092	-0.009	0.095	-0.034	0.371	0.433
C37	37	0.040	0.230	0.023	0.003	0.027	0.327	0.277
C38	38	0.239	0.112	-0.040	-0.042	0.143	0.153	0.149
C39	39	0.189	0.267	0.128	0.277	0.316	0.172	0.200
C40	40	0.285	0.133	0.149	0.345	0.340	0.028	0.133

		C36	C37	C38	C39	C40
		36	37	38	39	40
C36	36	1.000				
C37	37	0.205	1.000			
C38	38	0.092	0.411	1.000		
C39	39	0.133	0.214	0.164	1.000	
C40	40	0.047	0.107	0.174	0.524	1.000

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