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PERFORMANCE IN INTERNATIONAL COLLABORATIVE VENTURES: CASE OF THE GLOBAL CONSTRUCTION INDUSTRY

By

T. Cuneyt Evirgen

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

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1995

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ABSTRACT

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The importance of collaborative ventures for competitiveness in today's highly competitive global marketing environment is becoming more evident every day. A clear trend towards formation of such ventures is observed in many industries.

Following an interdisciplinary approach, this dissertation draws concepts and constructs from different disciplines together and develops and tests a model of international collaborative venture performance. Performance is modeled as being multidimensional and its associations with the six relationship constructs derived from the literature are examined. These six constructs are partner fit, mutual commitment, interdependence, mutual trust, two-way communications, and balanced power. Additionally, a thorough analysis of the global construction industry is made using secondary data.

The data used to test the model were collected through a mail survey of the top 225 international and top 400 US contractors. Furthermore, twelve in-depth interviews were conducted with executives and industry experts that provided qualitative data used to enrich the interpretation of the results.

Pearson correlation and regression analyses were used in data analysis. The results suggest that partner fit and commitment are the most critical factors affecting overall

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collaborative venture performance and its various dimensions. On the other hand, mutual trust, two-way communications and interdependence appear to affect performance through their effects on commitment. Further, some significant relationships are found among the relationship constructs.

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1995

Dedicated to my wife and daughter
Güniz Evirgen & Tugçe Evirgen

for their faith, love and support

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CHAPTER ONE

INTRODUCTION

Cooperative ventures or alliances among companies in the highly competitive global marketing environment have been on the rise. The consensus among the company presidents at the 1992 Business Week Presidents' Forum was that "those senior executives who negotiate the most successful alliances and partnerships..... will be the champions of the globalized future" (Peters and Peters 1992). It was also noted at the same forum that alliances will provide the springboard to move to new levels of innovation, growth and profitability. Revesz and Cowley (1986) note that companies are finding out that in order to compete they must cooperate. An article in Chicago Tribune (April 26, 1992) points out that America's electronics companies are forming strategic alliances with their Japanese and European rivals in order to survive and remain in the global marketplace. This trend is also evident in many other global industries. Johnston and Lawrence (1988) cite many industries where what they call "value-adding partnerships" have evolved or are evolving such as the construction, automobile, book publishing, movie, drugs and pharmaceuticals industries. Nevaer and Deck (1990) have concluded that "only the largest of companies today are capable of competing on their own in the growing international markets" (p.197).

In the marketing literature, on the other hand, it is suggested that marketing is experiencing a paradigm shift from transaction-oriented to relationship-oriented marketing with its recent focus on the concept of relational exchange and relationship marketing (Kotler 1991; Webster 1992). This new focus also fits well into the study of international cooperative

ventures since they represent a form of interorganizational interaction involving an exchange relationship (Hamel 1991).

1.1 PERSPECTIVES ON MARKETING RELATIONSHIPS

There has been a shift in the focus of marketing over the years. In 1970s, the focus has been on the transaction. Creation, valuation, stimulation and facilitation of the transaction has been emphasized as the domain of marketing. In this perspective, unilateral transactions have been emphasized and investigated. In other words, either buyer's or seller's perspective has been considered (or of course the effect of the transaction on the external environment). Another important feature has been that business transactions have been emphasized (Kotler 1967). However, later on in the broadened concept of marketing the domain has been expanded to include all types of transactions involving an exchange (Bagozzi 1975; Kotler and Levy 1969). That is marketing has been expanded to include social organizations and other nonprofit/ nonbusiness organizations as well (Alderson 1957; Arndt 1983; Hunt 1983; Stern and Reve 1980).

Recently, however, the attention is turned on to the concept of relational exchange and with that to relationship marketing (Webster 1992). Kotler (1991) calls this a paradigm shift: shift from transaction-oriented to relationship-oriented marketing. The basic premise of this new approach is that marketing is characterized by exchange relationships (e.g. buyer-seller, seller-seller relationships) and the key to success lies in developing and maintaining effective and efficient relationships. According to Webster (1992), a new conception of marketing will focus on managing strategic partnerships. In this regard, strategic alliances, partnerships or collaborative arrangements among firms have received considerable attention (Anderson and

Narus 1991; Bowersox 1990; Bucklin and Sengupta 1993; Devlin and Bleackley 1988; Lewis 1990; Morgan and Hunt 1994; Robicheaux and Coleman 1994; Stoltman, Gentry and Morgan 1993).

Johnston and Lawrence (1988) has suggested the term "value-adding partnership" to refer to "a set of independent companies that work closely together to manage the flow of goods and services along the entire value-added chain" (p.94). The basic motive is to create a very strong and highly competitive value-added chain by bringing the complementary strengths of the partners together (Kogut 1985). Collaborative arrangements allow firms to have access to capabilities that they do not have themselves which are critical to survive and remain competitive in what Stalk, Evans and Schulman (1992) call "capabilities-based competition". Similarly, such arrangements allow transfer of tacit knowledge which is highly valuable. Drucker (1992) notes that in today's knowledge society "knowledge is the primary resource for individuals and for the economy overall" (p.95). For instance, NUMMI (a joint venture between Toyota Motors and General Motors) has been very successful in facilitating mutual learning of critical know-how and technological transfer (JAMA-Forum 1993). This is an instance of an interfirm collaboration for the transfer of knowledge.

As a result of these trends, more and more studies are being reported in the marketing literature that focus on marketing relationships (e.g. Anderson and Narus 1990, Bucklin and Sengupta 1993, Dabholkar, et al. 1994; Dwyer, Schurr and Oh 1987, Heide and John 1992, Moorman, Deshpande and Zaltman 1993; Morgan and Hunt 1994; Robicheaux and Coleman 1994).

In summary, a clear trend towards forming collaborative arrangement is observed in many industries. Such arrangements have also begun to receive considerable attention from marketing researchers.

1.2 PERSPECTIVES ON ALLIANCES

The study of interfirm collaborations in international business has attracted a lot of interest among academicians and such collaborations have found a great deal of popularity among firms. In the literature, however, most of the studies tend to focus on joint ventures (Beamish 1987; Beamish and Banks 1987; Buckley and Casson 1988; Geringer and Hebert 1989; Hennart 1988; Kogut 1988; Salk 1993; Wallace 1993). A buzz word in this area of study is strategic alliance which is used by some authors to describe cooperative ventures (Hamel 1991; Harrigan 1988; Jain 1987; Killing 1988; Ohmae 1989; Osborn and Baughn 1990; Spekman and Sawhney 1990; Sengupta 1993) and joint ventures are regarded as one type of alliance (Harrigan 1987). On the other hand, in another approach, joint ventures, outsourcing agreements, product licensing and cooperative research are grouped together and called "competitive collaboration" (Hamel, Doz and Prahalad 1989). Furthermore, Buckley and Casson (1988) refer to cooperative ventures in international business which they see to be some alternative to wholly owned (100 per cent equity) foreign operations. Hence, in their view, a cooperative venture "may indicate a joint venture, an industrial collaboration agreement, licensing, franchising, subcontracting, or even a management contract or counter-trade agreement" (p.19).

Moreover, such global collaborations are further referred to as coalitions (Porter and Fuller 1986), cooperative arrangements (Contractor and Lorange 1988; Root 1988),

competitive alliances (Revesz and Cowley 1986), international corporate linkages (Auster 1987), collaborative agreements (Morris and Hergert 1987), cooperative ventures (Roehl and Truitt 1987), or partnerships (Root 1988). In this study, we will refer to such ventures as collaborative ventures to better reflect the element of collaboration inherent in all such ventures. Following on the definition suggested by Mowery (1988), an international collaborative venture is defined as:

> "an instance of *interfirm collaboration in product development, manufacture, or marketing that spans national boundaries, is not based on arm's-length market transactions, and includes substantial contribution by partners of capital, technology, or other assets*" (pp.2-3).

Hence, these ventures are more than arm's-length or open market transactions, but fall short of merger (Porter and Fuller 1986; Root 1988). This definition clearly covers joint ventures and other types of alliances such as licensing agreements, supply agreements, marketing agreements, etc.

1.2.1 Motives Behind Collaborative Ventures

A comparison and analysis of collaborative ventures between US and foreign firms in eight manufacturing industries has shown that the motives behind them vary across industries although some do overlap (Mowery 1988). Some of the identified motives are market access (both access by foreign partner to the US market and access by US firms to foreign markets), risk sharing, product line expansion, access to capital, joint development of new processes and products, access to technological and managerial expertise and advanced technological and managerial techniques.

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In the literature, various motives for entering into a collaborative venture are identified. These are risk reduction, economies of scale, scope and/or learning, market, technology and/or knowledge access, and shaping competition (Auster 1987; Badaracco 1991; Contractor and Lorange 1988; Harrigan 1987; Hennart 1988; Jain 1987; Kogut 1985, 1988; Morris and Hergert 1987; Porter and Fuller 1986). The relevance of these motives for a collaborative venture will depend on the form of the venture. In technological transfers and exchanges, for instance, the main motive will be to obtain or share technology that is not available or too costly to produce in-house (Auster 1987). On the other hand, hedging risk and shaping industry structure will also be particularly relevant motives in R&D arrangements (Porter and Fuller 1986). Nevaer and deck (1990) have observed that "firms are increasingly becoming specialized and seek diversification through alliances" (p.198).

Studies on joint ventures have also shown that these are also motivated by reducing incentive to cheat and enabling implementation of counterthreats (Buckley and Casson 1988), allaying national reactions in the foreign country (Hennart 1988), enhancing market power (Kogut 1988) and providing revenue enhancing and/or cost reducing opportunities (Beamish and Banks 1987).

A major motivator of collaborative ventures is the fact that in today's rapidly changing environmental conditions (especially the technological developments and their rapid diffusion) nothing stays proprietary for long. No one firm can internalize all of its operations and achieve efficiency. A complementary fact to this is the rapid surge towards global competition and the need to be globally competitive for long-term viability. Hence, firms must work with partners to be able to operate and compete globally (Ohmae 1989). Another trend that promotes

collaborative ventures is that developing new products and penetrating new markets have become very costly for an individual firm to afford without losing competitiveness and few companies can go alone in every situation (Hamel, Doz and Prahalad 1989). Firms need to have upstream and downstream know-how and they can get access to what they do not have by forming collaborative ventures through which non-marketable know-how can be transferred (Hennart 1988).

Collaborative ventures also help in dealing with the problems of uncertainty and opportunism (Williamson 1975, 1981) since the partners contribute assets to the venture and are interested in its success. One final point that needs to be addressed is that collaborative ventures enable the transfer of tacit or nonmarketable knowledge (Hennart 1988; Kogut 1988). This type of knowledge can not be transferred otherwise, unless a complete merger or acquisition takes place, because it is embedded in an organization. Today's global competitive environment is characterized by intense knowledge-driven competition and many firms use collaborative ventures to form knowledge links with other organizations to capitalize on knowledge and remain competitive. Such links enable the firms to get access to both migratory (that can be transferred easily in a formula or product) and embedded (resides primarily in relationships within the firm and defines how a particular firm does business) knowledge in the other firms (Badaracco 1991).

1.2.2 Classification of Collaborative Ventures

Various classifications of collaborative ventures suggested in the literature can be used to identify what is exchanged based on the context of collaborative ventures.

One such classification distinguishes between horizontal vs. vertical relationships. In the former type of venture, each partner provides similar inputs to the venture whereas in the latter type partners make complementary contributions (Contractor and Lorange 1988; Harrigan 1988). In other words, in horizontal collaborative ventures partners are engaged in the same upstream or downstream activity, and in vertical collaborative ventures while one partner is engaged in an upstream activity the other is engaged in a downstream activity. Similar distinctions are noted by other authors although they use different terminology such as symmetrically vs. asymmetrically positioned (Buckley and Casson 1988), scale vs. link (Hennart 1988), quasi-horizontal vs. quasi-vertical integration (Root 1988), horizontal vs. vertical integration (Kogut 1985) and Y vs. X coalitions (Porter and Fuller 1986).

In another approach, the value-added chain (Porter 1986) is suggested as a framework to distinguish among collaborative ventures. In that case, the location on the value-added chain of the resources exchanged through the venture by the partners is used to classify it. Root (1988) notes that "a firm may enter into a cooperative agreement or joint venture to obtain resources that pertain to any link or set of links in its value-added chain" (p.71). For example, Porter and Fuller (1986) distinguish between technology, operations and logistics, and marketing, sales and service coalitions.

Yet another type of classification for collaborative ventures can be based on the motive(s) behind their formation. In that respect Root (1988) distinguishes among technology sourcing, components/assembly sourcing and market entry collaborative ventures, whereas Porter and Fuller (1986) discuss access (to knowledge or ability), risk-reducing and economy (of scale or learning) coalitions. Hakansson and Johansson (1988) add another dimension to

classification of inter-firm interactions in terms of formal vs. informal cooperation. In their view, "formal cooperation is more visible both within the cooperating firms and outside to other actors ...[and]... informal cooperation is based on trust developed through social exchange" (p.374).

Another widely used type of classification is based on ownership where collaborative ventures are classified as equity (e.g. joint ventures) or contractual (e.g. licensing agreements) arrangements (Harrigan 1988; Killing 1988; Root 1988). In the former type, partners have equity in the venture, whereas in the latter case no equity is involved. Lorange (1989), on the other hand, identifies four types of cooperative ventures: project based cooperative ventures, licensing, cooperative venture with permanently complementary roles by the partners, and jointly owned business ventures. Kanter's (1988) classification of partnerships include multi-organization service alliances, opportunistic alliances, and complementary alliances.

In regards to the global construction industry which is the focus of the present research, Seaden (1992) notes that "globalization is evident at every level of the construction industry ..... not only are building materials markets and companies becoming global, so too are design and contractor services" (p.53). Moreover, this industry has been characterized by a number of collaborative relationships (Hoffmann 1992; Rudy 1992). According to Johnston and Lawrence (1988), the construction industry has always operated like a value-adding partnership where general contractors subcontract almost all the work on a construction project. Such arrangements have also been called "quasi-firms" in the construction industry (Eccles 1981). Other types of collaborations are also observed among contractors and owners and in consortia formed for mega-projects such as the Channel Tunnel (UK) or the

Bosphorous Bridge (Turkey). Strassmann and Wells (1988) note that in recent years both technical transfer and finance have become associated with joint venturing in the global construction industry.

Furthermore, global construction represents a multi-billion dollar industry which is very much understudied by marketing researchers. Despite a significant decline in the early 80's the industry has been on the rise since 1987 although there has been a slight decline in 1992. It is also one of the global industries where US firms remain competitive and are among the top players.

These characteristics of the global construction industry are compelling reasons to select this industry as a target for research on international collaborative ventures.

1.3 EVALUATION OF THE CURRENT LITERATURE

Although the amount of studies on collaborative ventures have been accumulating at an increasing rate, only a limited number of conclusions have emerged. In reviewing the literature, various observations can be made. First of all, as Sheth and Parvatiyar (1992) have observed a comprehensive theory of alliances is lacking in the literature. Although various conceptual models have been suggested, very few have been empirically tested. There appears to be a great deal of ambiguity and confusion in the literature about relationship development and its effects on collaborative venture performance. Particularly, very few studies have focused on the effects of relationship constructs (e.g. trust, commitment, interdependence) on collaborative venture performance. Furthermore, most of these studies have used a unidimensional representation of performance though its multidimensional nature has been recognized (Salk 1993).

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There seems to be a number of causes of the ambiguity and confusion surrounding this area of research. First of all, there does not appear to be a consensus on the definitions of the constructs and their operationalizations. Researchers do not even seem to reach consensus on the terminology. Most of the constructs of interest are borrowed from other disciplines such as sociology, social psychology, and organizational behavior and their operationalizations in marketing pose further problems (Sheth and Parvatiyar 1992). Moreover, relationships among those constructs are not yet clearly defined. Contradictory findings have been reported regarding the direction of some relationships (Anderson and Narus 1990).

There also appears to be a lack of integration of relationship marketing and alliance literatures. Many useful insights and synergistic effects can be obtained by integrating these two streams of research.

The literature also lacks studies focusing on consumer or industrial services industries. Services tend to be understudied in the marketing literature and study of collaborative ventures in service industries appears to be no exception.

On the other hand, the literature provides useful frameworks and a list of relevant constructs. Many relationships suggested in conceptual studies wait to be tested. There also appears to be challenging concepts and provoked interest in theory building in this area. At this point, it might be better to focus on convergent thinking (Kuhn 1970) and synthesize the developments achieved so far. Building up on and integrating previous studies can be very fruitful to advance knowledge in this area of research.

1.4 PURPOSE OF THE STUDY

The review of the collaborative venture literature reveals that there are still many dark areas that need clarification and gaps to be filled. This study attempts to address issues related to relationship development and performance in international collaborative ventures. The study specifically focuses on the relationship between the partners in a horizontal collaborative venture and how various aspects of that relationship affect venture performance. *The primary purpose of the study is to develop and test an integrated theoretical model of international collaborative venture performance.*

In this context, the primary research question that the study attempts to address is: what is the impact of each of the relationship constructs (partner fit, mutual commitment, mutual trust, interdependence, two-way communications and balanced power on the different performance dimensions (effectiveness, efficiency, stability/durability, client satisfaction, and managerial success assessment)? The other two research questions are: (1) what are the impacts of structural and strategic fit on overall partner fit; and (2) what is the impact of value of resource on commitment?

This study aims to contribute to the marketing literature in the following ways: (1) integrating relationship and alliance literatures to develop a theoretical model to better understand the performance factors in international collaborative ventures; (2)clarifying the relationships among various relationship constructs; (3) providing an empirical assessment of the proposed model; (4) focusing on horizontal collaborative ventures which tend to be understudied; and (5) providing a thorough analysis of a service industry which is understudied.

In addition to contributing to the academic literature, the study is also expected to generate results with managerial implications that will significantly contribute to managerial understanding and enhance decision-making. The macro analysis of the global construction industry will help managers to better comprehend the structure of the industry and assess where their companies stand in the industry and where competition is coming from. Since international alliances or consortia represent a common way of doing business in this industry, the results of the study will help managers to better understand the formation and conduct of such arrangements and success factors. Such understanding is especially important since such consortia typically involve multi-million dollar mega-projects. Since construction represents one of the significant industries where the United States is competitive, the analysis of the industry as well as the findings related to horizontal alliances or consortia in the industry offer significant public policy implications. Policy makers are expected to benefit from the results of the study in developing their plans to enhance US competitiveness.

The remainder of this dissertation is organized in five chapters. Chapter 2 presents a review of the theoretical foundations upon which the proposed theoretical model is based. It also includes description of the model and the hypotheses to be tested. Chapter 3 describes the research design including data collection, measurements and methodological issues. Chapter 4 offers a review of the global construction industry. Chapter 5 presents the survey response rates and the profiles of the respondents included in the analyses. Chapter 6 presents the findings of the study and discussion of the results. Finally, Chapter 7 provides the conclusions and implications for future research, managerial practice and public policy.

CHAPTER TWO

THEORETICAL FOUNDATIONS AND MODEL DEVELOPMENT

2.1 SOCIAL EXCHANGE THEORY

Exchange is defined as the type of association that involves "actions that are contingent on rewarding reactions from others and that cease when these expected reactions are not forthcoming" (Blau 1964, p.6).

The exchange approach focuses on the "benefits people obtain from, and contribute to, the process of social interaction" (Emerson 1981, p.31). Hence, the central concept in exchange theory is benefit which is called with different names in different disciplines such as value (sociology), utility (economy), reinforcement (psychology), reward or payoff (social psychology). One of the important assumptions in exchange theory is that the flow of benefits from one actor to another through social interaction is contingent upon the benefits received "in exchange". In this context, a resource is the capacity to provide some benefit to another. Moreover, it is groups rather than individuals that carry on the exchange and these are bound by obligations to each other (Turner 1986).

In his exchange theory, Simmel describes the social exchange process in terms of four steps (Turner 1986). First, one party desires for an object that he values, but does not have. Second, another party is identified as possessing the valued object. At the third stage, the desiring party offers the other party an object of value already owned in return for the desired object. Finally, the other party accepts the offer and exchange takes place.

The necessary condition for exchange to take place is that both parties perceive what they receive is more valuable than what they give.

Some basic principles of social exchange emerge from the approaches of different exchange theorists. Turner (1986), in his review of the works of these theorists, provides a systematic overview and codification of these principles which will be briefly described below referring to the original authors.

The attraction principle basically states that actors of exchange interact because they value (some of) each other's resources. Blau (1964), for example, assumes that people engage in social exchange because they perceive the possibility of deriving some rewards. Hence, as the parties get more attracted to each other, the likelihood of an exchange to take place increases.

Simmel has argued that value is a function of the need for and the scarcity of the desired object. Hence the **value principle** states that value of a resource for a party will be greater when that resource is less available and when that party has greater need for it. Emerson (1981), however, discusses the value of a reward and argues that such value is determined by its deprivation, the need for it, the uncertainty regarding its acquisition, and the conditional and generalized enforcers that it is associated with.

The **power principle** notes that the greater one party values the resource(s) of another party, the power of the latter over the former will be greater. Moreover, the power of a party will increase as the liquidity of its resources increases since it will have more exchange options and alternatives. (Simmel 1907, translation 1978).

Levi-Strauss has pointed out that the norm of reciprocity governs all exchange relations which requires all those receiving valued sources to give their benefactors other

valued resources in return. The **reciprocity principle** is also put forward by Blau (1964) who states that "the need to reciprocate for benefits received in order to continue receiving them serves as a 'starting mechanism' of social interaction" (p.92). Subsequent exchanges are regulated by the norm of reciprocity which emerges once an exchange has taken place. "Thus, inherent in the exchange process, per se, is a principle of reciprocity" (Turner 1986, p.265).

This principle is also important in ensuring the continuity of the relationship since it "induces individuals to remain socially indebted to each other" (Dixon 1984, p.15). Moreover, certain obligations for all members of the exchange emerge out of the norm of reciprocity. Expectations are formed regarding rights and obligations of exchange partners in an exchange relationship (Jones 1983). The more these obligations are violated, the more those deprived will tend to retaliate to the violators.

Blau (1964) notes that people establish certain expectations about the level of reward that they must receive in an exchange relationship. He further argues that these expectations will be more likely to be normatively regulated through the norms of fair exchange as the exchange relations get established. These norms play an important role in the stability of the exchange. The more these norms are violated, the more those deprived will tend to retaliate to the violators. Turner (1986) labels these as the **justice principles**. Related to these principles are the issues of cheating, opportunism and forbearance in the exchange relationship (Williamson 1975).

Emerson (1981) notes that different aspects of the relation, such as trust, commitment, solidarity, justice and equity concerns are developed through the exchange process. There is also the tendency for actors to become mutually dependent through the

exchange. Indeed, the focus of social exchange theory is on these interdependent transactions which distinguishes it from economic exchange theory (Cook and Emerson 1978; Emerson 1981).

In his social exchange theory, Emerson (1981) also draws attention to productive exchange which involves productive independence. In such an exchange both (or all) parties to the exchange contribute to collective gain of the group and the benefit can only be obtained by such mutual contribution. If either party fails, nobody benefits. Hence, the parties identify themselves with the interest of the collectivity. They attempt to maximize group gain. In other words, the parties are interdependent which reflects positively on the relationship since both (or all) contribute to obtain the benefit and value positive outcomes of the group. Thus, interdependence of the parties facilitate the exchange relationship to be productive.

Power and dependence appear to be two constructs that relate to the social exchange process. However, exchange theory emphasizes exchanges that are mutually beneficial to both (or all) parties. Exchange facilitated through coercion is not taken into account in the theory. Social exchange theory states that unequal or asymmetric exchanges lead to power inequalities (Blau 1964). These asymmetric exchanges reflect unequal dependence of the parties to each other. This results in the less dependent party to have more power over the more dependent party, hence, power inequality (Emerson, 1962). The possible violation of the norms of reciprocity and fair exchange due to imbalance of dependence will, then, tend to destabilize the exchange relationship and reduce its productive aspects.

2.2 POWER AND RESOURCE-DEPENDENCE THEORIES

In his theory of power and dependence, Emerson (1962) argues that "power resides implicitly in the other's dependency" (p.32). Any relation referred to in this theory can be person-person, group-person or group-group relation where a person or a group is called an actor. Central to the theory are the definitions of dependence and power. Dependence of actor A upon actor B is defined to be "(1) directly proportional to A's *motivational investment* [italics in original] in goals mediated by B, and (2) inversely proportional to the *availability* [italics in original] of those goals to A outside of the A-B relation," and power of A over B is defined to be "the amount of resistance on the part of B which can be potentially overcome by A " (Emerson 1962, p.32). Hence, power is seen as the potential to influence the other. Emerson (1962) views power of A over B to be equal to B's dependence on A for some reward.

Power relations are significant in social relations because such relations involve mutual dependence ties between the actors. Through these ties, each actor has some degree of potential influence over the other. Mutual dependencies that exist between the actors shape these ties. On the other hand, an actor is likely to have different levels of dependencies on others in different-relations.

Jacobs (1974) suggests that there are two components of dependence which can be used to rank dependencies. These are dependencies resulting from the essentiality of the item received in the exchange and the availability of that item from alternative sources. It follows that the more essential and the less available the item is, the more dependent the actor that wants to obtain it is on the other that can provide it. Such a situation results in a power imbalance. Since an exchange relation is balanced only when both (or all) actors

have equal power or equal levels of dependence, power differentials reflect unbalanced relations (Cook 1977). Emerson (1962) argues that an unbalanced relation is unstable since it increases the likelihood of use of power. Such power differentials will increase the opportunism potential if the more powerful party decides to exploit its power advantage (Williamson 1975, 1979, 1985). Hence, exchange relations with equally powerful actors tend to be preferred due to fewer costs of the exchange process. (Cook 1977).

It is argued that resource-based theory is the new theory of the firm (Conner 1991). Being in this tradition, the resource-dependence theory (Pfeffer and Salancik 1978) also focuses on the resources (inputs and capabilities) in the possession of an organization. It argues that the ability to obtain and maintain resources is critical for survival of organizations.

Borrowing from exchange and power-dependence theories (Emerson 1962), the dependence of organizations on resources and the concept of environmental uncertainty are central in this approach. Interdependence arises due to uncertainty over access to resources. The environment is viewed as a source of scarce resources resulting in organizations that need them to be dependent on it. On the other hand, due to environmental uncertainty, the environment is not dependable itself. The theory assumes that organizations try to minimize their dependence on the environment and maximize the dependence of the environment on themselves (Spekman and Sawhney 1990). This way they can have more control over the allocation of resources.

Thompson (1967) argues that in their attempt to reduce uncertainty and to have a more predictable environment, organizations enter into exchange relationships. On the other hand, dependence arises out of these relationships (Emerson 1962). If there is any

imbalance of dependencies, power differentials will be created that might result in unstable relationships as noted above.

In the resource-dependence approach, the notion of dependence used is similar to that of Emerson's (1962). This perspective suggests that dependence is derived from the importance of the resource, the discretion of the other party over the resource it has and the availability of alternatives (Pfeffer and Salancik 1978). Expanding on this notion Heide and John (1988) distinguish between four ways that can affect the level of dependence: magnitude and/or importance of exchange, the outcome of the exchange in comparison to other possible exchanges, availability of alternative sources of exchange and replaceability of the other party. They further assert that "transaction-specific assets create dependence, which is described by the extent of the replaceability of the exchange partner" (p.24). In this regard, they distinguish between potential dependence and realized dependence. Their model suggests that transaction-specific assets increase potential dependence which can be reduced by safeguarding those assets. The resulting level of dependence is realized dependence which can be measured by the replaceability of the exchange partner.

In other words, safeguarding the transaction-specific investments increases the replaceability of the exchange partner. In their study of manufacturer-agency relationships, Heide and John (1988) have found that any offsetting investments used as safeguards by one exchange partner reduces its dependence by increasing the replaceability of the other partner.

2.3 INTERORGANIZATIONAL RELATIONS

The notion of exchange has also been central in the study of interorganizational relationships (Levine and White 1961). In fact, Cook (1977) argues that exchange theory has been the dominant perspective in the study of interorganizational relations. Van de Ven (1976) defines interorganizational relationship as the occurrence of two or more organizations transacting resources among each other. Such relationships have also been defined as the occurrence of transactions, flows and linkages between organizations (Oliver 1990). Similarly, an exchange relationship between organizations is defined as "a formal or informal set of arrangements between organizations involving the transfer of resources or services (Seabright, Levinthal and Fichman 1992).

Van de Ven (1976)'s theory of interorganizational relations posits that the organizations involved in a relationship with each other form a social system. Hence, interorganizational relations are viewed as a social action system. The objective of the organizations is to attain goals that they can't achieve independently. In this respect, interorganizational exchange has been defined as any voluntary activity between organizations involving transfer of resources for mutual benefit (Cook 1977; Levine and White 1961). Hence, as in any organized form of collective behaviour, organizations behave in such a way that collective and self-interest goals are attained. What is also important is that through the division of responsibility among the organizations interdependent processes emerge. In other words, actions of the organizations in the relationship are interdependent. This leads to specialized roles for the parties and development of behavioural expectations from each other (Van de Ven and Ferry 1980).

In a similar vein to the resource-dependence theories, it is also argued that interorganizational relationships arise due to resource dependencies. Cook (1977) suggests that organizations enter into interorganizational exchange relationships either because of specialization or scarcity of resources. Organizations need to exchange with other organizations to obtain necessary resources. In fact, resource scarcity has been noted as an important condition facilitating development of interorganizational relations (Aiken and Hage 1968; Levine and White 1961; Oliver 1990; Pfeffer and Salancik 1978; Thompson 1967; Van de Ven 1976; Van de Ven and Walker 1984). A second condition suggested by different authors is domain consensus among the organizations (Levine and White 1961; Oliver 1990; Schermerhorn 1975; Thompson 1967; Van de Ven 1976; Van de Ven and Ferry 1980; Van de Ven and Walker 1984).

On the other hand, the scarcity of resources creates resource dependencies fostering organizational interdependence and specialization (Cook 1977). In other words, organizations' need for resources push them into such interdependencies (Aiken and Hage 1968). Organizational interdependence is noted as the lowest common denominator in interorganizational cooperation (Schermerhorn 1975). In this context, Schermerhorn (1975) defines interorganizational cooperation as "the presence of deliberate relations between otherwise autonomous organizations for the joint accomplishment of individual operating goals " (p.847).

Levine and White (1961) have suggested that there are four main dimensions to an exchange relationship. These are the parties to the exchange, kinds and quantities exchanged, agreement underlying the exchange and the direction of exchange. In terms of direction, they differentiate between unilateral, reciprocal and joint exchange based on the

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direction of the flow of resources. Reciprocal exchange is where there is a two-way flow of resources between the exchange partners.

Van de Ven (1976) suggests that resource and information flows between the organizations are the major processes within an interorganizational relation. Resource flows refer to the tangible or intangible items of value transacted between the organizations whereas information flows are the communications between the organizations about the items of exchange or the nature of the relationship. The intensity and directions of these flows define the degree of linkage between the organizations in the relationship (Van de Ven and Ferry 1980).

Different determinants for interorganizational relationship formation have been suggested in the literature. In her review of the interorganizational relations literature, Oliver (1990) points out six contingencies that facilitate interorganizational relation formation which are necessity (legal or regular mandates), asymmetry (potential to exchange power), reciprocity (mutual benefits), efficiency (internal input-output ratio), stability (reduce uncertainty) and legitimacy (demonstrate reputation, image or congruence with norms). She concludes that multiple contingencies may be in effect in the formation of an interorganizational relation. Van de Ven and Walker (1984) further argue that an interorganizational relationship or cooperation is likely to arise under conditions of domain consensus.

Interorganizational relationships are viewed as dynamic processes (Schermerhorn 1975; Van de Ven and Walker 1984). In this view, the process starts with a need for resources and communicating with other organizations that can provide them. Since an organization enters relationships with others to obtain needed resources, the resource fit

between its needs and the others' resource provisions is an important criterion in partner selection. In the course of the relationship, however, any change in resource fit may lead to dissolution (Seabright, Levinthal and Fichman 1992). During the process, resources are exchanged incrementally to allow gradual development of trust and commitment and interdependence of the organizations increases in the process.

2.4 RELATIONSHIP LITERATURE IN MARKETING

There are a growing number of articles appearing in the marketing literature that reflect a change in the focus of marketing thought. The emerging paradigm of marketing focuses on relational exchange rather than discrete exchange (Webster 1992). The findings of a group of European researchers called the Industrial Marketing and Purchasing (IMP) Group have refuted the assumption that marketing involves discrete transactions only (Sharma 1993). Moreover, exchange has been one of the central concepts in the development of marketing thought (Alderson 1957; Arndt 1983; Bagozzi 1975,1979; Hunt 1983; Kotler and Levy 1969; Kotler 1972; Stern and Reve 1980). Recognizing marketing as a process, the relationship paradigm emphasizes the relational aspects of the interaction between buyers and sellers in the context of both consumer and organizational/industrial marketing.

Published material in a discipline reflects the current way of thinking in the that field. Interest in and diversity of various dimensions of marketing relationships are clearly evidenced in a stream of empirical studies reported in the literature in two of the top marketing journals in the past few years (Dant and Schul 1992; Heide and John 1990, 1992; Moorman, Zaltman and Deshpande 1992; Bucklin and Sengupta 1993; Crosby,

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Evans and Cowles 1990; Anderson and Narus 1990; Anderson and Weitz 1992; Hallen, Johanson and Seyed-Mohammed 1991; Morgan and Hunt 1994; Noordewier, John and Nevin 1990; Moorman, Zaltman and Deshpande 1993). In addition to those suggested in these empirical studies, there have also been a number of conceptual frameworks suggested in the literature to describe buyer-seller relationships such as the network approach (Thorelli 1986,1990; Sharma 1993; Hakansson 1990; Hakansson and Johanson 1988, 1993; Johanson and Hallen 1989; Easton and Araujo 1989) and a number of other interdisciplinary approaches drawing from sociology, social psychology, economics and marketing (Dwyer, Schurr and Oh 1987; Frazier, Spekman and O'Neal 1988; Webster 1992; Frazier 1983; Stern and Reve 1980 ; Doz 1988; Robicheaux and Coleman 1994). The perspectives, notions and concepts suggested by these frameworks will be briefly reviewed below.

2.4.1 Network Approach

The network approach developed by researchers at the Uppsala School in Sweden offers many useful insights to understanding relationships among industrial firms (Cavusgil 1989, 1993). It is contended that this approach may be emerging as the dominant paradigm in organizational buyer behaviour and organizational marketing (Easton and Araujo 1989). Thorelli (1986) defines networks as two or more organizations involved in long-term relationships. Networks can be identified as connected exchange relations between independent companies (Johanson and Hallen 1989). They consist of three inter-related components: actors, resources and activities (Sharma 1993). The actors refer to the firms who own and control resources and carry out activities. They occupy

positions in the network and the links between these positions reflect bonding and nonbonding relationships (Easton and Araujo 1989). Hellgren, Melin and Pettersson (1993) clearly articulate how positions of firms with respect to each other are viewed from a relational perspective: "From a relational perspective, the strategic position of an industrial firm is given a different meaning compared to its factual view. Here position is "a matter of the exchange relationships of the actor and the identities of the counterparts" in those relationships (Johanson and Mattson 1988), where the identities of the counterparts in turn are partly shaped by their relationships to others (Emery and Trist 1965)" (p.92).

The central concepts in the network approach are power, influence, interdependence and trust (Thorelli 1988). Power is seen as the potential to influence others whereas influence reflects actual use of power. Trust, on the other hand is based on reputation and past performance. Moreover, trust among network members is required for network stability (Thorelli 1990). Networks represent an alternative to both vertical integration and diversification. In this perspective they lay between the extremes of Williamson's (1975) markets and hierarchies (Thorelli 1986).

The Interaction Approach adopted by the IMP Group sees industrial marketing and purchasing as an interaction process between two parties (Li and Cavusgil 1991). Hence, the importance of the relationship existing between buyers and sellers and the long-term aspects of that relationship are emphasized. In fact, Hakansson and Johansson (1993) define business relationships as "exchange relationships between autonomous business units" (p.14). Tornroos and Moller (1993) suggest that the interaction in buyer-seller relationships takes place through the processes of exchange of resources, social

exchange, adaptation and control. As a consequence of interaction industrial networks emerge and firms exchange tangible or intangible resources through the interaction (Hakansson and Johansson 1988). In other words, networks facilitate resource exchange. Each network actor is expected to carry out specific activities and through these activities complementary relationships develop (Sharma 1993).Exchange can be identified as product/service exchange, information exchange, financial exchange or social exchange (Hakansson 1990).Mutuality is of particular importance in relationship development as interaction increases and in non zero-sum type situations (Hakansson and Johansson 1993).

In this regard, development of mutual trust is essential for the development and stability of the relationship. Relations between the organizations are built gradually in a social exchange process through which mutual trust may be developed (Blau 1964). In addition to trust, the atmosphere of the relationship can be described in terms of power-dependence relationship between the organizations, cooperation, closeness and mutual expectation. Sharma (1993) suggests that marketing of power relationships in a network is critical. In this regard, trust and commitment are two important factors to achieve coordination.

2.4.2 Relationship Marketing

As it can be seen above, the network approach focuses on relational exchange and the interactive relationship between buyers and sellers. A similar focus can be traced in the marketing literature leading to the concept of relationship marketing which we will explore next.

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Exchange has been the central notion in various frameworks suggested in the marketing literature on buyer-seller relationships. These frameworks draw attention to the relationship aspects and social processes involved in buyer-seller behaviour such as the political economies framework (Arndt 1983; Stern and Reve 1980), interorganizational exchange framework (Frazier 1983), relational exchange framework (Dwyer, Schurr and Oh 1987) and JIT exchange framework (Frazier, Spekman and O'Neal 1988). Despite these developments, Heide and John (1990) argue that there is no theoretical framework that gives a detailed explanation of these relationships.

There have also been a number of empirical studies reported in the marketing literature investigating various aspects of buyer-seller relationships. These have been particularly prevalent in the channels literature where relationships between channel members have been studied. Other studies have focused on relationships outside the traditional manufacturer, dealer/retailer context of channels of distribution. These include, among others, studies on alliances in industrial purchasing (Heide and John 1990), relationship quality in services selling (Crosby, Evans and Cowles 1990), interactions across functional units (Ruekert and Walker 1987), adaptations in business relationships (Hallen, Johanson and Seyed-Mohammed 1991), industrial buyer-vendor relationships (Noordewier, John and Nevin 1990), role of norms in marketing relationships (Heide and John 1992), co-marketing alliances (Bucklin and Sengupta 1993), trust in marketing research relationships (Moorman, Zaltman and Deshpande 1992; Moorman, Deshpande and Zaltman 1993), conflict resolution processes in franchiser-franchisee relationships (Dant and Schul 1992) and tire trader-retrader relationship (Morgan and Hunt 1994).

To be able to understand relationship marketing, the distinction between discrete and relational exchange needs to be recognized (Dwyer, Schurr and Oh 1987). Discrete exchange refers to market exchanges that take place at one point in time. It is unilateral in nature and identity of the parties to the exchange are not important. Relational exchange, on the other hand, involves bilateral interaction and has a long-term orientation. The identity of the parties are important and the relation is seen as an ongoing one.

The important point to consider in making the distinction between discrete and relational exchange is that exchange is multidimensional (Dwyer, Schurr and Oh 1987). Hence, discrete and relational exchange differ from each other on a number of dimensions (Macneil 1980). Some of the situational differences were pointed out above. In addition to these, there are important process differences between relational exchange and discrete exchange. The former emphasizes joint efforts, mutual gains, cooperation, trust, self-regulation, conflict resolution processes, sharing of costs and burdens, and interdependence between the exchange partners. Moreover, mutual commitment becomes critical (Frazier, Spekman and O'Neal 1988). Relational exchange also points out noneconomic satisfactions derived from the exchange (Dwyer, Schurr and Oh 1987).

There are a number of benefits to relational exchange or forming an exchange relationship. Some of these include reduced uncertainty, improved efficiency through synergy created, joint payoffs and satisfaction from association with the exchange partner and the relationship. The point is that all of these combined or separately helps to increase the competitive advantage of the firm against rivalry (Porter 1980).

However, such exchange relationships are not without their costs. One such cost is the maintenance of the relationship. This may require development of trust, committing

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resources and adaptations. It is important to stress that in relationship marketing exchange is taken to be voluntary. Hence, coercive use of unjust power to maintain a relationship will be counterproductive for the relationship. Secondly, there are costs associated with conflict processes and conflict management. Finally, there may always be the opportunity cost of missing a more attractive opportunity (Dwyer, Schurr and Oh 1987).

There are also important factors that facilitate the exchange relationship. First of all, motivational investment of the exchange partners must be high for the exchange to be bilateral which is central to relational exchange. That is partners must expect to derive high net benefits from the relationship (Doz 1988). Moreover, factors such as commitment, trust, interdependence, power, norms and expectations and cooperation come into play. These factors have important roles in the exchange relationship development. In addition to these, partner fit or complementarity is also pointed out as another factor critical in relationship development and maintenance.

Relationship marketing with its focus on relational exchange and relationship aspects of interorganizational arrangements fits well into a lot of topics related to marketing. One such example can be given from the international context which is international collaborative ventures.

2.5 COLLABORATIVE VENTURE AS AN EXCHANGE PROCESS

It has been suggested that exchange can be used as a unifying construct for the study of international business (Toyne 1989). Moreover, it has been recognized that collaborative ventures among firms are based on an exchange relationship (Mowery 1988). Kogut (1988 a,b) points out that joint venture is a vehicle to exchange organizational

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knowledge. A better understanding of exchange relationships is possible within the framework of collaborative ventures. Hamel (1991) argues that success of a competitive collaboration is determined by a process of collaborative exchange. Through this process "access to people, facilities, documents, and other forms of knowledge is traded between partners" (Hamel 1991, p.100). In other words, **collaborative ventures represent a form of interorganizational interaction involving an exchange relationship** (Evirgen and Yaprak 1992).

Collaborative ventures are used to exchange technology, products, services, and other forms of knowledge (Contractor and Lorange 1988; Harrigan 1987; Hennart 1988; Porter and Fuller 1986; Osborn and Baughn 1990). Moreover, in their Interaction Approach, Hakansson and Johansson (1988) note that through interaction firms exchange resources, products and services. This interaction takes place through a social exchange relationship. Moreover, in this interaction "relationships are built gradually in a social exchange process through which the parties may come to trust each other (Hakansson and Johansson 1988, p.373).

What is exchanged, however, differs depending on the context of the collaborative venture. Some collaborative ventures involve pooling technologies of the partners in a single product or product line. Some others involve combining one partner's upstream capabilities, such as technological abilities with another's downstream capabilities, such as marketing or distribution know-how. The contributions of the partners may be providing market access, technological and/or managerial know-how, capital, R&D capabilities, or sharing risk. For example, an analysis of collaborative ventures between US and foreign

firms reveals that in a majority of cases collaboration is motivated by market access which is exchanged for technology (Mowery 1988).

2.5.1 Exchange Principles in Collaborative Ventures

The exchange principles pointed out in the social exchange theory can be observed in collaborative ventures. As briefly described above, the notion of reward (expected or received) is central in social exchange theory. Partners enter a collaborative venture because they expect some net benefits from the relationship as in social exchange (Blau 1964). In the context of collaborative ventures, these benefits correspond to different motives behind the formation of the collaborative ventures which were discussed before. A collaborative venture will be preferred to internal development, arm's length transactions or merger when it provides benefits that can not be obtained otherwise (Porter and Fuller 1986; Van de Ven 1976). Hence, just as in social exchange, partners in a collaborative venture are motivated by the benefits that the venture is expected to bring .

The steps in the social exchange process can be traced in the formation of any collaborative venture. For illustration, consider a collaborative venture where market access is exchanged for technological know-how. First, one firm desires to have access to a foreign market which it values, but does not have. Market access is a resource in the social exchange framework since it will provide benefit to the firm by enabling entry to the market (Emerson 1981). It is also very valuable if there are high entry barriers to the market. Then, another firm is identified as possessing that resource after which the firm desiring to have it offers the other firm to provide technological know-how in exchange for market access. Finally, a vertical collaborative venture is formed if the other firm

accepts the offer. Another example might be a joint R&D venture which is a horizontal collaborative venture. In that case, the resource of value would be complementary R&D capabilities and knowledge. The partners to the venture will exchange their complementary resources to obtain benefits such as shared risk, economies of scale and/or learning, synergy in product/process development/enhancement (Porter and Fuller 1986). If neither firm has enough R&D and technical resources to go alone, they can exchange their complementary resources through a collaborative venture.

Hence, there appears to be an isomorphism between the social exchange process and collaborative ventures. As noted before, **exchange of resources of value to the partners is the main characteristic of collaborative ventures.** Furthermore, based on the above discussion, collaborative ventures can be proposed to have the following characteristics:

1. In collaborative ventures, cooperation takes the form of exchange.
2. Partners in a collaborative venture exchange resources that are perceived by each partner to be valuable and to bring benefits or "rewards".
3. Collaborative ventures involve an exchange process in the relationships between partners whereby principles of exchange govern.
4. Collaborative venture may be/is influenced by behavioral and perceptual considerations.

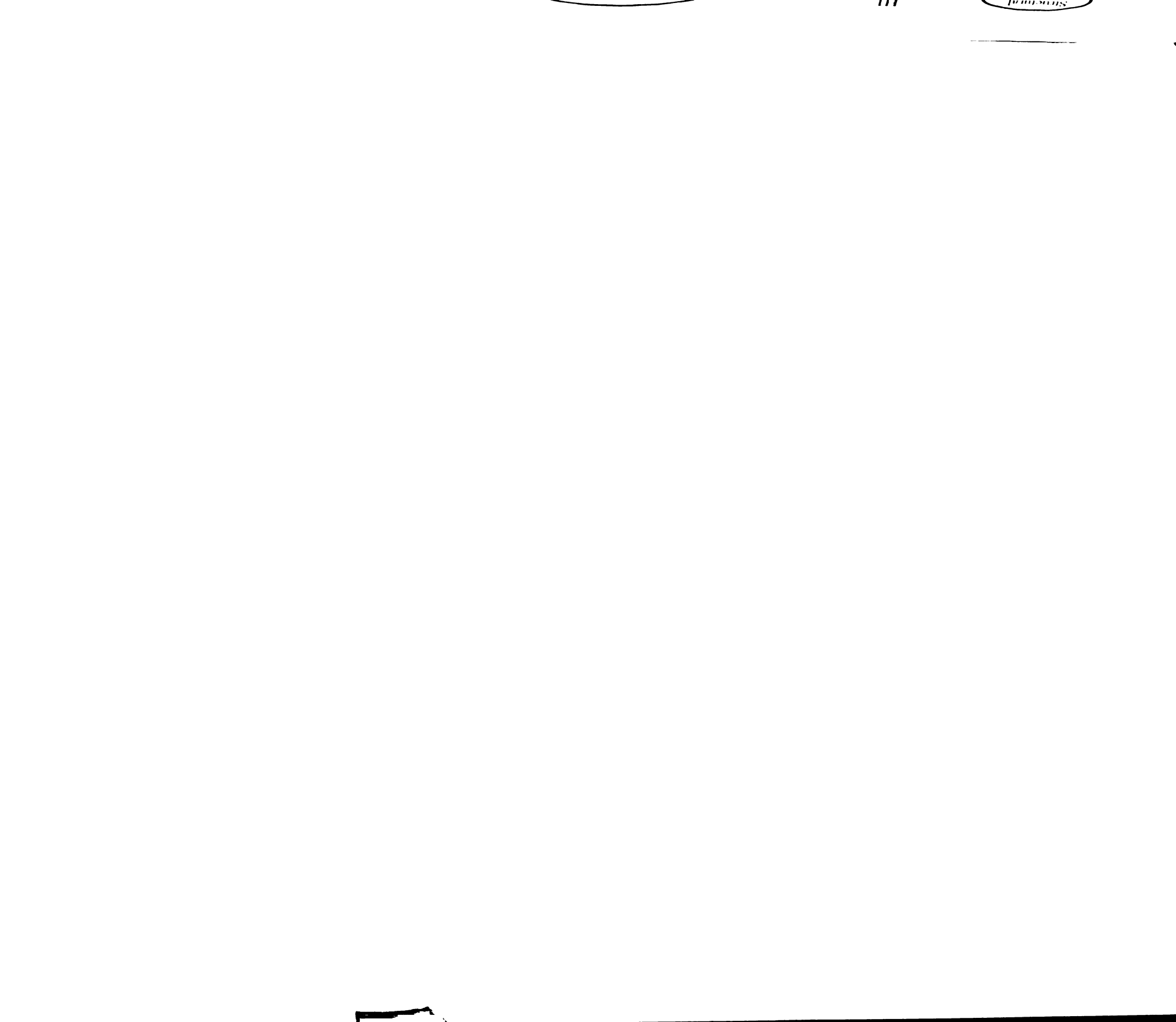
2.6 THEORETICAL MODEL OF INTERNATIONAL COLLABORATIVE VENTURE PERFORMANCE

The proposed theoretical model represents an interdisciplinary approach (Dunning 1988) to studying collaborative ventures using constructs and notions from social exchange, sociology, interorganizational behaviour, strategy and marketing literatures.

The proposed theoretical model for the study of relationships in international collaborative ventures is presented in Figure 4. The key constructs used to explain international collaborative venture performance are structural fit, strategic fit, partner fit, value of resource, mutual commitment, mutual trust, interdependence, two-way communications and balanced power. As noted, the dependent variable is international collaborative venture performance which is modeled as being multidimensional.

2.6.1 Partner Fit

The marriage analogy has been used in characterizing collaborative ventures (Levitt 1983; Stoltman, Gentry and Morgan 1993; Business International, Jan 23, 1989). As in a marriage, selection of the right partner appears to be a critical factor for the "marriage" to work. Similarly, selection of a partner in a collaborative venture is one of the most critical decisions faced by a company (Geringer 1991). Prior research has suggested that partner choice is an important decision affecting international collaborative venture performance (Harrigan 1985). Of particular importance is the amount of "fit" between the partners. Since the partners in an international collaborative venture enter a working relationship, fit between their goals, philosophies, strategies and structures will have an important effect on the performance outcomes of the partnership.



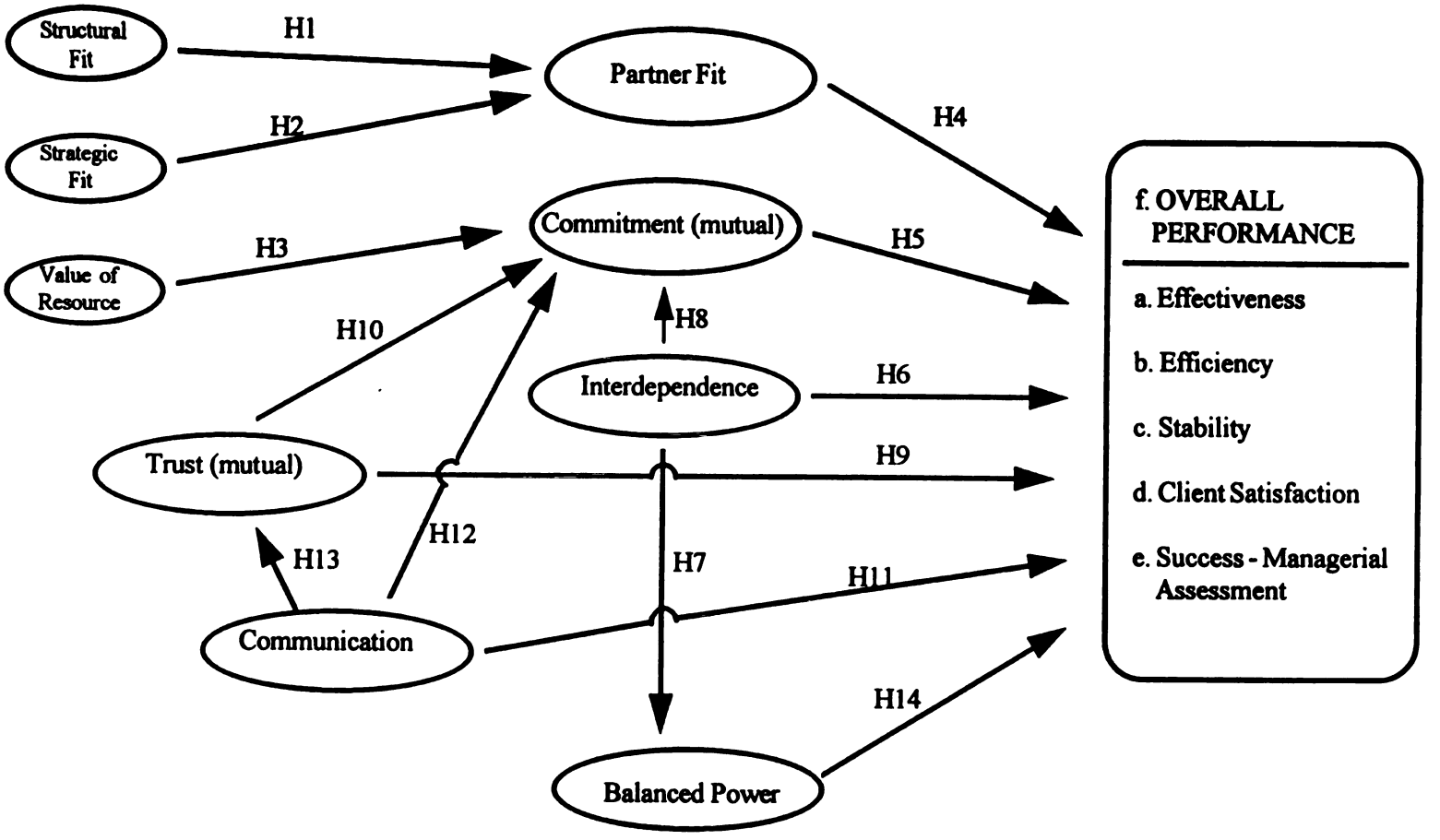


Figure 2.1

PROPOSED MODEL FOR INTERNATIONAL COLLABORATIVE VENTURE PERFORMANCE

Based on their analysis of 49 cross-border alliances, Bleeke and Ernst (1991)point out that complementary skills and capabilities of the partners are important for the alliance success. Lasserre (1984) suggests that in evaluating a local partner for technology transfer, strategic fit and resource fit are the two important criteria to use.

In their study of co-marketing alliances, Bucklin and Sengupta (1993) view partner match as similarity between marketing styles and company cultures of the partners. Their results show that partner match has a direct effect on the perceived effectiveness of the alliance. Specifically, they have found that organizational compatibility and prior history of business relationship with the partner are two strong predictors of alliance effectiveness.

In the proposed model, partner fit is modeled as being driven by structural fit and strategic fit among the partners. The former refers to organizational compatibilities whereas the latter points to the match between goals and objectives and strategic resources.

2.6.2 Structural Fit

The compatibility of operational and financial procedures of the partners appear to be facilitating factors for the smooth operation of activities in a collaborative venture.

The relationships or affiliations of the partners with third parties may also help or adversely affect the development of the partnership. Moreover, compatibility of the organizational cultures of the partners is suggested as an important requirement that enhances partner fit. In her analysis of joint ventures, Harrigan (1985) has found a positive relation between cultural homogeneity of the partners and the success of the joint venture. This is reflected in the values and social norms prevalent in the organizations.

Compatibility of the technical capabilities of the partners is a further factor enhancing the fit between them. Badaracco (1991) has observed that match of values and capabilities are necessary for the partners to be "fit" for each other. Moreover, compatible marketing philosophies of the partners will facilitate conflict reduction and provide a better match between the operations and organizational processes of the partners. These factors tend to reflect the operational structures, philosophies and capabilities of the partners which need to be compatible for the fit between them to increase. Hence, overall organizational compatibility is a necessary, but not sufficient, condition for partner fit (Porter and Fuller 1986).

2.6.3 Strategic Fit

A second important dimension of partner fit is strategic fit. We define this in terms of the extent that the goals and objective of the partners are compatible, resources are complementary and there is consensus on the domain of the partnership. Goal compatibility has been stressed as one of the crucial aspects of a healthy partnership (Radcliffe and Cowles 1993). The partners may have different strategic goals in entering the venture, but, they need to be compatible with each other so that each partner can reach its objectives without endangering the other's (Root 1988). Hamel, Doz and Prahalad (1989) note that in a collaboration mutual gain is possible if partners' strategic goals converge while their competitive goals diverge. Incompatible goals or objectives in a partnership, indicate a misfit between the partners which will negatively affect relationship development and performance of the collaborative venture.

Geringer (1991) suggests that complementarity is essential for the effectiveness of an international joint venture. The main motive behind collaborative ventures is the expectation to obtain benefits that the partners can't obtain themselves. Hence, complementarity is a critical factor in assessing partner fit (Sengupta 1993). Jain (1987) points out that two of the factors leading to success are the complementarity of the needs and strengths of the partners. Similarly, Contractor and Lorange (1988) points out that partner fit increases when the partners have complementary strengths and compatible strategies. By bringing together resources that are complementary to each other, firms can enhance the competitiveness of an alliance (Harrigan 1985). Porter and Fuller (1986) further argue that complementary contributions of the partners will enhance collaborative venture stability. The alliance provides a governance strategy through which each firm can exchange valuable resources with each other. Moreover, Seabright, Levinthal and Fichman (1992)have found support for the hypothesis that "change in resource fit provides an impetus for dissolution " (p.152).

Similarly, domain consensus is an important factor in development of interorganizational relationships (Van de Ven and Ferry 1980). The domain of the collaborative venture will consist of the specific goals it wishes to pursue and the functions it undertakes to implement them (Levine and White 1961). Consensus regarding the domain of the collaborative venture is essential to shape the expectations of the partners. Domain consensus is essential for an exchange agreement to be reached and implemented (Levine and White 1961). Moreover, Frazier, Spekman and O'Neal (1988) point out that the partners must have realistic expectations for the exchange relationship to be successful.

2.6.4 Value of Resource

Getting access to resources that it does not have appears to be a major motive for a firm to enter into a partnership or collaboration with other firms. The value of the resource to be obtained through the partnership is determined by the need for and scarcity of that resource (Emerson 1981). On the other hand, Seabright, Levinthal and Fichman (1992) suggest that value of a resource might decrease if resource requirements change. The firm in need of a resource can obtain it from another firm possessing it through the exchange relationship that can formed in a collaborative venture (Hamel 1991). In their review of empirical studies on joint ventures, Beamish and Banks (1987) note that in successful joint ventures, both partners significantly value each other's contributions. In fact, the success of a collaboration very much depends on the unique contributions of the partners (Hamel, Doz and Prahalad 1989).

Furthermore, when the value of the resource to be obtained through the collaborative exchange is high, the party in need of that resource will tend to be more committed to the venture. If the resources to be exchanged through the collaboration are valuable for both partners, both will be more committed to the partnership. In other words, mutual commitment of the collaboration partners will increase when they perceive the value of the resource(s) they will be obtaining through the partnership to be high.

2.6.5 Commitment

Commitment of the firms in a collaborative venture has been noted as a critical factor for venture success. In their model of development of buyer-seller relationships, Dwyer, Schurr and Oh (1989) suggest that commitment is the most advanced phase of

buyer-seller interdependence. Anderson and Weitz (1992) suggest that "commitment to a relationship entails a desire to develop a stable relationship, a willingness to make short-term sacrifices to maintain the relationship, and a confidence in the stability of the relationship" (p.19). Moorman, Zaltman and Deshpande (1992) further suggest that commitment reflects a positive valuation of a relationship. Commitment helps to reduce opportunism (Williamson 1975) that would increase the cost associated with the partnership (Lewis 1990).

Subieta (1991) has found that commitment impacts joint venture effectiveness positively. The effect of commitment on performance of collaborative ventures have been suggested in many conceptual and empirical studies reported in the literature (e.g. Beamish and Banks 1987; Jain 1987; Badaracco 1991; Sheth and Parvatiyar 1992; Ohmae 1989). Moreover, Jain (1987) suggests that mutual commitment in international strategic alliances will extend the duration of the alliance. Furthermore, Ohmae (1989) notes that for good partnerships to develop, effort and commitment are required from both partners.

2.6.6 Trust

The importance of trust in interpersonal relations that involve reciprocal exchange have long been recognized (Corazzini 1977; Aguilar 1984; Larzelere and Huston 1980). The role and importance of trust in cooperative relationships have also been clearly recognized in the marketing literature (Ring and Van de Ven 1992; Sullivan, et.al. 1981; Moorman, Zaltman and Deshpande 1992; Dwyer, Schurr and Oh 1987; Frazier, Spekman and O'Neal 1988; Dant and Schul 1992; Anderson and Narus 1990; Buckley and Casson

1988). In fact, Sheth and Parvatiyar (1992) view trust as one of the main constructs in alliance formation.

Moorman, Zaltman and Deshpande (1992) define trust as "a willingness to rely on an exchange partner in whom one has confidence" (p.315). They argue that this definition encompasses the two approaches taken in the literature, which are viewing trust as a belief or expectancy about an exchange partner's trustworthiness (Rotter 1967; Blau 1964; Anderson and Weitz 1992) or viewing it as a behavioural intention or behaviour reflecting reliance on a partner (Coleman 1990; Deutsch 1962; Zand 1972).

Moorman, Zaltman and Deshpande (1992) further note that trust has been treated to have two different roles in relationships. Some researchers have viewed it as an aspect of relationship quality (Crosby, Evans and Cowles 1990) while others have viewed it as a determinant of relation quality (e.g. Anderson and Narus 1990).

Ring and Van de Ven (1992) point out that partners in a collaborative venture need to be concerned about the trustworthiness of each other since they will need to work cooperatively for the venture to succeed. They argue that as the parties trust each other more, they may rely more on each other's actions.

Trust is an essential factor for a partnership to work. Lewis (1990) states that "since you can't monitor every aspect of an alliance, you want to rely on each other to do things in a way that considers your mutual interests"(p.247). Furthermore, Beamish and Banks (1987) note that with a foundation of trust, the partners would be more willing to be tolerant and persevering so that the joint venture can survive through difficult times. The importance of trust in alliances or cooperative ventures have been consistently pointed out in the literature (Bleeke and Ernst 1991; Lorange 1989; Spekman 1988; Bowersox

1990; Lyles 1987; Wallace 1993; Buckley and Casson 1988; Ohmae 1989; Sullivan et. al. 1981).

Various relations of the construct of trust with other key factors in alliance performance have also been investigated in the literature. Doz (1988) suggests that as trustworthiness of each partner increases mutual commitment will gradually increase. the positive effect of trust on commitment is also suggested by Dwyer, Schurr and Oh (1987). In fact, trust has been found to have a direct positive effect on commitment to a relationship (Moorman, Zaltman and Deshpande 1992). In their study of manufacturer-distributor working partnerships, Anderson and Narus (1990) have found support for the view that communications is an antecedent for trust. They have also found a significant path from trust to satisfaction. In their conceptualization of strategic alliances, Spekman and Sawhney (1990) also note the positive effect of trust on alliance performance. Frazier, Spekman and O'Neal (1988) also argue that trust between the parties to a JIT exchange relationship is one of the factors leading to success. Badaracco (1991) also sees trust as a necessary factor in what he calls "knowledge-driven" alliances. This effect has been empirically supported by Wallace's (1993) study of American and Japanese joint ventures. Moreover, Subieta (1991) has found empirical support for the hypothesis that trust leads to effective formation of international cooperative arrangements and satisfaction with the arrangement.

In his study of international project selling, Hadjikhani (1993) refers to Hedaa's (1991) work who has found that increased trust results in increased interdependencies. This is in line with Dwyer, Schurr and Oh's (1987) model of buyer-seller relationship development who also posit a positive relationship between trust and interdependence.

In their theory of cooperation, Buckley and Casson (1988) suggest that mutual trust is generated through mutual forbearance by the partners which increases the efficiency of cooperation. It is important that trust needs to be mutual, i.e. it must flow in two directions. Moorman, Zaltman and Deshpande (1992) note that unless trust is bilateral, it is likely to disappear. In fact, when mutual trust degenerates, the collaborative venture may fail (Lorange 1989).

2.6.7 Interdependence

Schermerhorn (1975) has pointed out that organizational interdependency is the lowest common denominator for the notion of interorganizational cooperation. Parvatiyar (1993) has argued that interdependence is the main construct to focus on in studies on alliances. Moreover, in their conceptualization of strategic alliances, Spekman and Sawhney (1990), identify interdependence as one of the core dimensions of a strategic alliance. Kanter (1988) has also identified interdependence as one of the six "I"s of successful partnerships.

Contractor and Lorange (1988), hypothesize that the level of interorganizational dependence will be different across different types of cooperative arrangements being highest for equity joint ventures. Moreover, higher switching costs will reflect higher levels of interdependence (Anderson and Narus 1991). Holding a similar view, Astley and Fombrun (1983) have suggested a classification of organizational collectives using the form of interdependence as one of the two dimensions.

Interdependence arises due to mutual dependencies that exist among alliance partners. Given that there are mutual dependencies, there is also mutual interest in

cooperating (Anderson and Narus 1991). Since performance of the collaborative venture depends on the mutual contributions by the partners, their interdependence provides an incentive to have a productive exchange relationship (Emerson 1981). On the other hand, increase in dependence has been pointed out as one of the costs associated with entering an alliances (Spekman and Sawhney 1990).

The functional aspects of interdependence have been noted in the literature which is the view adopted in our proposed model. For instance, Lewis (1990) states that "for both firms to gain, the mutual dependence created by a strategic alliance should increase each firm's independence ..... alliances can support the growth of separate competitive strengths and create net growth opportunities" (p.50). Lorange (1989) further argues that especially in less formal, temporary cooperative ventures, partners must be willing to become interdependent in order to achieve a minimum degree of stability.

Firms enter into collaborative ventures because they want to have access to the resources that their partner(s) can bring in. In other words, each partner needs the resources of the other. Due to these reciprocal needs, partners will be less likely to resort to opportunism and stab the other in the back. Since power is derived from dependence, interdependence of partners will lead to a balance of power in the relationship. It is important to note that this argument is valid for interdependence which implies mutual dependencies. If there are differences in the relative dependencies of the partners, the power balance will be lost since the less dependent party will have more power (Cook 1977, Emerson 1962).

Mutual partner needs, reflecting interdependence, have been found to have a positive affect on joint venture performance (Beamish 1987). This is reflected in

Emerson's (1981) notion of productive dependence. Contractor and Lorange (1988) have noted that the viability of a cooperative venture will increase as interdependence among partners increases. In the relational exchange framework suggested by Dwyer, Schurr and Oh (1987), interdependence is viewed as a driver of commitment. Similarly, Hallen, Johanson and Seyed-MOhammed (1991) have provided empirical evidence that dependence increases the extent of adaptation which they argue is an indicator of commitment. Moreover, Van de Ven and Walker (1984) have found that resource dependence has a great effect on stimulating interorganizational communications.

2.6.8 Communication

Two-way communication is an important factor for a healthy relationship to develop. It plays an important role in realizing mutual benefits in cooperative relationships by allowing exchange of necessary information and reducing misunderstanding (Dwyer, Schurr and Oh 1987; Frazier, Spekman and O'Neal 1988; Anderson and Narus 1990). Kanter (1988) argues that one of the six "I"s characteristic of successful strategic partnerships is being "Informed" about the plans and direction of the other partners.

Crosby, Evans and Cowles (1990) note that mutual disclosure is a factor enhancing relationship quality. Heide and John (1992) have found that norm of information exchange has a significant effect in the relationships between OEM manufacturers and their component suppliers.

Two-way communications will demonstrate the willingness of each party to share information and exchange views with their partners. Such an approach is very likely to be valued positively by the partners which will increase their trust in the other party and their

commitment to the relationship. In fact, open communication among partners is one of the factors leading to success of alliances and development of good relations (Badaracco 1991; Lewis 1990). It has also been suggested that such open and honest communication will result in increased commitment of the partners (Spekman 1988) which has been empirically shown by Anderson and Weitz (1992).

Open communication will help to improve collaborative venture performance by allowing exchange of relevant information that might impact the operations related to the venture. It is important for the collaborative venture partners to realize that they are in the same boat. If the boat sinks, both will lose. Art Hitsman, president of Boeing Computer Services, has stated that "any alliance must have a clear purpose and salient mutual benefits. The guiding principle here is that .... you win only if the joint project succeeds" (Peters and Peters 1992). Hence, it is critical to share any information to keep the boat sailing. Lyles (1987) notes that poor judgments are one of the causes for mistakes in joint ventures. Open communication may help to make better judgments. Two-way communication will also help to reduce misjudgment of expectations of the partners (Frazier, Spekman and O'Neal 1988).

2.6.9 Balanced Power

The notion of power has been central in exchange relationships (Emerson 1962; Cook 1977; Gaski and Nevin 1985). Jain (1987) has suggested that shared power is one of the characteristics of successful strategic alliances. Frazier, Spekman and O'Neal (1988) have further argued that balance of power is necessary for the viability of JIT exchange

relationships. Furthermore, in their study of co-marketing alliances, Bucklin and Sengupta (1993) have found that balanced power enhances perceived effectiveness of alliance.

Any imbalance of power will create an environment prone to opportunism. The more powerful party may exploit the less powerful one which will result in unbalanced contributions made and/or benefits obtained. Since balanced contributions and mutual benefits are essential in an exchange relationship, imbalance of power will negatively affect the collaborative venture relationship and its outcome (Jain 1987).

2.6.10 Performance

The multidimensional nature of collaborative venture performance has been emphasized in the literature (Salk 1993). Geringer (1991) suggests to use several different performance measures in studying international joint ventures. Geringer and Hebert (1989) state that "no consensus on the appropriate definition of international joint venture performance has yet emerged" (p.245). Some of the objective measures have been financial indicators (e.g. Tomlinson 1970), survival (e.g. Killing 1983), duration (e.g. Kogut 1988b), and instability in ownership structure (e.g. Gomes-Casseres 1987).

On the other hand, there might have been various strategic motives and objectives in entering a collaborative venture whose achievement is not necessarily reflected in objective measures (Geringer and Hebert 1989). Hence, perceptual measures may capture how the collaborative venture has performed better than objective measures. Perceptual measures can provide information on whether the collaborative venture has reached its objectives or not.

Perceived effectiveness has been widely used as the measure for collaborative venture performance (Bucklin and Sengupta 1993). Van de Ven (1976) views it as the extent to which the partners perceive that each party has carried out its commitments and that the relationship has been worthwhile, equitable, productive and satisfying. On the other hand, since the collaborative venture can be viewed as an exchange relationship, it can be considered to have been effective only if mutual benefits have been obtained (Emerson 1981). According to Lorange (1989), success of a collaborative venture can be measured from each partner's perspective "since what is successful for one partner is not necessarily successful for another" (p.217). Since international strategic alliance provides the opportunity for interpartner learning, the extent of learning that has taken place appears to be another indicator of performance (Hamel 1991).

The dimensions of performance considered in the proposed theoretical model are perceived effectiveness, perceived efficiency, durability/stability, client satisfaction, and managerial assessment of success. These include both subjective, objective as well as collective, and individualistic dimensions of performance.

2.7 RESEARCH HYPOTHESES

A number of research hypotheses are derived in the proposed model of collaborative venture performance. The model associated overall collaborative venture performance and its five dimensions and relationship constructs.. *The underlying premise behind the model is that a collaborative venture represents a form of interorganizational interaction involving an exchange relationship.*

The specific research hypotheses are listed below.

Structural Fit

H1 Increase in the structural fit between collaborative venture partners will increase the overall fit between them.

Strategic Fit

H2 Increase in the strategic fit between collaborative venture partners will increase the overall fit between them.

Value of Resource

H3 When both partners place a high value on the resource they obtain through the collaborative venture, mutual commitment of the partners to the collaborative venture will increase.

Partner Fit

H4a The higher the partner fit in a collaborative venture, the higher will be the perceived effectiveness of the collaborative venture.

H4b The higher the partner fit in a collaborative venture, the higher will be the perceived efficiency of the collaborative venture.

H4c The higher the partner fit in a collaborative venture, the higher will be the stability of the collaborative venture.

H4d The higher the partner fit in a collaborative venture, the higher will be the satisfaction of the client with the performance of the collaborative venture.

H4e The higher the partner fit in a collaborative venture, the higher will be the managerial assessment of the success of the collaborative venture.

H4f The higher the partner fit in a collaborative venture, the higher will be the overall performance of the collaborative venture.

Commitment

H5a The higher the mutual commitment in a collaborative venture, the higher will be the perceived effectiveness of the collaborative venture.

H5b The higher the mutual commitment in a collaborative venture, the higher will be the perceived efficiency of the collaborative venture.

H5c The higher the mutual commitment in a collaborative venture, the higher will be the stability of the collaborative venture.

H5d The higher the mutual commitment in a collaborative venture, the higher will be the satisfaction of the client with the performance of the collaborative venture.

H5e The higher the mutual commitment in a collaborative venture, the higher will be the managerial assessment of the success of the collaborative venture.

H5f The higher the mutual commitment in a collaborative venture, the higher will be the overall performance of the collaborative venture.

Interdependence

H6a The higher the interdependence of the partners in a collaborative venture, the higher will be the perceived effectiveness of the collaborative venture.

H6b The higher the interdependence of the partners in a collaborative venture, the higher will be the perceived efficiency of the collaborative venture.

H6c The higher the interdependence of the partners in a collaborative venture, the higher will be the stability of the collaborative venture.

H6d The higher the interdependence of the partners in a collaborative venture, the higher will be the satisfaction of the client with the performance of the collaborative venture.

H6e The higher the interdependence of the partners in a collaborative venture, the higher will be the managerial assessment of the success of the collaborative venture.

H6f The higher the interdependence of the partners in a collaborative venture, the higher will be the overall performance of the collaborative venture.

H7 The higher the interdependence of the partners in a collaborative venture, the higher will be the balance of power in the collaborative venture.

H8 The higher the interdependence of the partners in a collaborative venture, the higher will be the mutual commitment of the partners to the collaborative venture.

Trust

H9a The higher the mutual trust among the partners in a collaborative venture, the higher will be the perceived effectiveness of the collaborative venture.

H9b The higher the mutual trust among the partners in a collaborative venture, the higher will be the perceived efficiency of the collaborative venture.

H9c The higher the mutual trust among the partners in a collaborative venture, the higher will be the stability of the collaborative venture.

H9d The higher the mutual trust among the partners in a collaborative venture, the higher will be the satisfaction of the client with the performance of the collaborative venture.

H9e The higher the mutual trust among the partners in a collaborative venture, the higher will be the managerial assessment of the success of the collaborative venture.

H9f The higher the mutual trust among the partners in a collaborative venture, the higher will be the overall performance of the collaborative venture.

H10 The higher the mutual trust among the partners in a collaborative venture, the higher will be the mutual commitment of the partners to the collaborative venture.

Two-way Communications

H11a The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the perceived effectiveness of the collaborative venture.

H11b The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the perceived efficiency of the collaborative venture.

H11c The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the stability of the collaborative venture.

H11d The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the satisfaction of the client with the performance of the collaborative venture.

H11e The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the managerial assessment of the success of the collaborative venture.

H11f The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the overall performance of the collaborative venture.

H12 The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the mutual commitment of the partners to the collaborative venture.

H13 The higher the level of two-way communications among the partners in a collaborative venture, the higher will be the mutual trust among them.

Balanced Power

H14a The higher the balance of power among the partners in a collaborative venture, the higher will be the perceived effectiveness of the collaborative venture.

H14b The higher the balance of power among the partners in a collaborative venture, the higher will be the perceived efficiency of the collaborative venture.

H14c The higher the balance of power among the partners in a collaborative venture, the higher will be the stability of the collaborative venture.

H14d The higher the balance of power among the partners in a collaborative venture, the higher will be the satisfaction of the client with the performance of the collaborative venture.

H14e The higher the balance of power among the partners in a collaborative venture, the higher will be the managerial assessment of the success of the collaborative venture.

H14f The higher the balance of power among the partners in a collaborative venture, the higher will be the overall performance of the collaborative venture.

CHAPTER THREE

RESEARCH DESIGN

The study is conducted following a multi-phase research design. The phases in the study are: (1) analysis of secondary data on the global construction industry; (2) personal in-depth interviews conducted with executives from the construction industry; and (3) empirical testing of the hypotheses proposed about the collaborative venture performance. Next, these phases in the research are described.

3.1 PHASE 1: ANALYSIS OF SECONDARY DATA

In this phase of the research, a macro perspective has been taken with a thorough analysis of secondary data. These data are taken from *Engineering News Record* (*ENR*) which is a weekly publication. This trade journal specializes in the construction industry and is a comprehensive publication providing regular information on the industry and the firms in the industry. Each year *ENR* conducts various surveys of firms in the construction industry and publishes their results. Of these annual surveys, two have been selected as being relevant for the purpose of this study. These are the top 225 international contractors survey and the top 400 US contractors survey.

The format of the published data for these two surveys are similar. For each firm that is included in the list, its rank in that year's survey listing, name, state or country, total billings of new contracts awarded, billings of new international contracts, percentage of total new contracts in each construction market, and its rank in the previous year's survey listing are given. Moreover, for the top 225 international contractors, the total awards by the listed

contractors, the distribution of new contracts across the major construction regions in the world and the shares of contractors from different nationalities in those regions and the number of contractors from different nationalities that have entered that year's listing are given. On the other hand, the total billings of domestic and international new contracts are given in the top 400 US contractors listing. It is important to note that each year's survey results reflect the new contracts information for the previous year.

These surveys have been conducted since 1978 although the format of the reported results have improved over the years. However, the period of 1982-1993 is selected for analysis due to consistency of data reporting. In other words, the data described above are available for 1982 through 1993. Each year *ENR* sends out a questionnaire to the contractors and those who respond to the questionnaire supply the information reported in *ENR* surveys. *ENR* also ranks some nonresponding contractors according to overseas contract awards reported *International Construction Week (ICW) ENR*'s weekly newsletter (Strassmann and Wells 1988). In this study, these data have been tabulated for the period 1982-1993 and analyzed through graphs generated. A graphical analysis is very helpful to visually see some trends and deviations in the international construction activities.

These secondary data obtained from annual survey results published by *ENR* are supplemented by information retrieved from various other issues of *ENR* and other industry and government publications. Moreover, the insights obtained from the in-depth interviews conducted in the second phase of the study also supplement the graphical analysis. The interpretations of the graphs and the various trends or deviations have been done incorporating the information obtained from these supplementary sources.

On the other hand, it is important to note various limitations of the *ENR* survey data. These are discussed in the next chapter under the heading of measurement problems.

The results of this phase of the study will help us understand the structure of the global construction industry. We will be able to see trends in the industry as well as the overall picture.

3.2 PHASE 2: IN-DEPTH INTERVIEWS

This phase of the study includes personal in-depth interviews with industry experts from industry associations and executives from the construction industry. A total of twelve (12) interviews were conducted in this phase.

After scheduling the appointments with the interviewees, these ten general contractors have been visited personally. The format of the interviews has been semi-structured and the interviews have been guided by an interview guide that has been prepared in advance. Following the interview, the interviewees have also been asked to comment on the relationships between the constructs in the model. Specifically, each has indicated the direction of the relationships between the constructs that have been laid out to them at the end of the interview. Each interview has lasted about an hour.

Such face-to-face interviews have provided valuable information and insights about the construction industry from the executives in the industry.

3.3 PHASE 3: EMPIRICAL TESTING

The last phase of the study involves collecting the primary data to test the proposed hypotheses. Since measures of the key constructs are perceptual in nature, the data for testing

the model primarily come from a mail survey of key executives in the selected sample of contractors. The key informant technique (Seidler 1974) has been used to collect the data. Campbell's (1955) criteria of being knowledgeable about the phenomenon under study and being able and willing to communicate with the researcher has constituted the major criteria for informant selection. This phase of the study was aimed to generate results that will help us to answer our research questions and test our hypotheses.

3.4 MEASUREMENT

Building on previous empirical studies and scales developed, especially those by Anderson and Weitz (1992), Bucklin and Sengupta (1993), Crosby, Evans and Cowles (1990), Heide and John (1988, 1992), Kaufmann and Stern (1988), Larzelere and Hudson (1980), Moorman, Zaltman and Deshpande (1992), Ruekert and Walker (1987), Subieta (1991), Sullivan, *et.al.* (1981), and Van de Ven and Ferry (1980), measures have been developed for each of the constructs of interest (See Table 3.1).

As noted above, a questionnaire has been used as the survey instrument in the study. Initially, a detailed listing of scale items were generated which were then reduced to produce the first draft of the questionnaire. This questionnaire was then sent to the interviewees that were contacted in the second phase of the study and asked to comment on it. The questionnaire was also reviewed by academicians highly experienced in questionnaire development. Based on the feedback received both from the industry executives/experts and the academicians, the survey instrument has been revised and finalized. The questionnaire contained the following sections for different types of data:

Table 3.1
Construct Measures and References

Construct	Measures	Literature Reference
Overall Performance		
Effectiveness	The collaboration provided a very effective medium of learning for both firms Both firms carried out their responsibilities and commitments in this relationship A fair amount of time and effort was wasted in this relationship The collaboration met its objectives for both firms The owner's objectives (in terms of specifications, schedule, quality) were met	Bucklin & Sengupta (1993), Crosby, Evans & Cowley (1990), Ruekert & Walker (1987), Van de Ven (1976), Van de Ven & Ferry (1980)
Efficiency	In general, resources were used very efficiently in this relationship Overall, the project was efficiently carried out	New scale
Stability	Overall, the working relationship in this partnership was stable This partnership lasted as long as it was intended	Gomes-Casseres (1987)
Client Satisfaction	At the completion of the project, the credibility of the project partners was confirmed or enhanced in the eyes of the owner The owner was not satisfied with the outcome of the project The owner was proud of the project at its completion The owner perceived the partnership as one united team	Crosby, Evans & Cowley (1990)
Success	Our strategic objectives going into the venture were achieved The venture was profitable for our firm We regret getting into this venture Collaborating with this partner in this project was a wise business decision We were tied up with legal claims after the project was completed	Anderson & Narus (1990), Bleeke & Ernst (1991)

Table 3.1 (cont'd)

Construct	Measures	Literature Reference
Structural Fit	The organizational values and social norms prevalent in the two firms were congruent Technical capabilities of the two firms were compatible with each other The organizational procedures of the two firms were compatible Employees of both firms had similar professional or trade skills	Badarocco (1991), Harrigan (1985), Porter & Fuller (1986)
Strategic Fit	Executives from both firms involved in this project had compatible philosophies/approaches to business dealings Each partner enabled the other to reach strategic objective(s) that it could not reach alone The goals and objectives of both firms were compatible with each other The resources brought into the venture by both partners were complementary	Bucklin & Sengupta (1993), Ruekert & Walker (1987), Van de Ven & Ferry (1980)
Partner Fit	Both partners were very suitable for each other There was a poor match between the two firms The chemistry was right between the two firms	Bleeke & Ernst (1991), Geringer (1991), Harrigan (1985)
Commitment	Both firms made several adaptations in their processes and/or procedures to better satisfy each other's needs Both firms were willing and/or actively seeking for a substitute to replace each other's place Both firms were willing to dedicate whatever people and resources it took to make this project a success Both firms provided experienced and capable people to the project Both firms were committed to making this project a success	Subieta (1991), Anderson & Weitz (1992), Crosby, Evans & Cowley (1990), Moorman, Zaltman & Deshpande (1992)
Value of Resource	Both firms needed each other's resources to accomplish their goals and responsibilities The resources contributed by both firms were significant in getting the bid Resources brought into the venture by each firm were very valuable for the other The resources contributed by both firms had easily available substitutes	Bucklin & Sengupta (1993)

Table 3.1 (cont'd)

Construct	Measures	Literature Reference
Interdependence	If the relationship between the two firms was terminated, both firms would suffer significantly One of the two firms (or both) could easily replace the other with another firm Either of the firms could easily leave the partnership at any time Both firms absolutely needed each other for the project	Anderson & Narus (1990), Dant & Schul (1992), Noordewier, John & Nevin (1990), Rukert & Walker (1987), Van de Ven & Ferry (1980)
Trust	Both firms were primarily interested in their own welfare Both firms were perfectly honest and truthful with each other Both firms treated each other fairly and justly Relying on each other was risky for both firms Both firms found it necessary to be cautious in dealing with each other Both firms had established reputations for trustworthiness	Anderson & Narus (1990), Crosby, Evans & Cowley (1990), Dant & Schul (1992), Kaufmann & Stern (1988), Larzelere & Huston (1980), Moorman, Zaltman & Deshpande (1992), Moorman, Deshpande & Zaltman (1992), Sullivan, et.al. (1981)
Communication	There was frequent communication between the two firms (e.g. visits to each other's firms, meetings, written and telephone communications) Exchange of information in this relationship took place frequently and informally Overall, people from both firms found it hard to communicate with each other Making contact with people from the other firm was hard for both firms Problems between the two firms tended to get worse before they discussed them Both firms kept each other well informed about their operations	Anderson & Narus (1990), Anderson & Weitz (1992), Bucklin & Sengupta (1993), Crosby, Evans & Cowley (1990), Heide & John (1992), Rukert & Walker (1987), Van de Ven & Ferry (1980)
Balanced Power	Decisions regarding the project were made unanimously in joint meetings with managers from both firms Both partners had equal potential to influence each other Power in this relationship was equally distributed between the partners Either you or your partner dominated the decisions regarding the project	Anderson & Narus (1990), Bucklin & Sengupta (1993), Gaski & Nevin (1985), Rukert & Walker (1987), Van de Ven & Ferry (1980)

A. Information about the respondent

B. Information about the company of the respondent

C. Information about the partner company of the respondent company in the collaborative venture

D. Information about the collaborative venture

E. Information about the performance of the collaborative venture

F. Information about the various aspects of the relationship between the partners

G. Open-ended section for additional comments

The points emphasized in questionnaire development have been simplicity, but comprehensiveness, shortness, professionalism, and straightforwardness.

3.5 DATA COLLECTION

The mailing lists for the top 400 US contractors and the top 225 international contractors lists was obtained from *ENR*. These two lists have been combined to generate a list of top contractors which has constituted the sample for the study. This list includes all of the major contractors in the world as well as the major contractors in the US. The unit of analysis has been individual projects involving a collaborative venture.

The respondents have been specifically instructed to report on only one collaborative venture their firm has been involved in within the last ten years with at least one foreign partner. If more than one such venture fits the description, they have been asked to report on the most recent one. If, however, they have not had any foreign partners, but instead had only domestic partners in collaborative ventures, they have been asked to report on a domestic collaborative venture.

A mailing package was then prepared and sent out to a senior executive in each contractor in the sample. The package included a cover letter, the questionnaire and a self-addressed return envelope. The letter requested the addressee to forward the questionnaire (if necessary) to an executive who had been in charge of a construction project that had involved a collaborative venture with a foreign partner firm within the last ten years (Van de Ven 1976). For the contractors in the US, postage paid business reply envelopes have been used. The respondents have also been promised an executive summary of the results obtained as an incentive to participate in the study.

Five weeks after the initial mailing, a second mailing was done to those who had not responded to the first mailing. The mailing package was similar to the initial package, but a different cover letter was used.

CHAPTER FOUR

THE GLOBAL CONSTRUCTION INDUSTRY

4.1 INTRODUCTION

Despite its importance and high profile, the global construction industry appears to be understudied by researchers. Strassmann and Wells (1988) point out that this neglect may be due to the large number of different project types, numerous client types, the highly diversified market, and the various nationalities of the contractors. An additional point is also noted by the interviewed construction industry executives that, construction industry is very much closed and sharing of information is very limited in the US.

Construction is one of the largest global industries. World construction exports was about $156 billion in 1993 (*ENR*, August 29 1994). The global construction market, on the other hand, is estimated to be about $3 trillion a year (US Department of Commerce, International Trade Administration 1993). Moreover, the industry is unique in several aspects and demands a careful analysis. The uniqueness of the industry is due to a number of its characteristics.

First of all, each "product" in this industry, which is a particular type of constructed structure and/or its maintenance and operation, is different. There are different designs and specifications used and different requirements met for each project. Secondly, the point of production changes for each product. In other words, there is no central site where production takes place and from where products are distributed. Eccles (1981) states that "the construction equivalent of the manufacturing plant is the *project* [italics

original], which is built on-site for a specific owner" (p.344). This is due to the third unique characteristic of this industry which is the fact that each product is fixed to the particular location it is built at. So, production takes place at the site where the product will be located. This means that production can take place anywhere and everywhere in the world. Finally, the factors of production used in the construction process are highly mobile. The construction process is carried out at the production site which is highly variable as noted above. Hence, many of the resources such as equipment, vehicles, materials and labor need to be mobile to be able to move from one site to another for different projects (Strassmann and Wells 1988). Linder (1994) notes that "... at the end of the twentieth century, multinational construction firms still ship their own equipment from project to project around the world while importing workers from great distances"(p.4). Even when some objects such as bridges are prefabricated at home and exported to the location of the project, on-site processes involving excavation, assembly, and erection are still necessary (Linder 1994).

Fonfara (1990) notes that the standardization potential of complex construction projects is limited due to the individualized preferences of the project owners, dissimilarities of the project locations and the advancement of technology.

Moreover, many construction firms specialize in certain project types. For instance, among American contractors, Fluor specializes in energy-related work and petrochemicals, Ebasco in power generation, T.Y. Lin in structural engineering of prestressed concrete, Guy F. Atkinson in heavy construction, M.W. Kellogg in petrochemicals, Brown and Root in offshore oil projects, and Louis Berger International in planning, design and construction management (US Congress, Office of Technology

Assessment 1987). Hence, not all firms compete on all types of projects. For each project type, those with the specialized expertise in that area compete for contracts.

Competition has also dramatically increased in this industry. Contractors from developing nations and newly industrialized countries (NICs) have emerged as legitimate competition (US Congress, Office of Technology Assessment 1987). Contractors from these areas have developed the capability to handle many types of projects on their own. US firms who were once dominant in international markets, now find it increasingly difficult to compete with traditional competitors from Europe and Japan as well as with firms from these developing nations and NICs (Yates, Mukherjee and Njos 1991). Referring to these new competitors, a construction industry executive who participated in this study stated the following:

> "with their low overhead cost structures, these firms are difficult to compete with, especially on low bid business."

Contractors from South Korea, Turkey, Brazil, Yugoslavia, Taiwan and India were pointed out by him as the most active countries outside the Triad.

Another executive participating in this study made the following comment:

> "Fifteen or twenty years ago, when few developing nations had other than the most rudimentary domestic construction capabilities, US expertise was needed and, in many cases, welcomed. If a developing country needed a highway or a dam, it generally had to bring in a foreign company to design and build it. More recently, however, as the domestic construction industries in a number of countries have developed to the point that they can handle an increasingly sophisticated range of project types, these countries are seeking to protect their domestic companies by excluding or restricting foreign competition."

Commenting on the US construction industry, Richard L. Tucker, director of the Construction Industry Institute (hereafter referred to as CII), stated the following in his opening remarks of the *1992 CII Annual Report*:

> "In our companies, we see significant growth in international markets and globalization. No one can deny that our engineering and construction industry is now truly an industry operating in a global market" (p.3).

Today, American contractors face tough competition, mainly from European and Japanese contractors who often have more financial leverage (US Department of Commerce, International Trade Administration 1993). The effect of financing on competitiveness will be discussed below in more detail.

The basic point to note is that in construction what is sold is actually not the structure itself, but rather the construction service. Hence, when a construction project in a given country is carried out by foreign contractors, the construction services are imported by the country where the project takes place. This is why such international construction activities are referred to as international construction exports. These are also referred to as "International Contracting" which Strassmann and Wells (1988) define as "firms from one country building under contract in another.

4.2 TRENDS IN WORLD CONSTRUCTION EXPORTS

4.2.1 Overview: 1982-1993

In this section, an overview of the trends in world construction exports through 1982-1993 will be presented. First, some measurement problems related to the data used for this analysis of world construction exports will be discussed. Secondly, the trends in total international contract awards will be presented. These will be followed by overviews of distribution of construction exports by regional markets, by project markets, and by nationality of contractors respectively.

4.2.1.1 Measurement Problems

The only periodically collected data on world construction exports appear to be those collected by the *Engineering News Record (ENR)*, a McGraw-Hill construction weekly, which is a trade journal of the construction industry,. The industry experts, including executives, academicians and public authorities, tend to agree that these data are the only and best standard secondary data available on the activities in the global construction industry despite several deficiencies that demand caution in using them.

Since 1978, each year *ENR* has been publishing figures for the international contracts awarded to the top international contractors. The contract awards are given for the top 200 contractors in 1978 and 1979, for the top 250 for 1980-1990, and for the top 225 since 1991. The data for each year have all been presented in similar formats (ENR, July 21 1983, July 19 1984, July 18 1985, July 18 1986, July 16 1987, July 7 1988, July 13 1989, July 5 1990, July 22 1991, August 24 1992, August 23 1993, August 29 1994). Hence, these data have been used in the following analysis of the trends in world construction exports for the period 1982-1993.

As noted above, however, these data have some caveats leading to some measurement problems that need to be pointed out. First of all, the published information is supplied to *ENR* by the contractors themselves in response to a questionnaire (Strassmann and Wells 1988). Hence, the objectivity of the data may be questioned. Some firms may understate their business in some years, while others may have reason to overstate theirs (US Congress, Office of Technology Assessment 1987). Moreover, the nonresponding contractors are obviously not included.

Secondly, the total construction award figures presented in *ENR* for the top international contractors are seriously inflated (Strassmann and Wells 1988). This is due to the effect of significant amount of "double counting". Strassmann and Wells (1988) note that :

> "...included in the totals are prime contracts, a firm's share in joint ventures, subcontracts, design-construct contracts, and the erected value of construction management/programme management (CM/PM) contracts. Hence, there is clearly a substantial amount of `double counting' as much of the work reported may in fact be subcontracted, all of it in the case of CM/PM. Also, design and construct contracts include the value of installed equipment" (p. 7).

There is also the likelihood of double counting between prime and subcontractors or parents and subsidiaries since awards are reported by each entity participating in a project (Price Waterhouse 1985).

Hence, in this chapter, the analysis of the *ENR* data on contract award figures is based on the general trends exhibited by the data. Despite the inflated nature of the reported figures, the basic trends do not change. What the inflated figures do affect are the steepness of the ascent or descent of the curves, but not the direction. Moreover, all of the figures have been converted into constant dollars (1982=100) to standardize the data against the effect of rising prices (Gordon 1990). Hence, *the data used to generate the graphs presented in the following pages are not the absolute figures reported in ENR for each year, but the standardized figures in 1982 dollars.*

Another issue regarding the measurement of contract awards is the lag between contract awards and expenditures. Strassmann and Wells (1988) state that this lag is generally two years which has also been confirmed by industry experts during the personal interviews conducted. A project may be carried out over several years before it is completed (Price Waterhouse 1985). The figures reported in *ENR* are for new

international contracts awarded to the firms and not for completed projects. Moreover, the awards do not represent the net revenues from construction service exports (Price Waterhouse 1985).

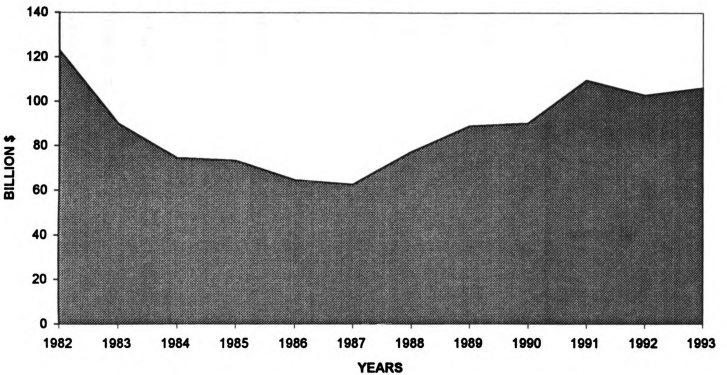
The difficulty of obtaining data on the world construction exports also needs to be recognized. In this regard, the efforts of *ENR* in supplying the industry with standard data in comparable format from year to year has to be appreciated. The data presented are still useful, once their deficiencies are recognized, and especially, if they are used to depict basic trends, but not absolute figures.

4.2.1.2 Total World Construction Exports

An overview of the trend in total international contract awards through 1982-1993 is given in Figure 4.1. The most apparent trend is the decline of total awards through 1982 and 1987 and the upswing after 1987. A peak can be observed in 1991 followed by a relative decline in 1992, and then, a relative increase in 1993. Two relative plateaus can also be observed between 1984 and 1985, and between 1989 and 1990.

There have been various reasons for the dramatic decline of international contract awards between 1982 and 1987. First of all, the sharp fall of world oil prices in 1983 has resulted in a substantial decrease in oil revenues leading to the substantial shrinkage of the Middle Eastern market for construction exports. The economic recession experienced worldwide has also contributed to the decline in the demand for new construction.

The following headlines that had appeared in the various issues of *ENR* exemplify these trends in that period (The headlines refer to the situation in world construction exports in the previous year):



SOURCE: *ENR*, various issues

Figure 4.1
WORLD CONSTRUCTION EXPORTS: TOTAL INTERNATIONAL CONTRACT AWARDS

- "Recession cuts foreign work" (July 21, 1983, p.50)
- "Foreign contracts take a dive" (July 19, 1984, p.54)
- "Foreign contracts slump further" (July 18, 1985, p.34)
- "Foreign contracts inch upward" (July 18, 1986, p.39)
- "Foreign awards continue decline in most regions" (July 16, 1987, p.26)
- "Foreign contracts hold steady" (July 7, 1988, p.38)

This decline bottomed out in 1987 and the volume of international awards was on the rise in 1988 as illustrated by the following headline in *ENR*:

"Foreign contracts bouncing back" (July 13, 1989, p.42)

However, this rise has not really been due to the growth in construction markets, but rather due to the new strategies adopted by the international contractors. They have been able to get more contracts by presenting themselves as "local" firms (*ENR*, July 13, 1989).

As the top contractors have repositioned themselves to exploit new opportunities, the growth that started in 1988 continued in 1989. The new opportunities presented by Europe's changing borders and Asia's emerging underdeveloped countries contributed to this growth. The relative plateau exhibited in Figure 4.1 between 1989 and 1990 is also exemplified in the headline in *ENR* regarding construction export markets in 1990:

"Instability slows growth abroad" (July 12, 1991, p.30)

This slowdown was due to the rapid economic and political changes that were taking place in Europe. The potential Eastern Europe and the former Soviet Union presented in 1990 had been elusive due to the economic and political instabilities. However, another

upswing in the world construction exports was experienced in 1991 due to the strong growth of construction markets in Asia, the Middle East and Latin America.

1992 was another year of decline in world construction exports as ENR's headline read:

"International contracts dip slightly in 1992" (August 23, 1993, p.28)

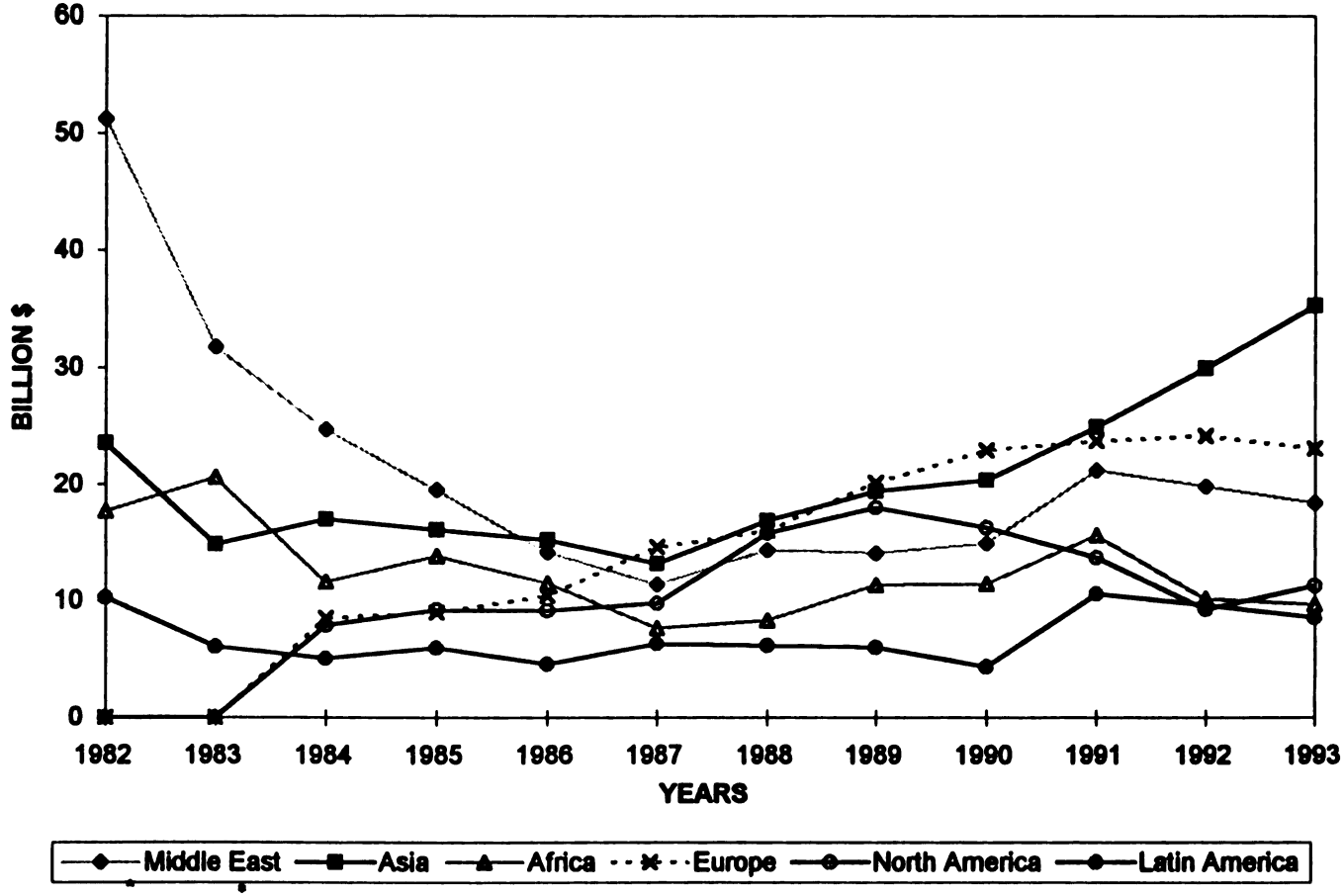
Despite this decline, however, the contractors were optimistic about the future as expressed by Ian Robertson, chairman of John Brown/Davy, U.K.:

> "This has been a tough year, but we see that things are getting better. There are potential developments in a large number of areas" (*ENR*, August 23, 1993, p.28).

In fact, this optimism about the future turned out to be realistic for 1993, as the figures for 1993 exhibited growth in construction export awards. New international contracts awarded increased 5.9% in 1993 compared to the previous year (*ENR*, August 29, 1994). International contracts rose again mainly due to the growth of the Asian construction market. Asian market is expected to grow even further and appears to remain to be the largest regional market in the years to follow. For instance, another $12 billion list of regional infrastructure and power projects in Asia has been approved by the associated governments (ENR, May 16 1994).

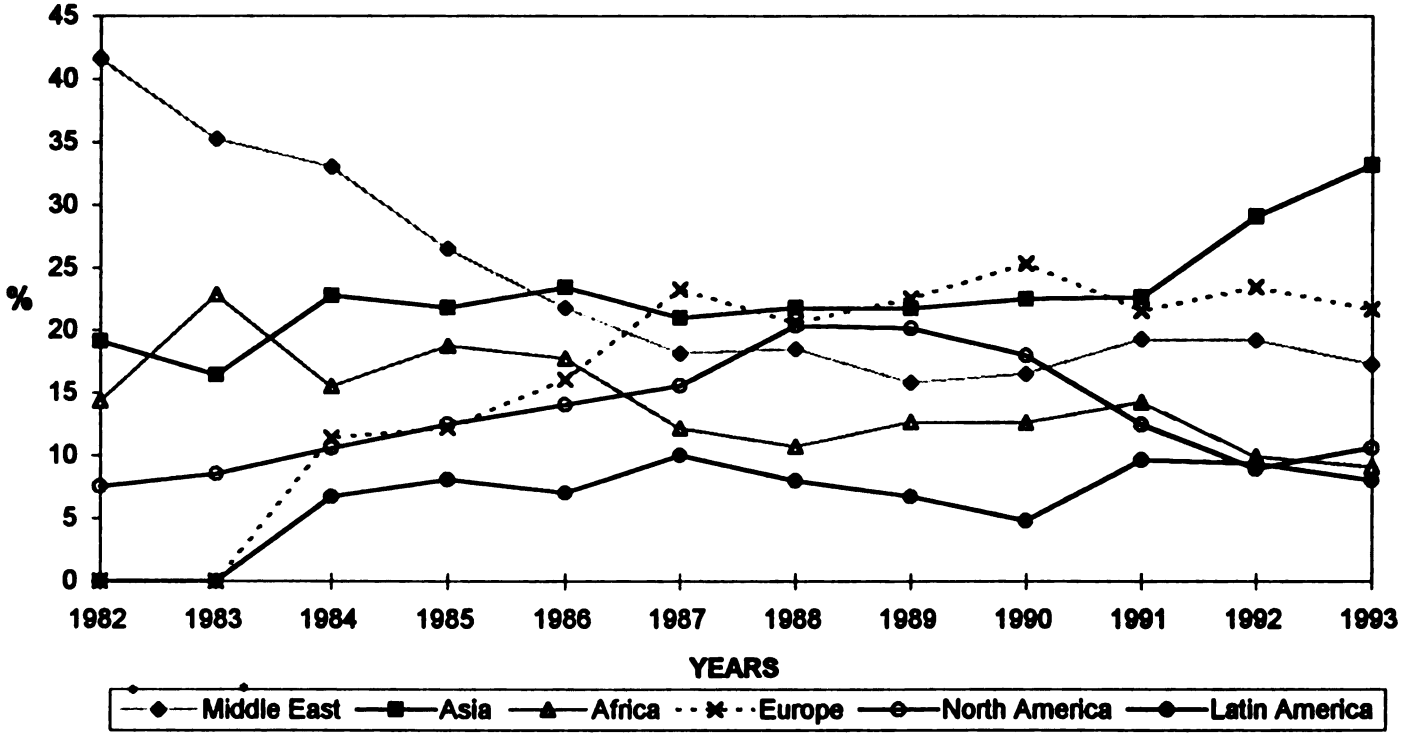
4.2.1.3 Distribution of Construction Exports by Regional Markets

There are six main regional markets identified for construction exports which are Middle East, Asia, Africa, Europe, North America, and Latin America. Distribution of construction contract awards among these regional markets during the period from 1982 to 1993 is presented in Figure 4.2. Figure 4.3, on the other hand, presents the same distribution in terms of the relative shares of each region in the total world construction



* ENR data not available for the European and North American markets for 1982 and 1983
SOURCE: *ENR*, various issues

Figure 4.2
WORLD CONSTRUCTION EXPORTS: CONTRACT AWARDS BY REGIONAL MARKETS



* ENR data not available for the European and North American markets for 1982 and 1983
SOURCE: *ENR*, various issues

Figure 4.3

WORLD CONSTRUCTION EXPORTS: PERCENTAGE OF CONTRACT AWARDS IN REGIONAL MARKETS

exports. As illustrated in both figures, Middle East has been in a steady decline between 1982 and 1987, losing its dominant position as the largest market. While the Middle East had accounted for about $51 billion of new contract awards in 1982, this dropped to $11.4 billion in 1987, and reached $18.4 billion by the end of 1993.

The interesting point, however, is that although the Middle Eastern market has been on the rise in terms of new contract award amounts since 1987, its share in the world market continued to decrease until 1990. Even though, by the end of 1993, Middle East accounted for a little over 17% of the total market, placing it as the third largest regional market in the world, this share was still less than its shares in the period from 1982 to 1986.

Another interesting observation is that Asia kept a relatively steady profile in terms of new contract awards until 1991 after which it has exploded. Furthermore, Asia's percentage share in the world market has been rising, positioning it as the largest regional market since 1991. Continuing their growth, the new international contracts awarded in Asia increased 20% in 1993 compared to the previous year (*ENR*, August 29 1994).

Moreover, Europe has also been on a continuous rise although its share has had relatively minor fluctuations. However, overall, the growth of the European market has resulted in Europe representing the second largest regional market for construction exports since 1991.

Not much has changed in Latin America which has always been the smallest market both in terms of award amounts and percentage shares. Africa, on the other hand, has been a shrinking market which has had as high as nearly 23% of the world market in 1983. Africa's share was only a little over 9% by the end of 1993. North America has

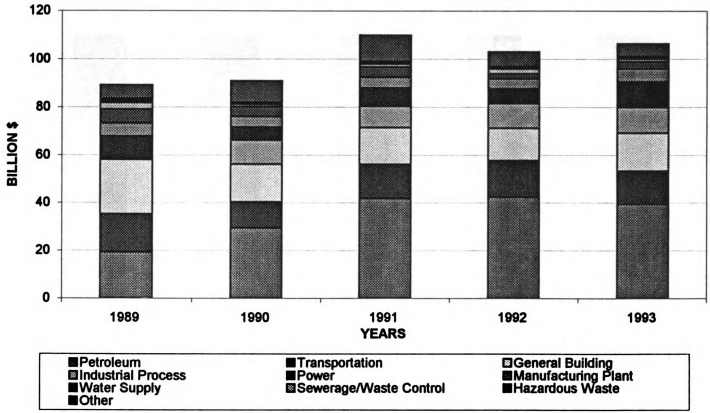
exhibited an interesting trend working in the opposite direction to world market trends. It has grown while the world market was shrinking until 1987, and declined while world market was growing after 1988. The US market, however, has been on the rise and climbed 40% in 1993 (*ENR*, August 29 1994).

4.2.1.4 Distribution of Construction Exports by Project Markets

The distribution of world construction exports by different project markets from 1989 to 1993 is shown in Figures 4.4 and 4.5. Figure 4.4 presents the distribution in terms of total award amounts and Figure 4.5 in terms of percentage shares. As it can be seen in these figures, petroleum, transportation and general building construction projects represent the top three project markets in world construction exports. Among these, petroleum projects have represented, by far, the largest market since 1990 both in terms of award amounts and percentage shares. These projects have accounted for as high as 41% of all projects in 1992 which has dropped to 37% in 1993. Transportation and general building projects have had their largest shares in 1989 and since then appear to have stabilized around 13-15% each.

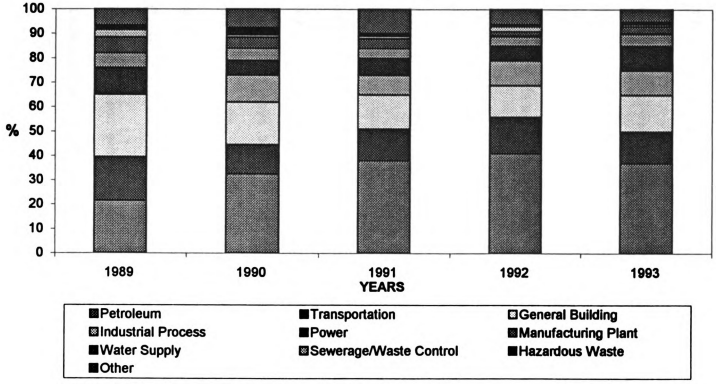
On the other hand, there has been a dramatic boom in the power market in 1993 which increased 59.6% in 1993 compared to the previous year. The growth in this market is expected to continue due to the vast energy needs of the Pacific Rim countries. For instance, China alone needs an estimated 15,000 Mw to 18,000 Mw annually (*ENR*, August 29 1994).

The smallest project markets for world construction exports are sewerage/waste control and hazardous waste. Each of these types of projects have represented 1-2% of the total through 1982-1993. Interestingly enough, there appears to be a relatively stable



NOTE: For 1989, petroleum awards include both petroleum AND industrial process awards
SOURCE: ENR, various issues

Figure 4.4
WORLD CONSTRUCTION EXPORTS CONTRACT AWARDS IN PROJECT MARKETS



NOTE: For 1989, petroleum awards include both petroleum AND industrial process awards
SOURCE: *ENR*, various issues

Figure 4.5

WORLD CONSTRUCTION EXPORTS PERCENTAGE OF CONTRACT AWARDS IN PROJECT MARKETS

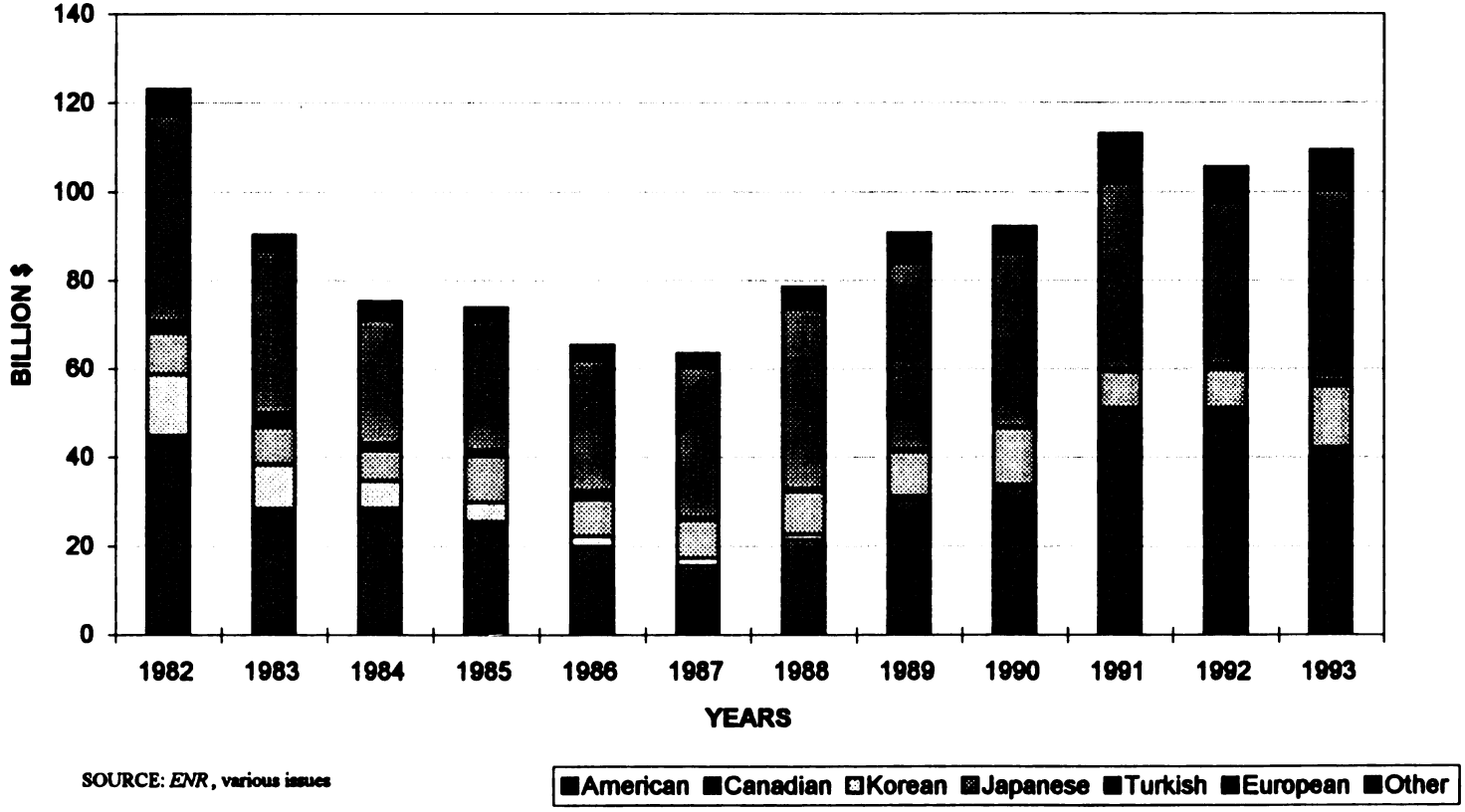
distribution of world construction exports among different project markets, particularly from 1990 to 1993. The fluctuations in the award amounts have also paralleled those that have occurred in percentage shares of different project markets.

4.2.1.5 Distribution of Construction Exports by Nationality of Contractors

Figures 4.6 through 4.11 present the trends in world construction export activities of the top contractors with respect to their nationalities. The distribution of contract awards among the six main groups of contractors in terms of their nationalities (except that European contractors are represented as a whole) is presented in Figure 4.6 for award amounts and Figure 4.7 for percentage shares.

Top contractors from Europe and the United States have been clearly dominating the world market for construction exports followed by Japanese contractors throughout the period form 1982 to 1993. The Japanese, however, appear to be increasing their share which rose 63% in 1993 compared to the previous year (*ENR*, August 29 1994). The Korean contractors have been very active from 1982 to 1986, with their shares diminishing thereafter. The Turkish contractors have also been relatively active in the beginning of the 1980s, but, they have also lost their shares. However, they have been better off than the Koreans and hold to about 1% of the world market by the end of 1993.

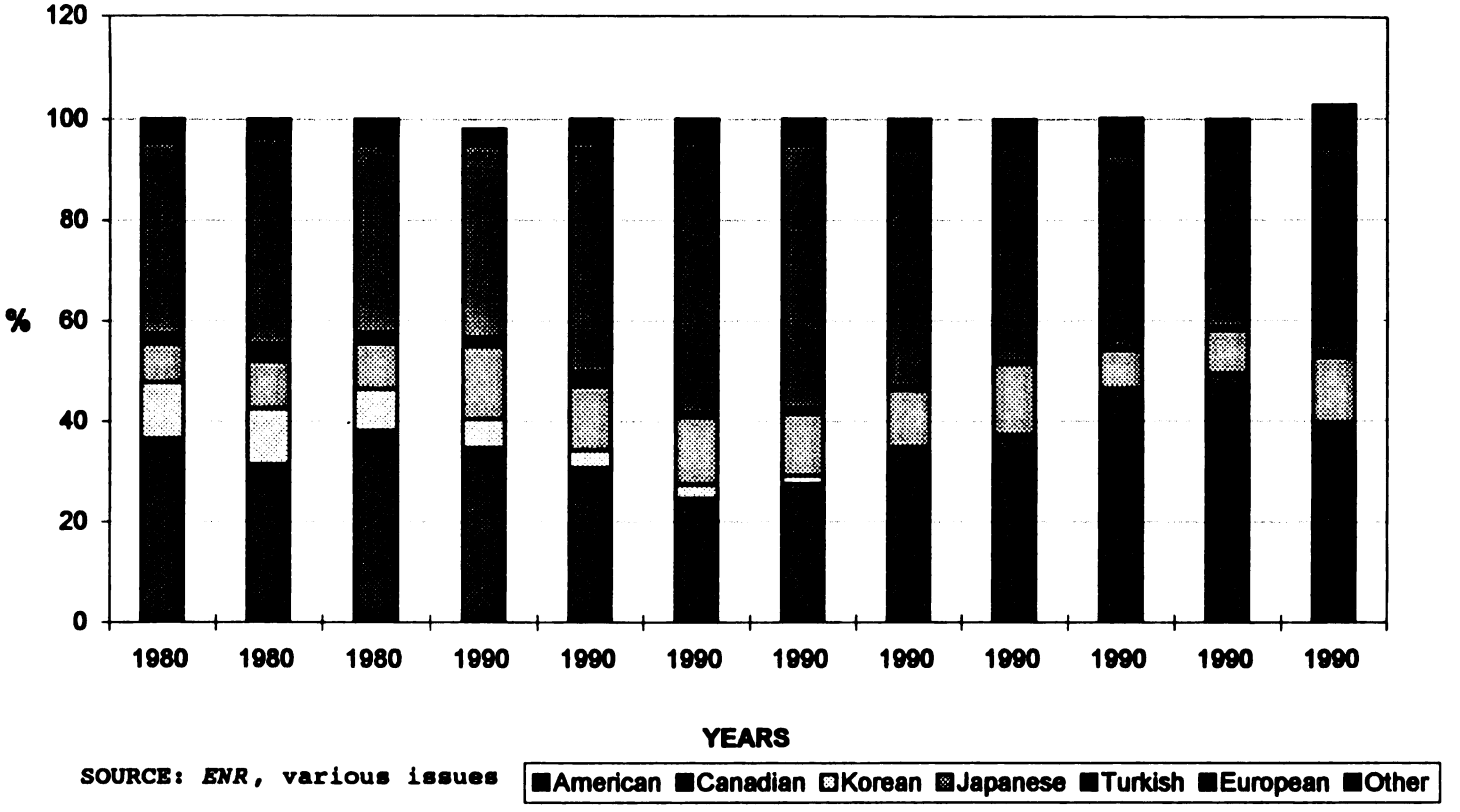
The major reason behind the relatively high performance of the Korean and Turkish contractors in the early part of the 1980s and their decline thereafter is the market situation in the Middle East. Contractors from either of these countries had been very active in the Middle East. Hence, with the decline of this market through 1987, they lost their major markets and were not able to compete effectively in the other markets with contractors from the Triad countries.



SOURCE: *ENR*, various issues

Figure 4.6

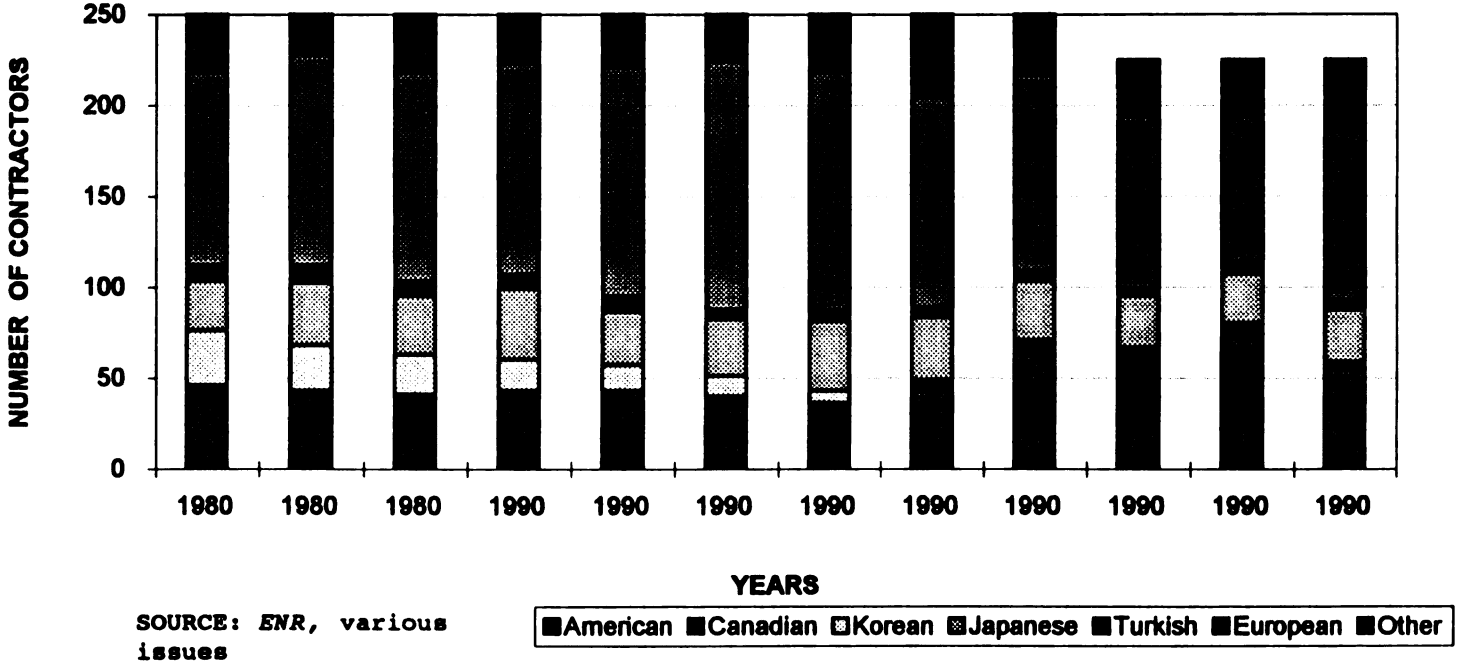
WORLD CONSTRUCTION EXPORTS: CONTRACT AWARDS BY NATIONALITIES



SOURCE: *ENR*, various issues

Figure 4.7

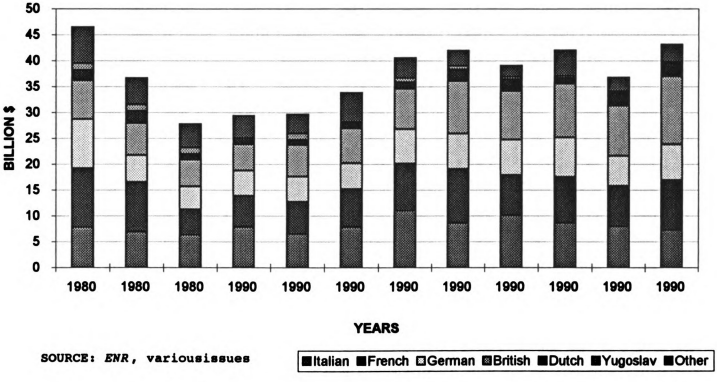
WORLD CONSTRUCTION EXPORTS: PERCENTAGE OF CONTRACT AWARDS BY NATIONALITIES



SOURCE: *ENR*, various issues

Figure 4.8

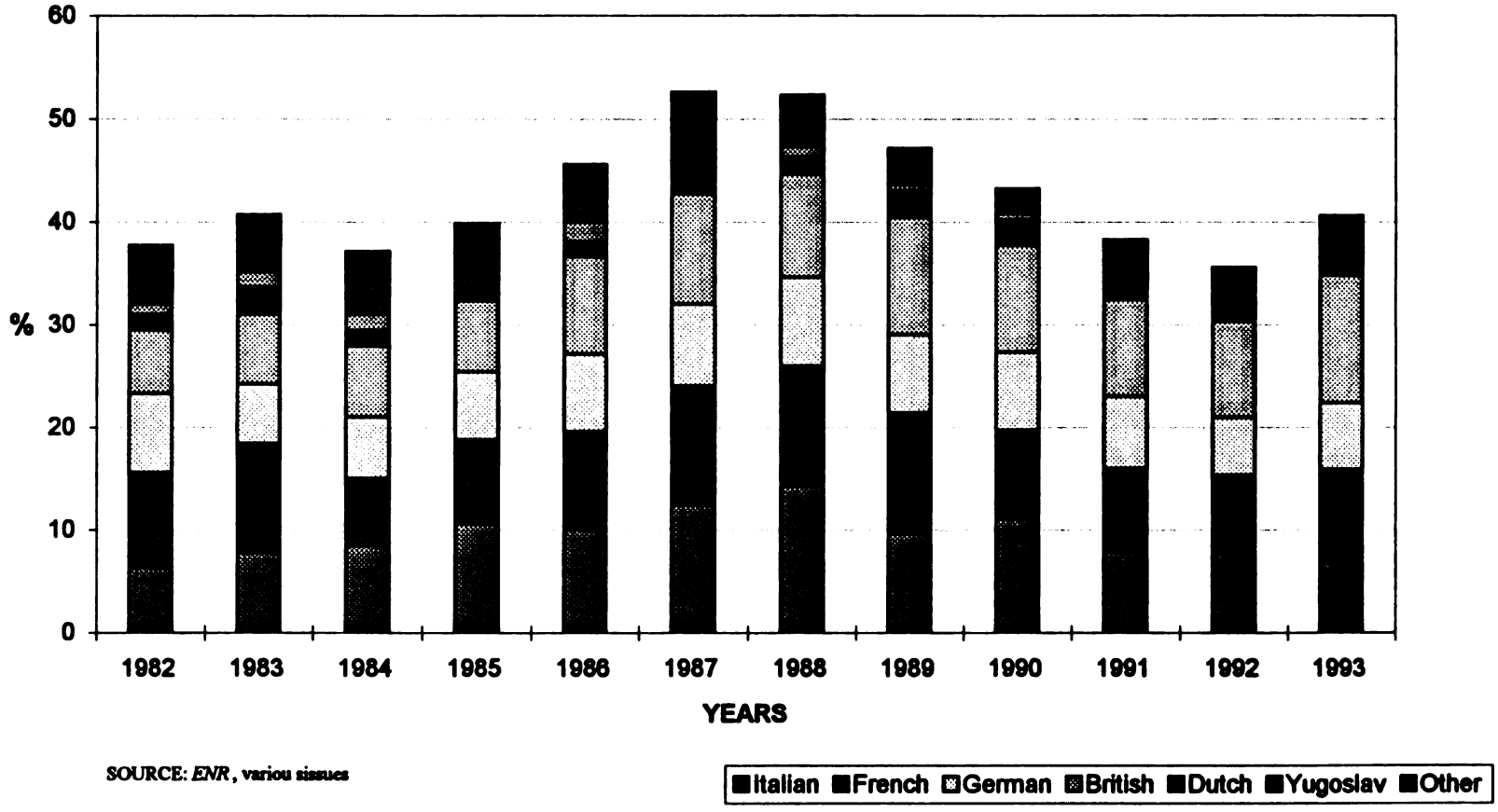
WORLD CONSTRUCTION EXPORTS: NUMBER OF CONTRACTORS IN THE TOP 225 BY NATIONALITIES



SOURCE: *ENR*, variousissues

Figure 4.9

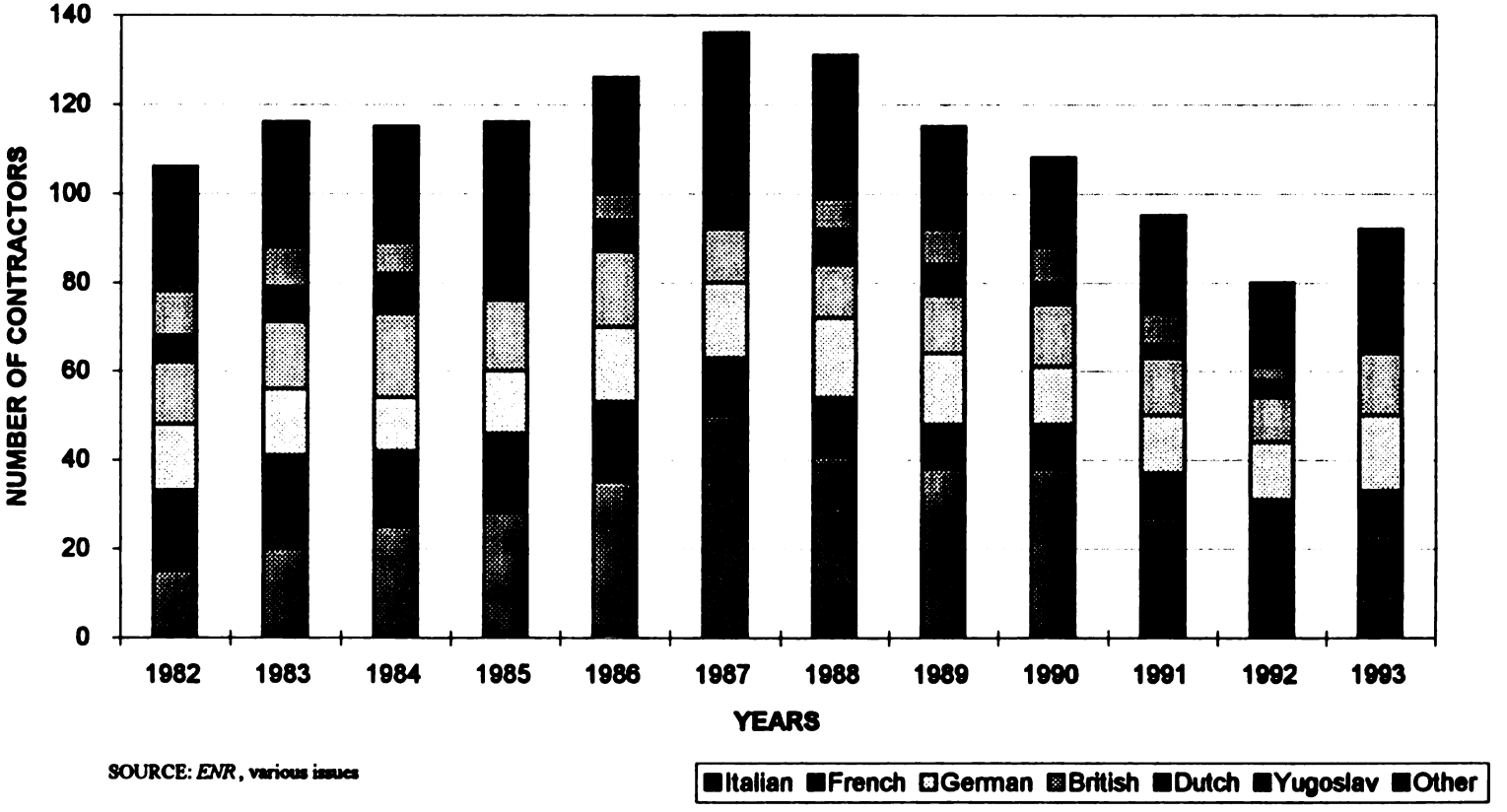
WORLD CONSTRUCTION EXPORTS: CONTRACTS AWARDS BY NATIONALITIES WITHIN EUROPE



SOURCE: *ENR*, variou sissues

Figure 4.10

WORLD CONSTRUCTION EXPORTS: PERCENTAGE OF CONTRACT AWARDS BY NATIONALITIES WITHIN EUROPE



SOURCE: *ENR*, various issues

Figure 4.11

WORLD CONSTRUCTION EXPORTS: NUMBER OF EUROPEAN CONTRACTORS IN THE TOP 225 BY NATIONALITIES

Figure 4.8 presents the number of contractors by nationality (again viewing European contractors as a whole for the sake of simplicity) in the top 250 between 1982 and 1990, and top 225 from 1991 to 1993. As illustrated in Figure 4.8, while the number of American contractors has increased after 1989, the number of European contractors has decreased. On the other hand, the number of Japanese and Turkish contractors have been relatively steady throughout the period from 1982 to 1993.

Figures 4.9 and 4.10 present the distribution of total contracts awarded to European contractors by their nationalities and their percentage shares respectively. As seen in both figures, Italian, French, German, and British contractors have been the driving force behind the success of the European contractors as a whole. By the end of 1993, British contractors have been the recipient of most of the contracts awarded to European contractors followed by French, Italian and German contractors.

On the other hand, as Figure 4.11 illustrates, Britain is the third country in the ranking of European countries in terms of the number of contractors each had among the top international contractors. Italy has the largest number of contractors followed by Germany. Hence, it is noteworthy to point out that Britain has performed better than either Italy and Germany with less contractors. A further note is that Italy has always had the largest number of contractors in the top 225 compared to the other European countries since 1984. However, there has also been a decrease in the number of Italian contractors that enter the top 225 list since 1988.

4.2.2 Geographical Markets for Construction Exports

In this section, the trends in each of the six main regional markets for construction exports will be reviewed one by one. For each regional market, first an overview of the

market through 1982 -1993 will be given. Following that, the trends in the activities of the contractors from different countries will be briefly reviewed. The countries or nationalities covered are those whose contractors have significant activities in the given market. For the sake of simplicity, contractors from different European countries are all grouped together and referred to as European contractors.

4.2.2.1 Middle East

Figure 4.12 presents the trend in the Middle East construction exports from 1982 to 1993 and the trend in the share of the Middle East in the world market. Middle East was the largest regional market in construction exports in 1982 as mentioned before. This market represented nearly 42% of the world total at that time. The amount of new contract awards, however decreased each year thereafter until 1987. Although new contracts gradually began to increase after 1987, the decline of Middle East's share continued until 1989, bottoming out at 15.8% of the world total. In fact, during 1988-1990, Middle East dropped to being number four in terms of size among the six main regional markets in the world.

Since 1989, Middle East has increased its world market share a little bit. On the other hand, although it is the third largest regional market in 1993, its share is again in a decreasing trend as Figure 4.12 illustrates.

As Figure 4.13 illustrates, the amount of new contracts awarded to the top contractors in the Middle East from the five main nationality groups that have been active there has declined from 1982 to 1993 as this market shrunk significantly. On the other hand, as presented in Figure 4.14, the shares of the contractors from different nationalities have exhibited a different pattern.

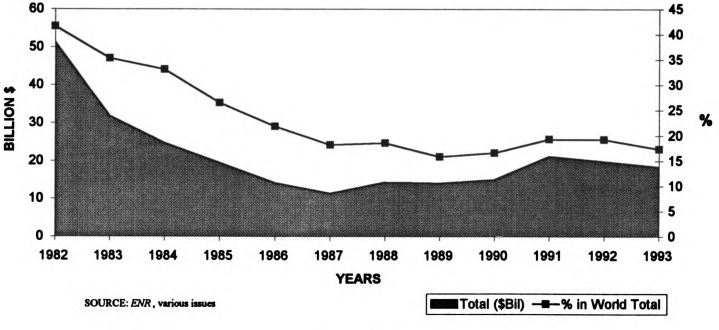
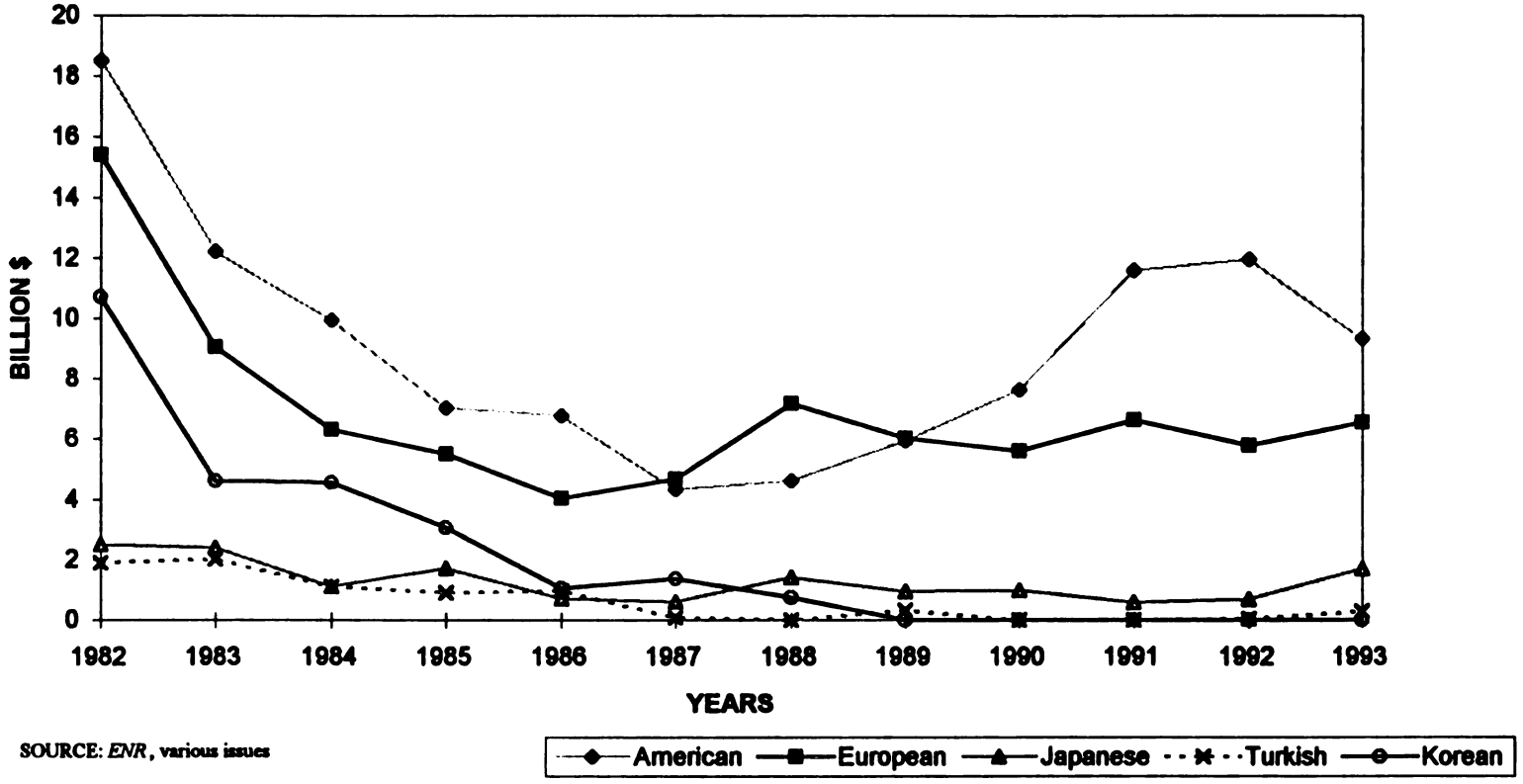


Figure 4.12

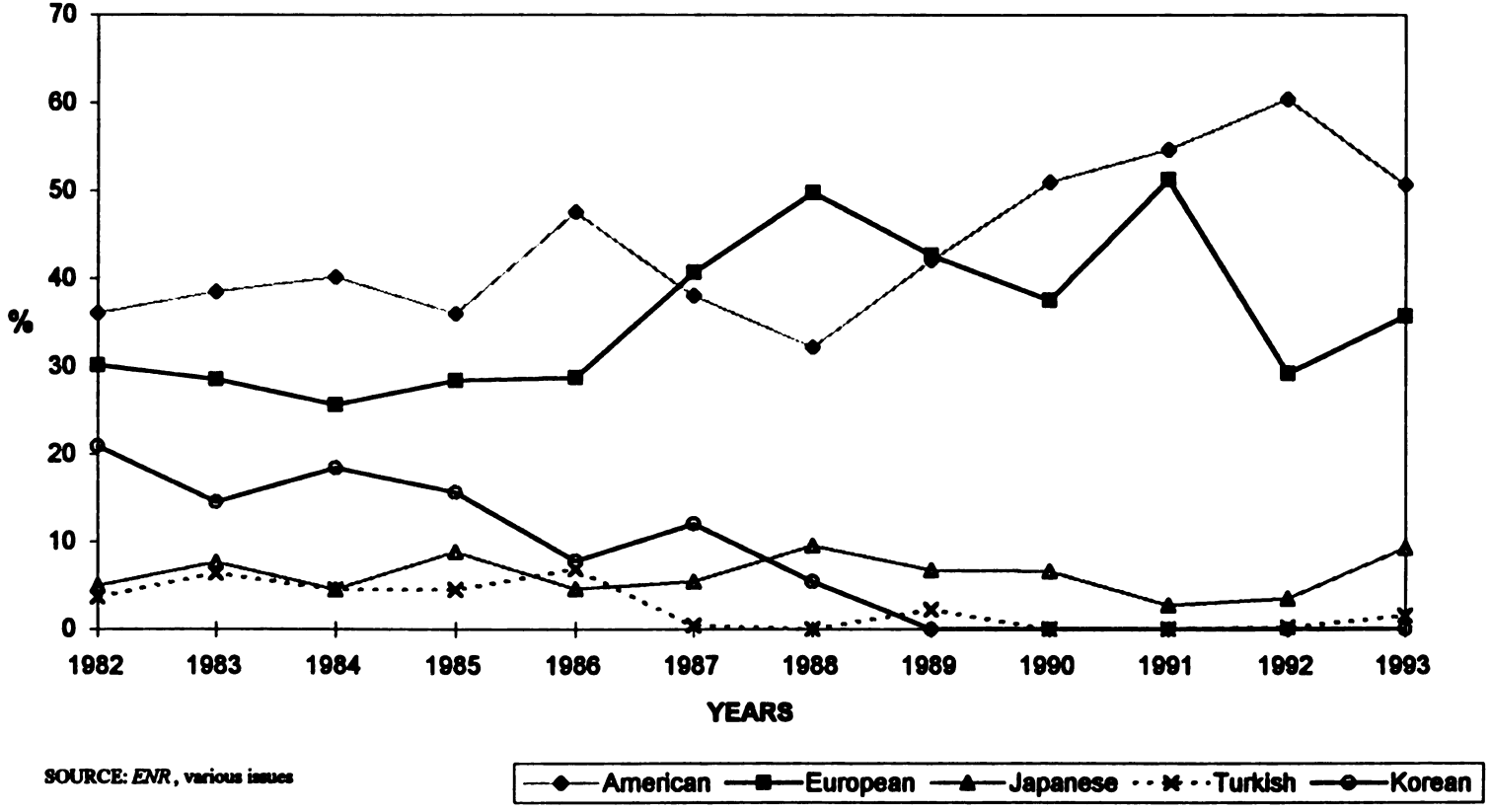
MIDDLE EAST CONSTRUCTION EXPORTS: OVERVIEW



SOURCE: *ENR*, various issues

Figure 4.13

MIDDLE EAST CONSTRUCTION EXPORTS: CONTRACTORS BY NATIONALITY



SOURCE: *ENR*, various issues

Figure 4.14

MIDDLE EAST CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES

American and European contractors have increased their shares in a shrinking market at the expense of Turkish and Korean contractors. By 1990, Turkish and Korean contractors have practically been out of the Middle Eastern market. American and European contractors appear to have been particularly successful in retaining most of the new contracts awarded. The Japanese contractors have succeeded in exhibiting a relatively stable trend of activities, with small ups and downs.

4.2.2.2 Asia

The trends in the amount of new contracts awarded in Asia through 1982-1993 and the percentage of the Asian market in world total are shown in Figure 4.15. From 1982 to 1987, the Asian construction exports have shrunk which is in parallel to the shrinkage of the world construction exports in the same period. On the other hand, despite the decline in the dollar amount of new contracts awarded, the share of the Asian market in world total has increased in the same period. This points to Asia doing much better than the other regional construction markets even in those years of recession in the world market.

After 1987, the Asian construction exports have begun to increase drastically, benefiting from the growth of the world market as a whole. On the other hand, its share has been relatively stable indicating that the other regional markets have also grown at a similar rate.

What is particularly noteworthy is, however, what has happened since 1991. In the two years following 1991, the Asian market has exploded increasing both the amount of new contracts awarded and its share in the world market. By the end of 1993, Asia accounted for over 33% of the new contracts awarded worldwide. Hence, Asia was the

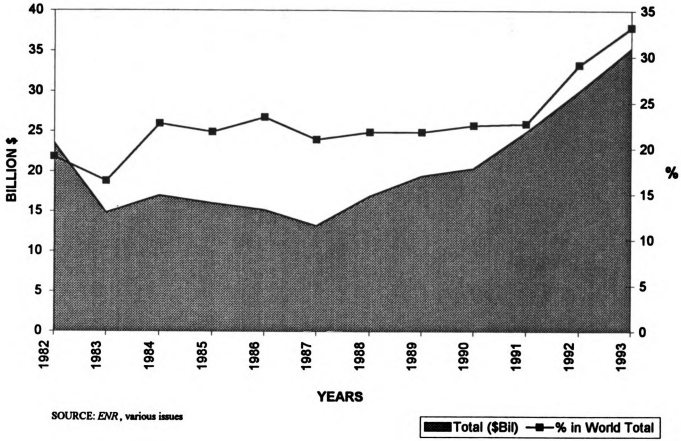


Figure 4.15
ASIA CONSTRUCTION EXPORTS: OVERVIEW

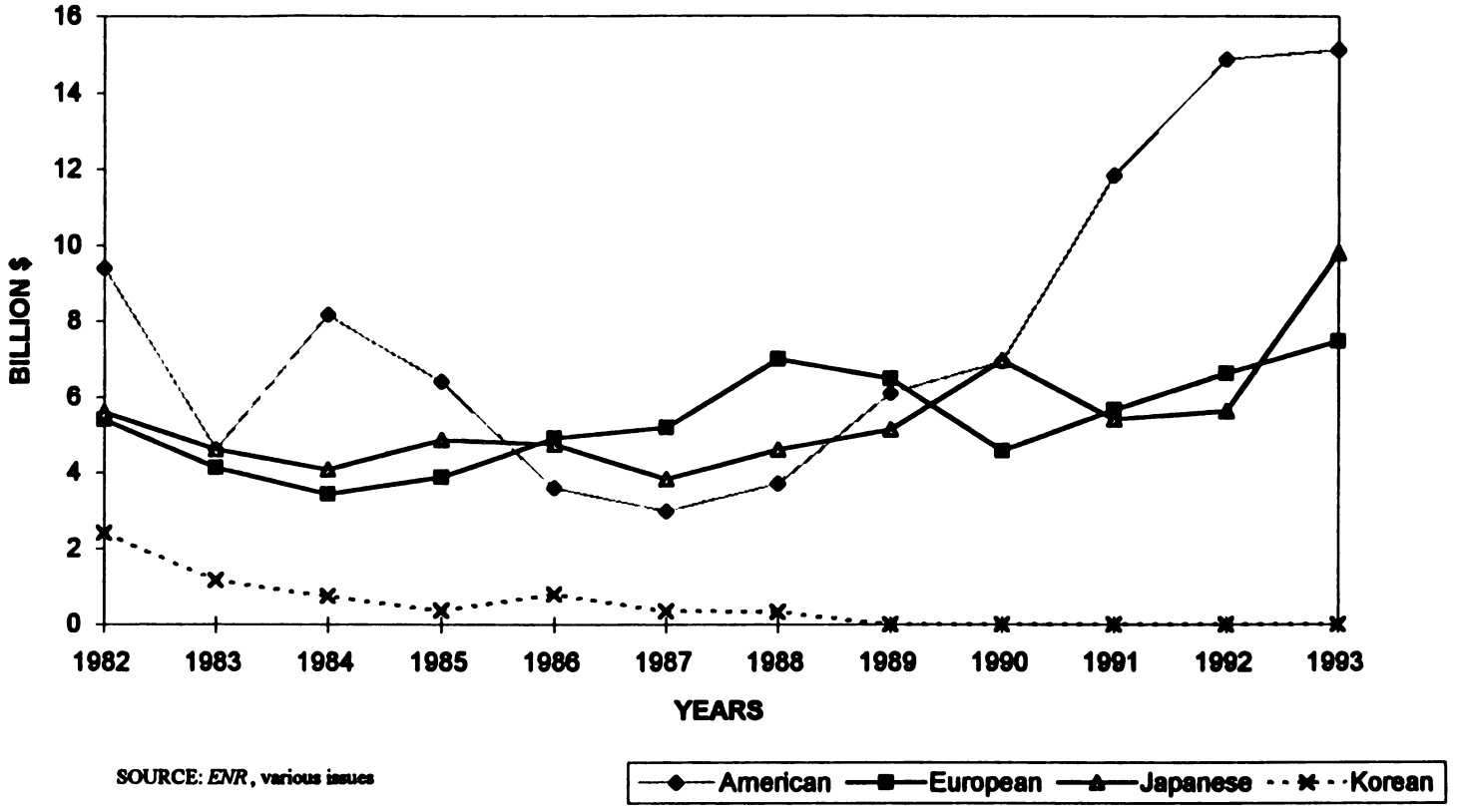
largest regional market for construction exports in 1993, being the engine for the growth of the world market for construction exports.

Figures 4.16 and 4.17 present the trends in the activities of the top contractors in the Asian regional market. American contractors have been the dominant players between 1982 and 1985, dropping to number three between 1986-1988, going up to number two between 1989 and 1990, and finally regaining and keeping their leadership since 1991. The European contractors have exhibited the exactly opposite trend. In other words, they have been weak until 1985, strong between 1985 and 1989, and weak thereafter in terms of percentage share.

The amount of new contracts awarded to both American and European contractors have increased since 1991. However, the percentage share of European contractors has decreased in the same period. In other words, European contractors appear to have performed much less successfully than their American counterparts in the Asian market. The Japanese contractors, however, seem to be on the move, increasing both the amount of new contracts awarded to them and their percentage share in the Asian market. Finally, although the Korean contractors had about 10% of the new contract awards in 1982, they do not seem to have any significant level of activities in the Asian market for construction exports by the end of 1993.

4.2.2.3 Africa

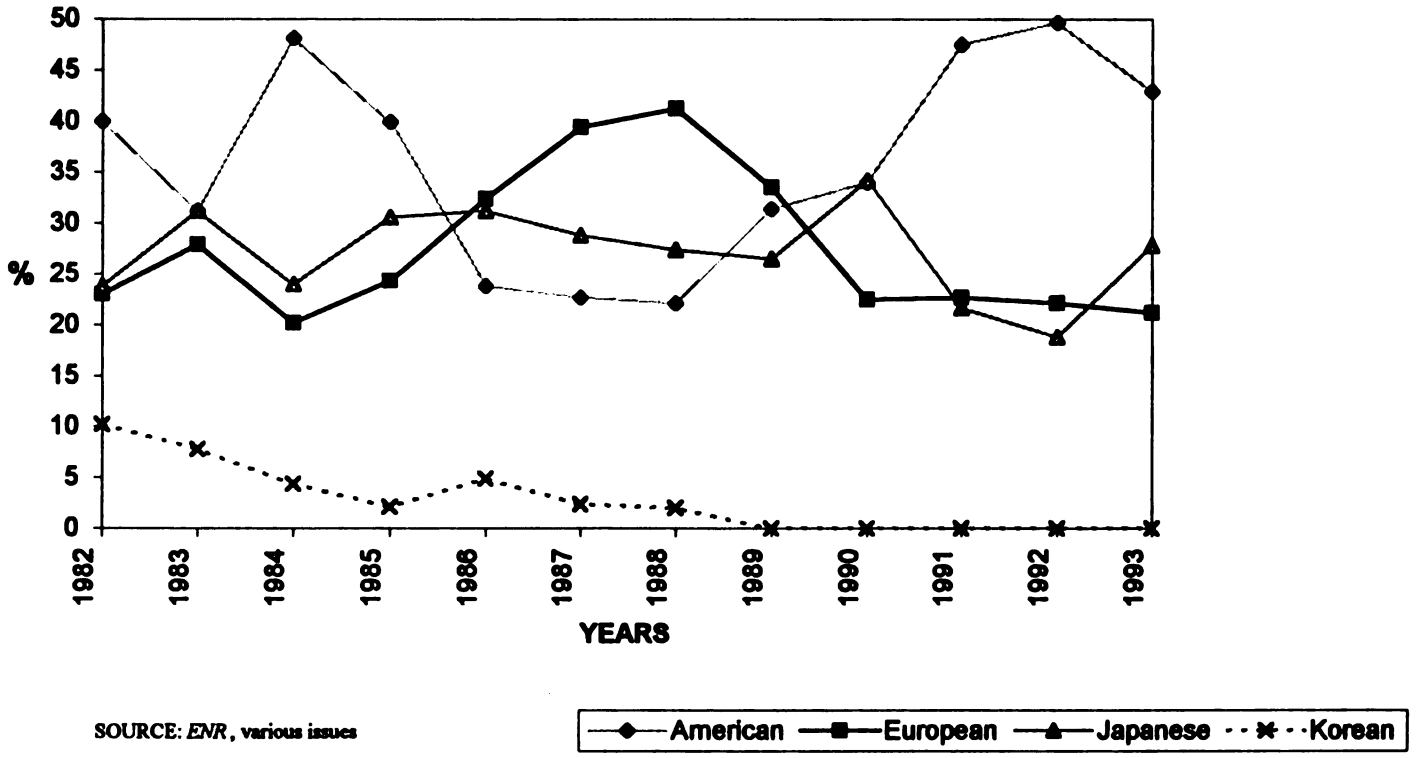
Overall, the African market for construction exports exhibits a declining trend between 1982 and 1993 as Figure 4.18 illustrates. It has had many ups and downs during that period. On the whole, the market has shrunk until 1987, grown between 1987 and 1991, and has been shrinking since 1991. The share of Africa in the world market for



SOURCE: *ENR*, various issues

Figure 4.16

ASIA CONSTRUCTION EXPORTS BY CONTRACTOR NATIONALITIES



SOURCE: *ENR*, various issues

Figure 4.17

ASIA CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES

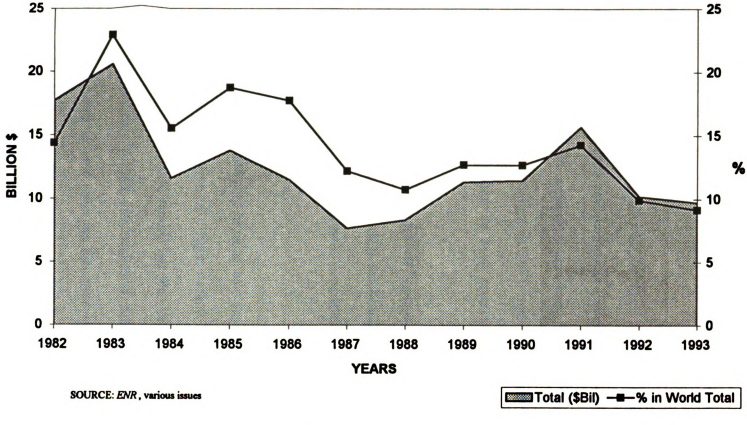


Figure 4.18
AFRICA CONSTRUCTION EXPORTS: OVERVIEW

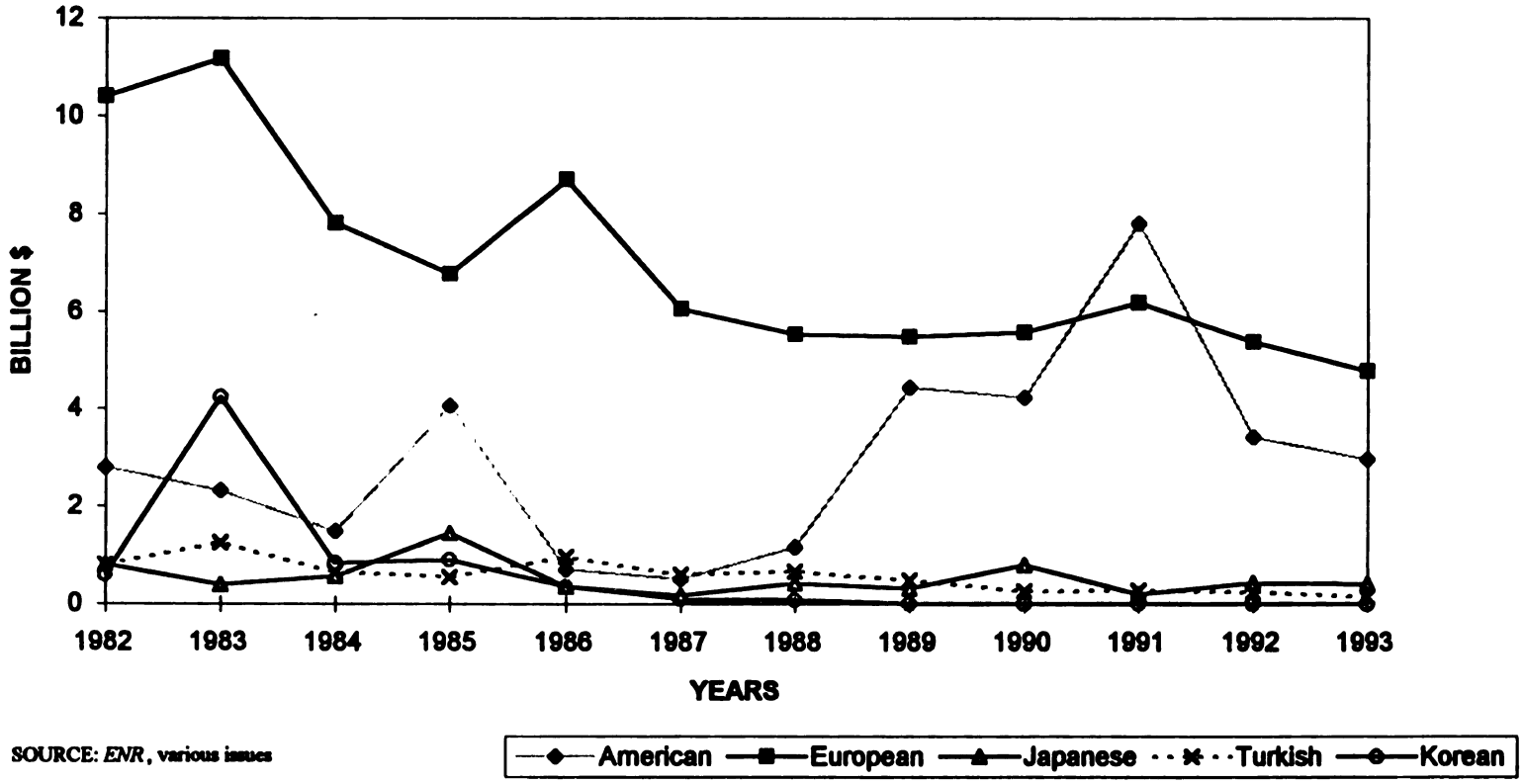
construction exports has followed roughly the same trend exhibited by the amount of new contracts awarded in that market. In other words, its share has increased when the market has grown, and decreased when is has shrunk. As noted above, however, the African market has been steadily shrinking.

European contractors have by far been dominating the African market for construction exports as illustrated by Figures 4.19 and 4.20 holding as high as 80% of the market in 1987. American contractors have been following their European counterparts and have even outperformed them in 1991. Apart from these, however, Turkish and Korean contractors also appear to have been major players in the African market, particularly until 1987.

However, since the African market has been shrinking in recent years, the amount of new contracts awarded to contractors has been decreasing for all of them. Hence, the challenge for contractors in this market is to be able to hold on to their market shares.

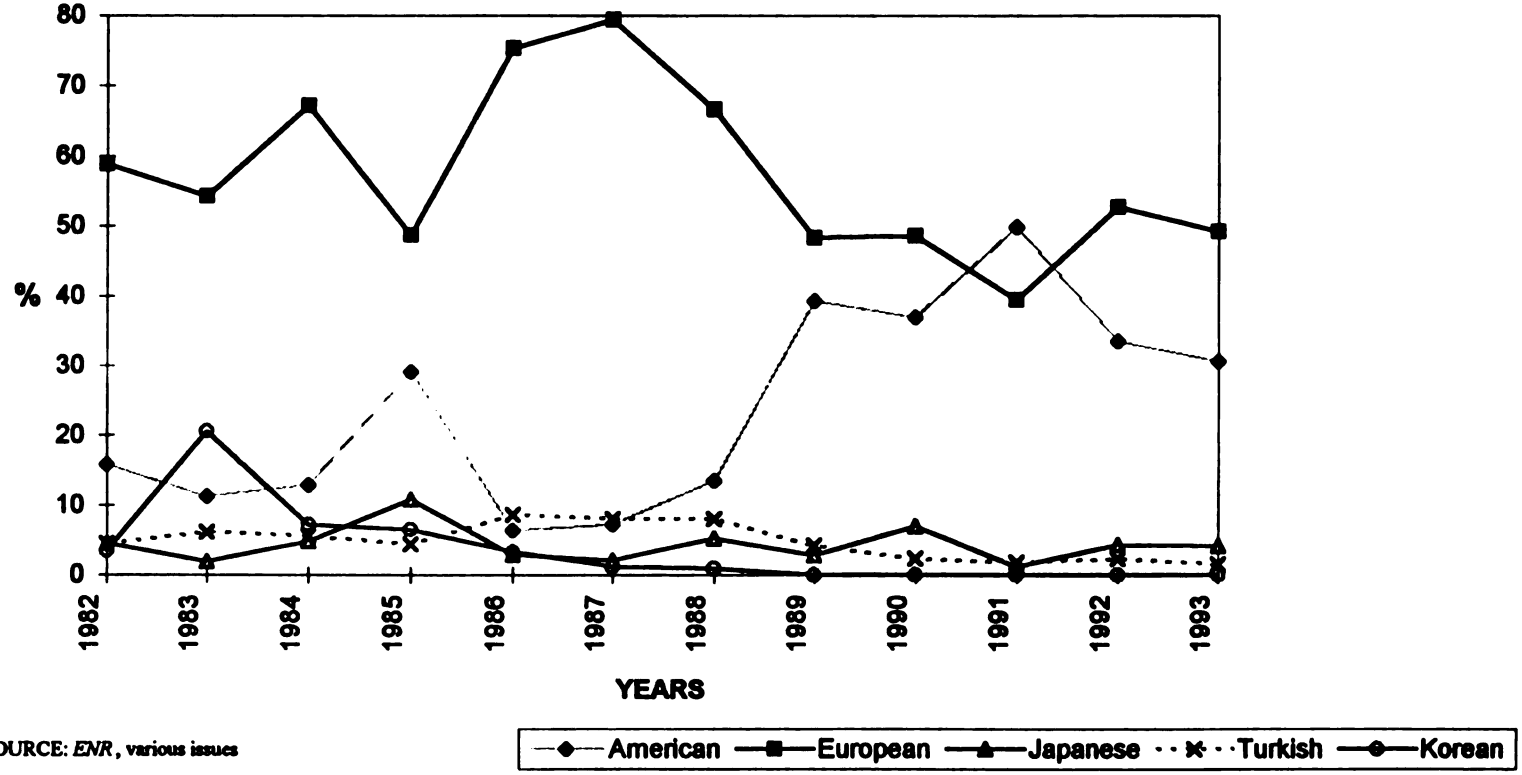
4.2.2.4 Europe

Europe has been steadily growing as a regional market for construction exports since 1984 with the exception of a slight decline in 1993 as illustrated by Figure 4.21. Overall, its share in the world market has also increased from 1984 to 1993. Europe's share has declined only in 1988, 1991 and 1993. Among these exceptional years, 1988 and 1991 are interesting to note since the European market has expanded in those years in terms of the amount of new contracts awarded. Obviously, some or all of the other regional markets had grown at a faster rate than Europe did in those years. On the whole, however, Europe appears to be one of the leading regional markets in the world for construction exports.



SOURCE: *ENR*, various issues

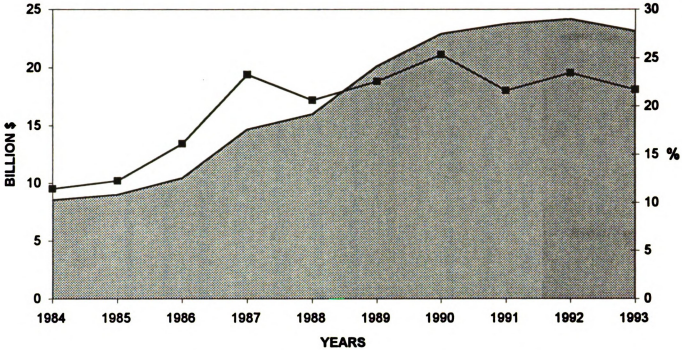
Figure 4.19
AFRICA CONSTRUCTION EXPORTS BY NATIONALITY



SOURCE: *ENR*, various issues

Figure 4.20

AFRICA CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES



NOTE: ENR data not available for the European market for 1982 and 1983

SOURCE: *ENR*, various issues

Figure 4.21

EUROPE CONSTRUCTION EXPORTS: OVERVIEW

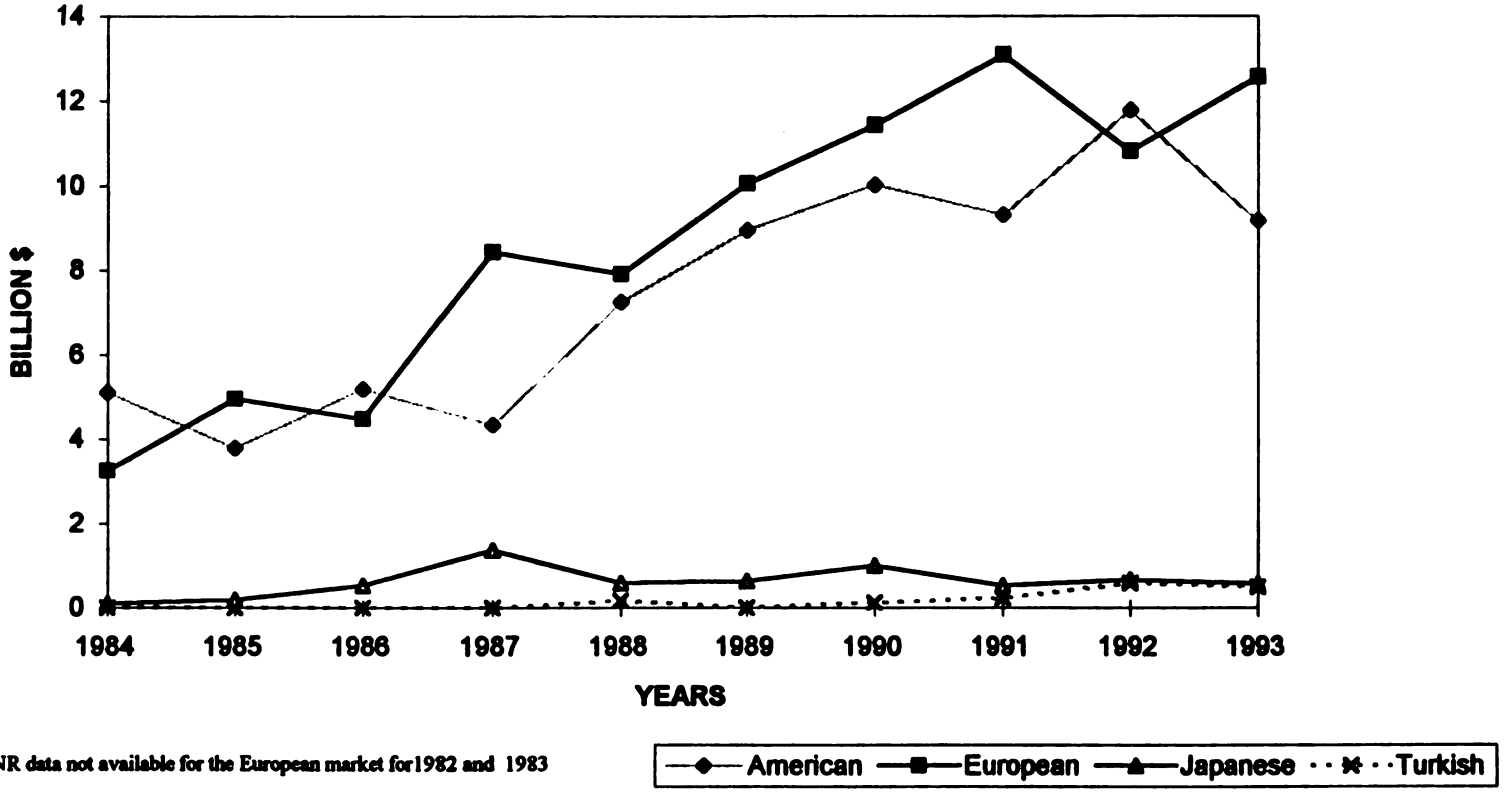
As Figures 4.22 and 4.23 show, American and European contractors have, by far, been the dominant players in the European market for construction exports. Together, they have accounted for over 90% of the new contracts awarded in this regional market. The third major group of players come from Japan who follow the leaders form a wide distance. Finally, the Turkish contractors have had some activities in Europe since 1988, taking their activities to the same level as those of the Japanese contractors.

One interesting note is that American contractors have been awarded less new projects and have also lost market share in 1993 compared to the previous year. At the same time, European contractors have been on the move who have increased both the amount of new contracts awarded to them and their market share.

4.2.2.5 North America

The North American market for construction exports has exhibited a fluctuating trend from 1984 to 1993 as shown in Figure 4.24. While the world market was shrinking until 1987, this regional market was growing. This is also reflected in the fact that its share of the world construction exports has steadily increased from 1984 to 1988. This growth period was, however, followed by a decline period after 1989 which went on until 1992. Similarly, North America's share of the world market decreased in the same period. From 1992 to 1993, the market grew again accounting for over 10% of the world market in 1993.

The North American market for construction exports is comprised of the US and Canadian markets. Figures 4.25 and 4.26 exhibit what was happening in these two markets from 1988 to 1993. Both of these markets grew from 1988 to 1989, but, shrunk from 1989 to 1992. When Figures 4.24 through 4.26 are compared, however, it becomes

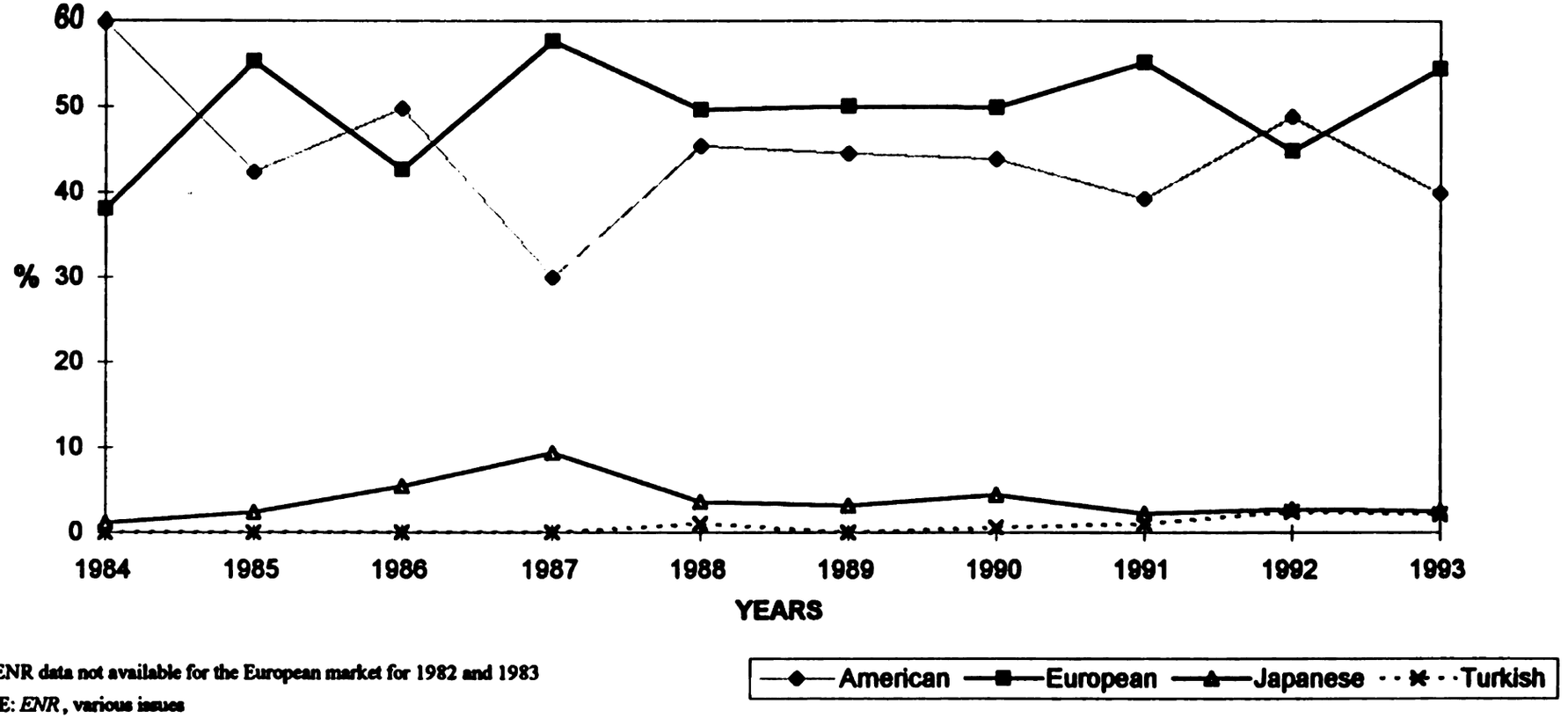


NOTE: ENR data not available for the European market for1982 and 1983

SOURCE: *ENR*, various issues

Figure 4.22

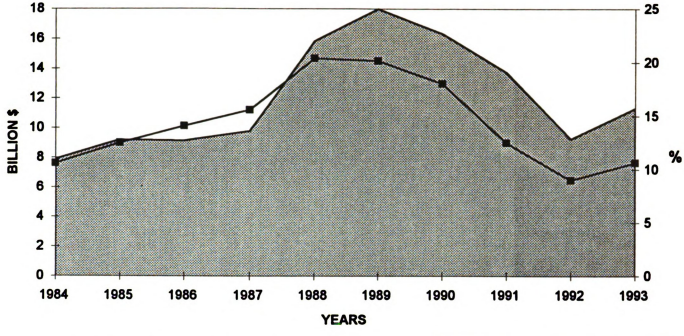
EUROPE CONSTRUCTION EXPORTS BY CONTRACTOR NATIONALITY



NOTE: ENR data not available for the European market for 1982 and 1983
SOURCE: *ENR*, various issues

Figure 4.23

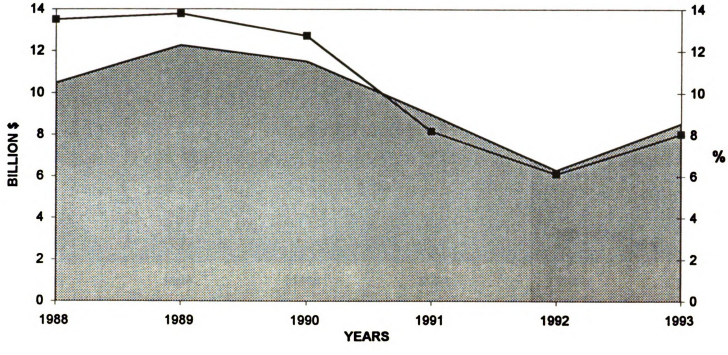
EUROPE CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES



NOTE: ENR data not available for the North American market for 1982 and 1983
SOURCE: *ENR*, various issues

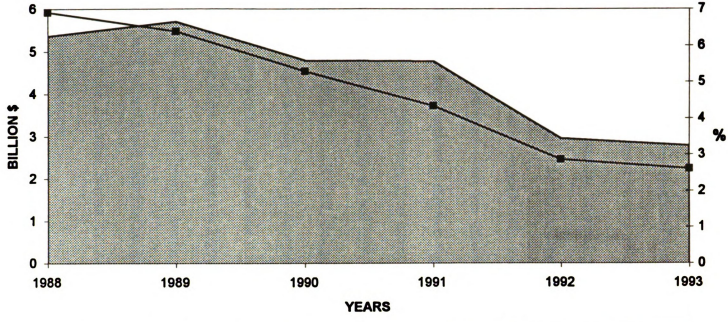
Figure 4.24

NORTH AMERICA CONSTRUCTION EXPORTS: OVERVIEW



NOTE: ENR data not available for the US market for 1982-1987
SOURCE: *ENR*, various issues

Figure 4.25
UNITED STATES CONSTRUCTION EXPORTS OVERVIEW



NOTE: ENR data not available for the Canadian market for 1982-1987

SOURCE: *ENR*, various issues

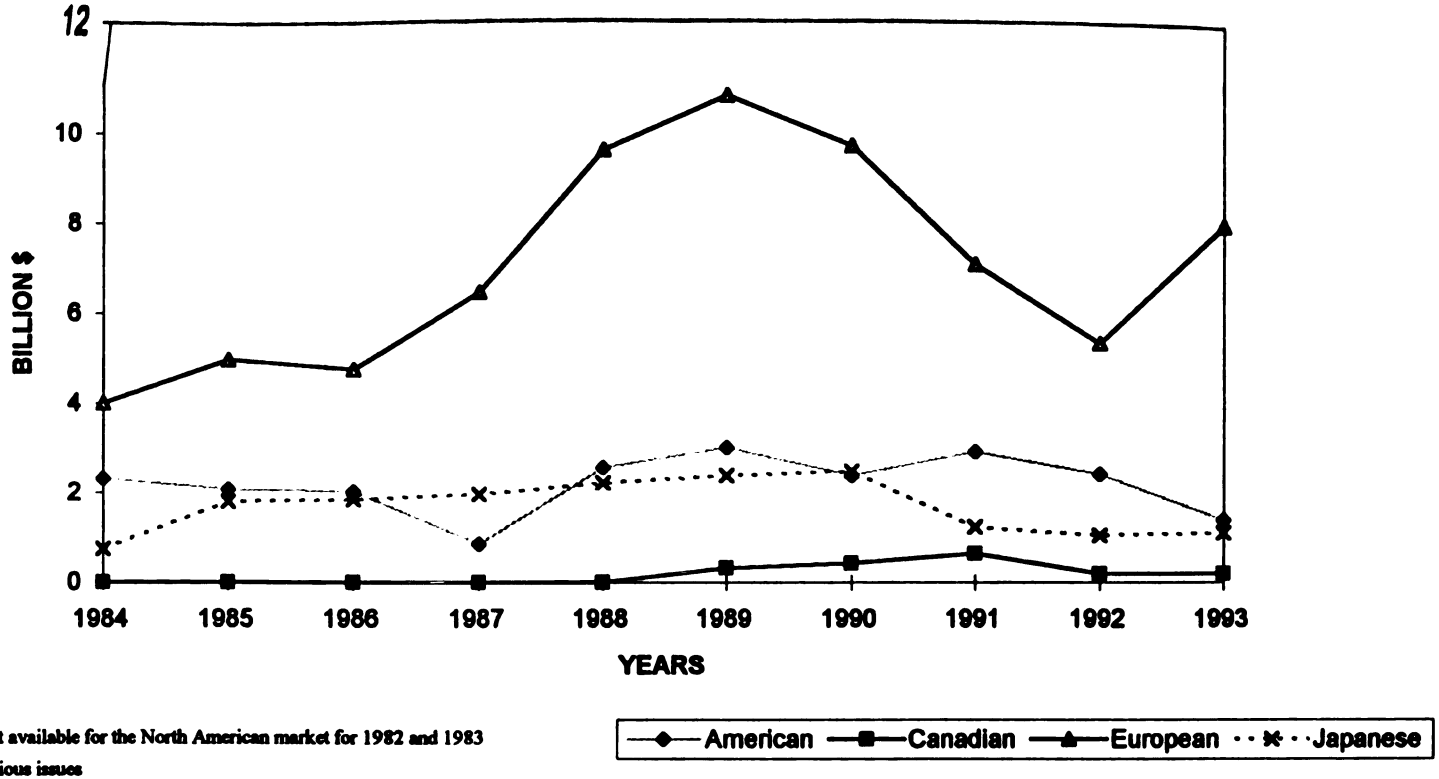
Figure 4.26
CANADA CONSTRUCTION EXPORTS OVERVIEW

apparent that the growth in the North American market from 1992 to 1993 is due to the growth of the US market which has also compensated the continuing decline of the Canadian market.

The comparison of the activities of top contractors from different nationalities in the North American market from 1984 to 1993 is shown in Figures 4.27 and 4.28. It is important to note, however, that the activities of the US and Canadian contractors in their home countries are not included in these comparisons. This is apparent in the fact that this analysis involves construction exports only, and does not include domestic construction activities. This will be clear when the activities of the top contractors in the US and Canadian markets are compared as shown in Figures 4.29 through 4.32.

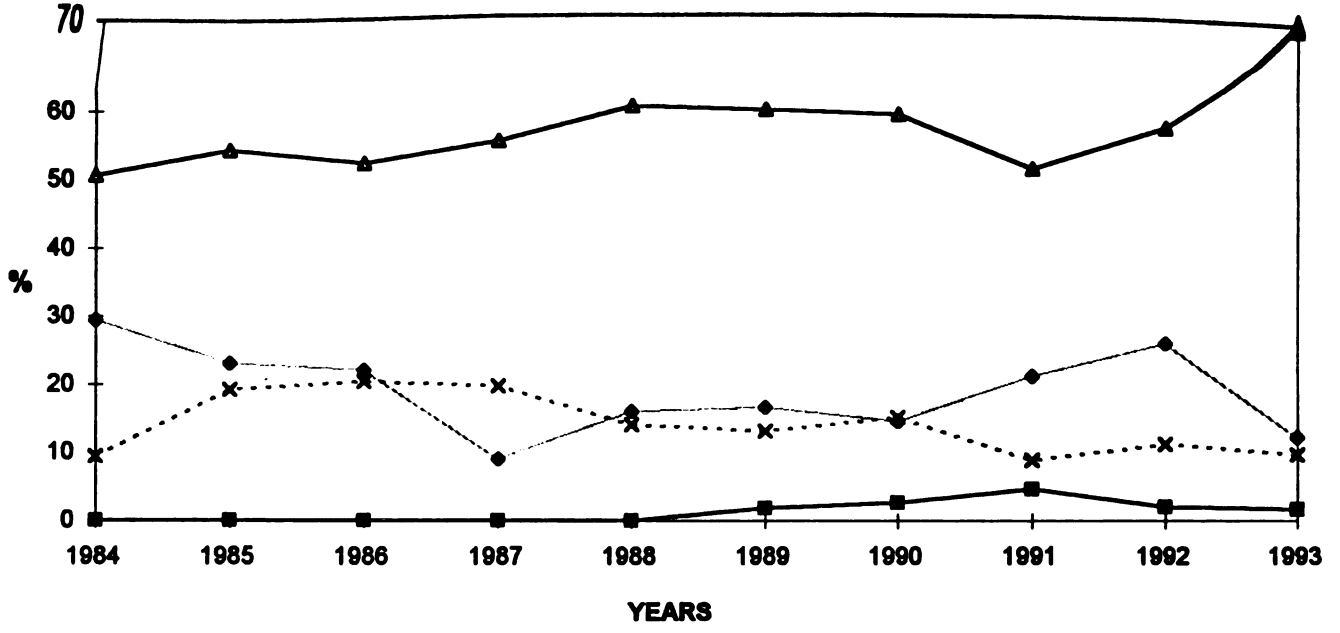
The European contractors have clearly been the dominant players in the North American market accounting for at least 50% of all construction exports in this market throughout 1984-1993. In fact, in 1993, European contractors accounted for almost 70% of construction exports made to North America. In the analysis of the US market, where the American contractors are left out since it is their domestic market, the dominance of the Europeans is evident as illustrated in Figures 4.29 and 4.30. On the other hand, this has not been the case in the Canadian market from 1988 to 1993 where the American contractors have outperformed their European counterparts (See Figures 4.31 and 4.32). The proximity of the Canadian market for American contractors appear to have been effective in this achievement.

The Japanese contractors have also had some activities in the North American market accounting for 10-20% of the construction exports to this regional market from year to year. However, this has been mainly a result of their activities in the US market as



NOTE: ENR data not available for the North American market for 1982 and 1983
SOURCE: *ENR*, various issues

Figure 4.27
NORTH AMERICA CONSTRUCTION EXPORTS BY CONTRACTOR NATIONALITY

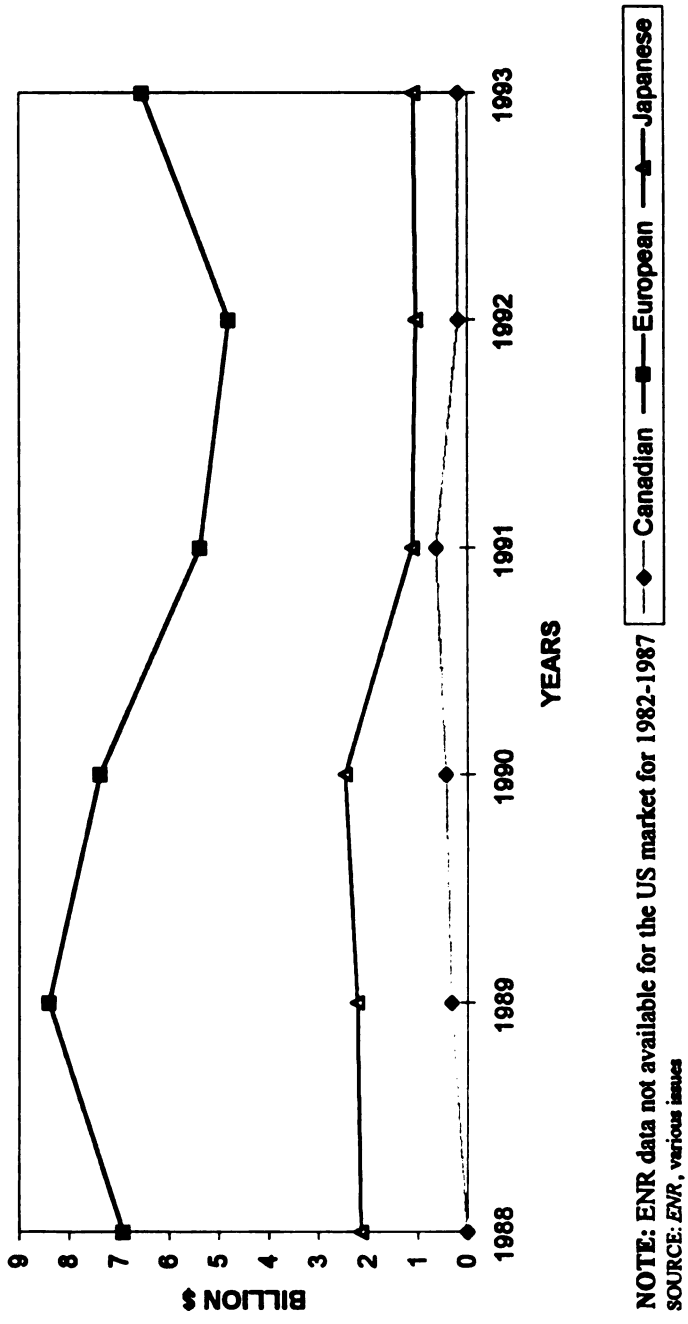


NOTE: ENR data not available for the North American market for 1982 and 1983

SOURCE: *ENR*, variou sissues

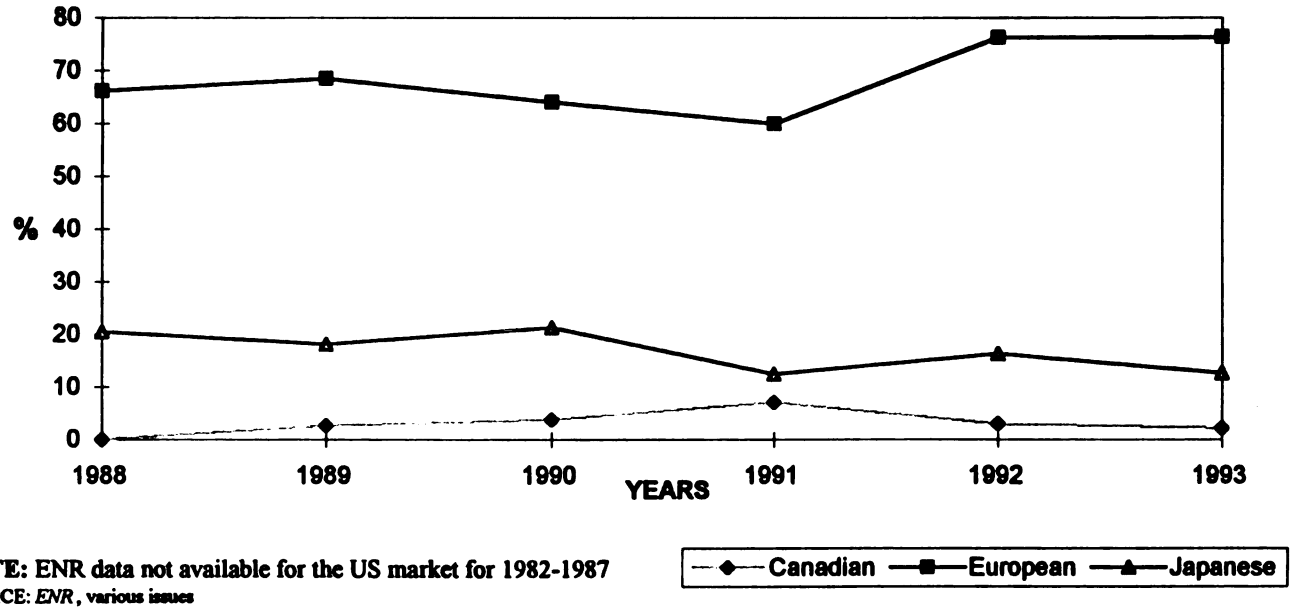
Figure 4.28

NORTH AMERICA CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES



NOTE: ENR data not available for the US market for 1982-1987
SOURCE: *ENR*, various issues

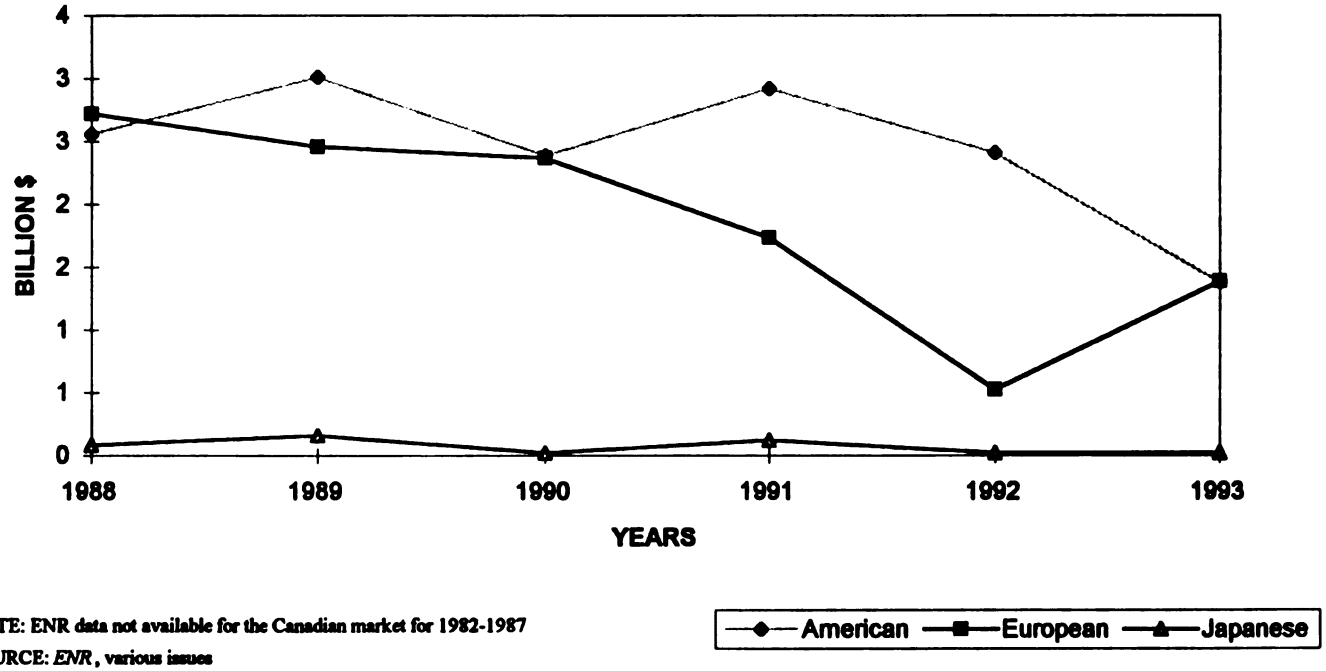
Figure 4.29
US CONSTRUCTION EXPORTS BY CONTRACTOR NATIONALITY



NOTE: ENR data not available for the US market for 1982-1987
SOURCE: *ENR*, various issues

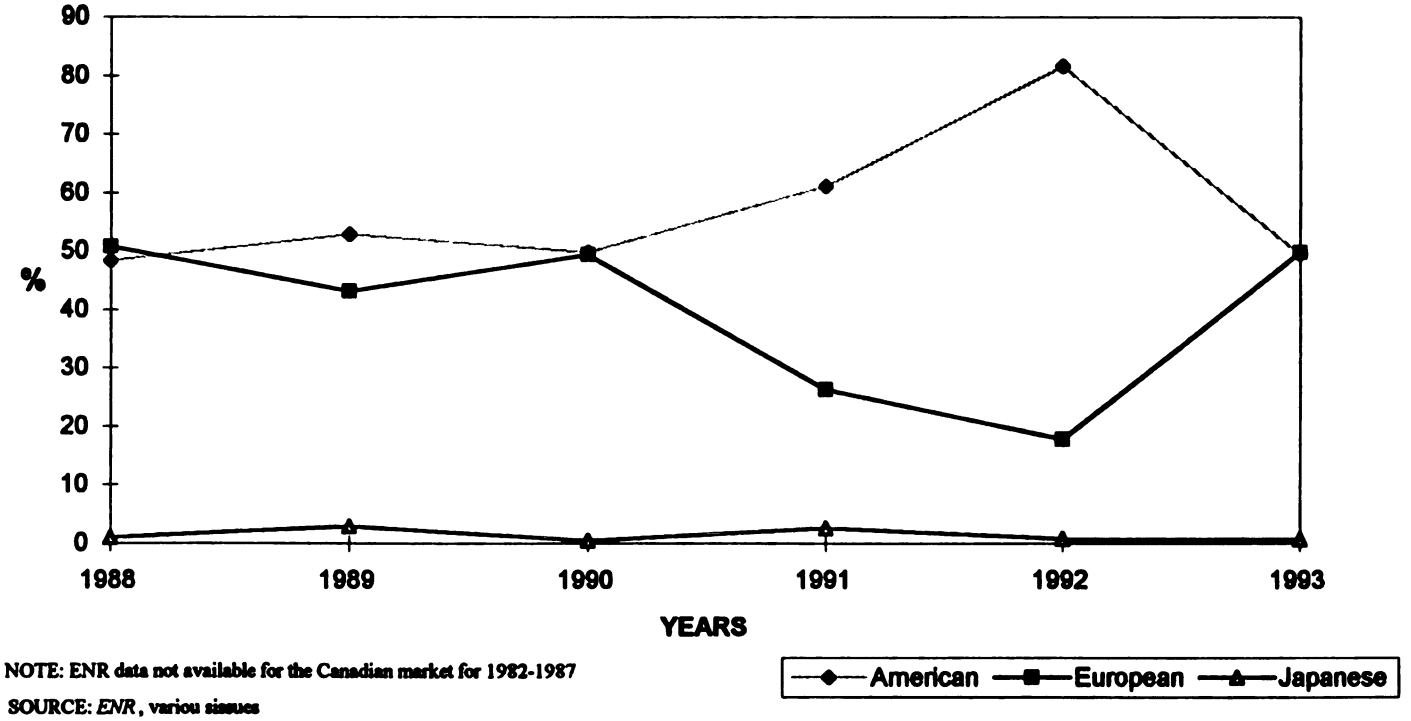
Figure 4.30

US CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES



NOTE: ENR data not available for the Canadian market for 1982-1987
SOURCE: *ENR*, various issues

Figure 4.31
CANADA CONSTRUCTION EXPORTS BY CONTRACTOR NATIONALITIES



NOTE: ENR data not available for the Canadian market for 1982-1987

SOURCE: *ENR*, various issues

Figure 4.32

CANADA CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES

shown in Figures 4.29 through 4.32. Japanese have had a very small scale of construction activities in Canada.

4.2.2.6 Latin America

The amount of new contracts awarded in Latin America for construction exports has exhibited an unstable trend from 1982 to 1993 as shown in Figure 4.33. The market shrunk from 1982 to 1984, grew in 1985, shrunk again in 1986, grew again in 1987, shrunk from 1988 to 1990, grew in 1991, and shrunk thereafter. The growth in 1991 was more of an explosion which doubled the share of the Latin American market for construction exports in world total (from 4.79% to 9.66%). Overall, however, Latin America has been a relatively small market for construction exports whose share of the world total has never exceeded 10%.

As shown in Figures 4.34 and 4.35, American, European and Japanese contractors have shared the Latin American market for construction exports throughout 1982-1993. Among these, however, the share of the Japanese has been at most about 10%, being 3.2% in 1993. Hence, practically speaking, the Latin American market has been divided between the American and European contractors.

Despite the relative proximity of this market for the American contractors, the Europeans have dominated the market from 1982 to 1990. In 1991 and 1992, however, the American contractors have outperformed the Europeans and almost doubled their share (from 34.3% to 63.6%). In 1993, however, the American and European contractors have had about 45% of the Latin American market each.

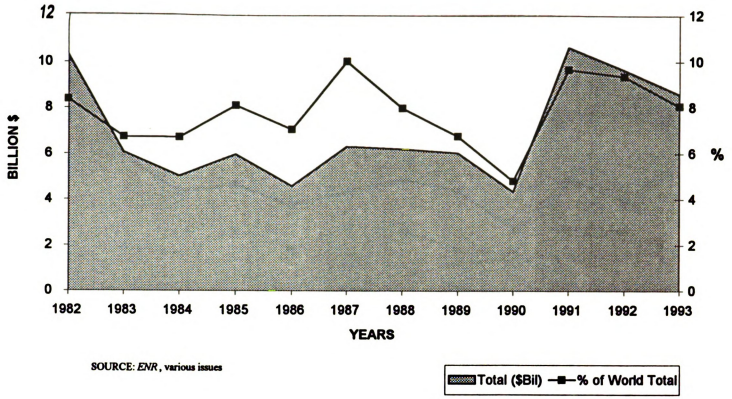
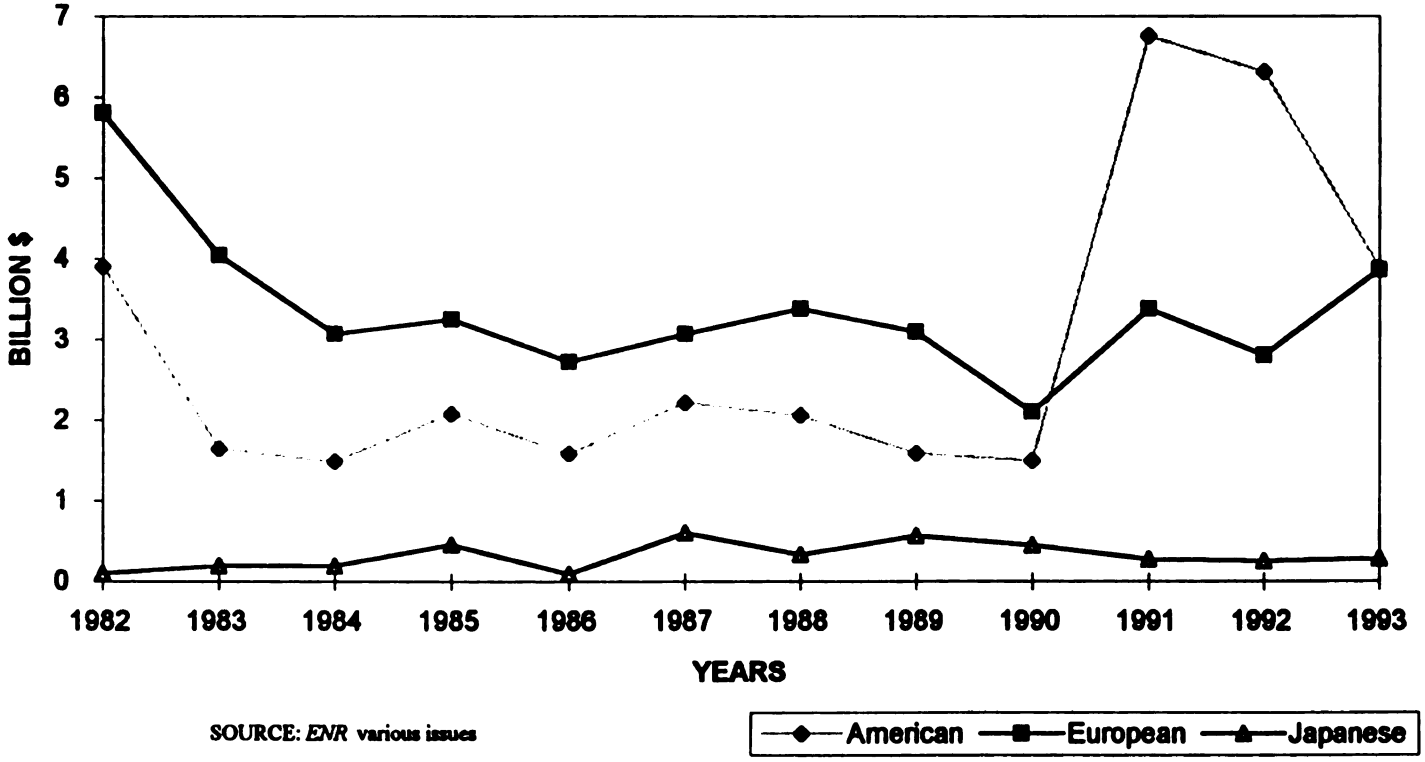


Figure 4.33

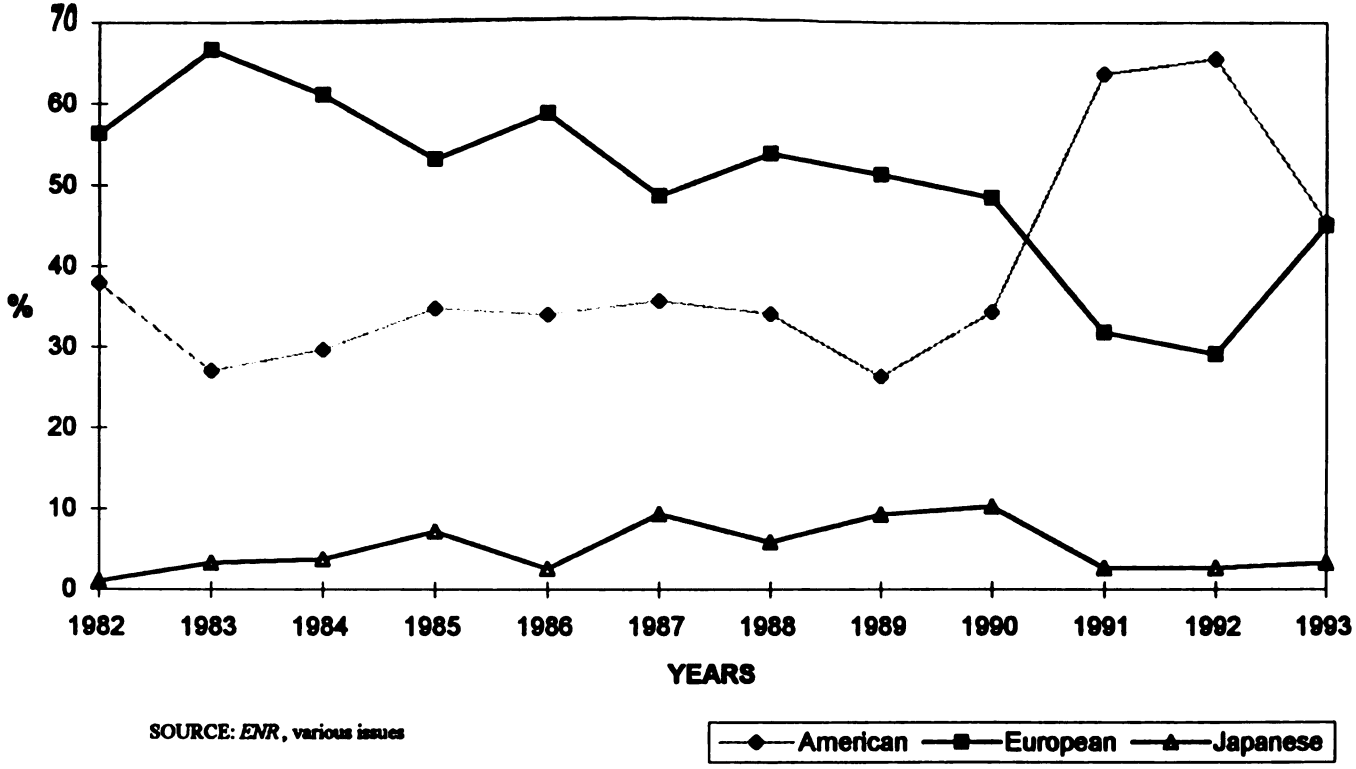
LATIN AMERICA CONSTRUCTION EXPORTS: OVERVIEW



SOURCE: *ENR* various issues

Figure 4.34

LATIN AMERICA CONSTRUCTION EXPORTS BY CONTRACTOPR NATIONALITY



SOURCE: *ENR*, various issues

Figure 4.35

LATIN AMERICA CONSTRUCTION EXPORTS: PERCENTAGE OF TOTAL BY CONTRACTOR NATIONALITIES

4.3 CONCENTRATION OF THE WORLD MARKET FOR CONSTRUCTION EXPORTS & INTERNATIONALIZATION OF THE TOP CONTRACTORS

In this section, a brief analysis of the distribution of the new contract billings of the top contractors in construction exports will be presented. First, the concentration in the market and the level of international activities of the top contractors will be reviewed. Secondly, the international activities of the contractors from different nationalities will be compared.

As the data in Table 4.1 show, the top 5 contractors accounted for 14.6% of the total contract billings in the world in 1993. Similarly, top 10 accounted for 24.2%, top 50 61.0%, top 80 75.2%, and top 100 81.3% of the world total. In other words, the top 50 contractors held nearly two-thirds of the world construction export market in 1993.

What is more interesting, however, is that the top 5 contractors, which constitute 2% of the top 225 contractors, had 29% of all international billings in the world in 1993. Moreover, top 10 had 41.8% of all international construction billings in the world. Similarly, top 50 accounted for 81.1%, top 80 91%, and top 100 94.4% of all international billings. Those contractors ranked 101st to 225th accounted for only 5.6% of all international billings in world construction contracts.

As noted above, 2% of the 225 contractors (the top 5) hold 29%, and 55.6% of the 225 contractors (the last 125) hold 5.6% of the market. This clearly indicates the concentration in the market and the outstanding dominance of those few contractors who are at the very top of the list of top 225 contractors in the world.

In other words, the market for world construction exports is largely held by 50 top contractors who hold over 80% of the market. Hence, overall, the world market for

Table 4.1

TOP CONTRACTORS IN THE WORLD IN 1993

Rank	Total Billings (Billion $)	% of Total Billings	International Billings (Billion $)	% of International Billings	International Billings/ Total Billings
Top 5	71.5974	14.6 %	44.9198	29.0 %	62.7 %
Top 10	119.1211	24.2 %	64.8550	41.8 %	54.4 %
Top 50	299.7598	61.0 %	125.8982	81.1 %	40.0 %
Top 80	369.3195	75.2 %	141.1667	91.0 %	36.7 %
Top 100	399.5239	81.3 %	146.4849	94.4 %	35.3 %
Top 225	491.4168	100.0 %	155.1556	100.0 %	31.6 %

construction exports appears to be highly concentrated. On the other hand, the remaining 20% of the market appears to be very fragmented. Particularly, beyond the top 100, the remaining 5.6% of the world market is divided among the last 125 contractors in the top 225 list for world construction exports. In fact, Seaden (1992) observes that construction industry is highly fragmented worldwide, but that large, integrated companies, are becoming more and more important.

The last column in Table 4.1 shows the ratio of the international billings of the contractors to their total billings. This ratio, which is an indication of the importance of international activities for the contractors, can be viewed as a proxy for the level of internationalization of the contractors. Overall, 31.6% of the total billings of the top 225 contractors come from international billings. On the other hand, when the contractors at the higher ranks and lower ranks are grouped and compared, different levels of internationalization are observed.

The data reveal that almost 63% of the total billings of the top 5 contractors come from international activities. This ratio decreases as we go down the list of the top 225 contractors. For instance, the ratio of international billings to total billings for the top 10 contractors goes down to 54.4%. For the top 50, the ratio is 40%, for the top 80 36.7%, and for the top 100 35.3%. In other words, the level of internationalization of the contractors decreases as we move down the ranks.

On the other hand, the internationalization ratio for the top 100 is still more than the ratio when all of the top 225 contractors are considered which was 31.6% as noted above. Hence, it becomes apparent that the amount of international work done by the

contractors who are towards the bottom of the list is more or less negligible compared to the total market.

Table 4.2 presents the data for comparison of the internationalization levels of contractors form different nationalities. It must again be noted that the contractors from different European countries are grouped together for the sake of simplicity only.

When total contract awards are compared, Japanese contractors are number one followed by the American and European contractors in second and third place respectively. On the other hand, this ranking changes completely when international contract awards are compared. This time, European contractors are number one, followed by American contractors, with Japanese contractors falling down to third place.

The internationalization levels of contractors from different nationalities are again compared using the ratio of their international contract awards to their total awards. In this analysis, the Turkish contractors are found to be the most international. 68.8% of the total contracts awarded to Turkish contractors are on international contracts. This is a clear indication of the disposition and commitment of the Turkish contractors to foreign markets for doing business. Kaynak and Dalgic (1992) have also noted that Turkish construction firms have gone through a clear internationalization process and have been particularly successful in the Middle Eastern and North African markets.

The European contractors follow the Turkish firms who have an international contract awards to total contract awards ratio of 46.3%. American contractors have a ratio of 41.85 placing them in third place in terms of internationalization. However, when only the top ten American contractors are considered, this ratio goes up to 51.8%. This ten point increase clearly shows the discrepancy in the internationalization levels of

Table 4.2
INTERNATIONALIZATION OF THE TOP CONTRACTORS BY NATIONALITIES IN 1993

Nationality	Total Billings (Billion $)	International Billings (Billion $)	International Billings/Total Billings
European	136.0105	62.9376	46.3 %
Japanese	162.0556	20.1911	12.5 %
South Korean	13.3223	3.3188	24.9 %
Turkish	2.1335	1.4674	68.8 %
American	145.9453	61.0513	41.8 %
(Top 10 US Contractors)	100.7030 (69 % of US total)	52.1149 (85.3 % of US total)	51.8 %

American contractors. The top ten, who account for 85.3% of the total international contracts awarded to American contractors in 1993, appear to be highly international. Hence, a few big contractors dominate the export-oriented group of American contractors (US Congress, Office of Technology Assessment 1987).

The Koreans do about a quarter of their work in foreign markets. Interestingly enough, Japanese contractors are found to be the least internationalized. Only 12.5 % of the total contracts awarded to them are on international contracts. This is mainly due to the fact that they have a very well-protected domestic market that precludes foreign contractors from entry (Schelesinger 1993).

4.4 INDUSTRY STRATEGY

Development of a business strategy in international construction involves a number of decisions. Contractors need to decide "when to enter which country, what to export there, in association with whom, under what contract form, at what price, and with whose finance" (Strassmann and Wells 1988, p.227).

Market entry decisions are not too much different from those facing firms in different industries who are involved in international business. Among the factors considered are attractiveness of the market, resource availability and cost, political and economic stability, etc. The contractors from the Triad countries have been active in all markets across the world though in varying degrees. On the other hand, contractors from developing nations or NICs have targeted specific regions in particular. For instance, Koreans have been very active in the Middle East which also became their handicap when this market shrunk drastically through 1982-1987. Similarly, the Turkish contractors have

been very active in the Middle East and North Africa and have been hurt with the decline of these markets (Kaynak and Dalgic 1992).

Another major decision facing international contractors is on selection of associates or partner to work with. According to Strassmann and Wells (1988),

> "To initiate, organize, and execute work abroad, a construction firm will often associate itself with others in a joint venture or consortium" (p.227).

Given that such an association is necessary, selection of the "right" partner to collaborate with becomes a critical decision. In this regard, forming long-term alliances appear to be very beneficial, particularly in markets where continuity of work is anticipated. The issue of collaborations among contractors will be discussed in detail later in this chapter.

Another concept or approach that has gained a lot of popularity and attracted interest in the US construction industry is that of "partnering" between owners and contractors (Rudy 1992). This view focuses on the relationship between all parties involved in a construction project including the owners. Partnering approach emphasizes "making long-term commitments with mutual goals for all parties involved to achieve mutual success" (Partnering Task Force, 1991). In a CII (Construction Industry Institute) study, Halpin, et al (1993) note that owners look for long-term relationships with contractors where mutual expectancies are met. A relationship based on trust and the selection of team personnel are identified as the top management concerns in the partnering approach (Partnering Task Force 1989).

Minimizing uncertainty and maximizing the amount of work and income are the objectives of the contractors. Hence, they seek large projects with safe turnover. The most preferred contract type is a design-build package and the least preferred is open

competitive bidding. A design-build package is very attractive because higher profits can be obtained (Strassmann and Wells 1988).

Seven key factors were identified in a CII study which were most likely to influence competition in the construction industry. These were (1) flexibility in operations and the ability to adjust to changing client needs rapidly, (2) diversification and expansion of markets, (3) recognizing the importance and need for establishing people relationships, (4) formations of strategic alliances, (5) innovation and the capacity to adapt new techniques, (6) quality in products and services offered, and (7) maintaining a strong financial disposition (Yates, Mukherjee and Njos. 1991).

4.4.1 Financing

Financing of projects is one of the major issues in the construction industry (US Congress, Office of Technology Assessment 1987). In international construction, financing becomes even more critical and project proposals that include low-cost financing get preferential treatment (Pheng 1992). Request for financing is also usually part of the bid process for foreign construction. Several instances of this are reported in the article "Bankers Construction" (*ENR*, Jan 27 1983). Provision of low-cost finance is one of the main criteria used by foreign governments in awarding contracts. Project proposals that include competitive financing as part of the bid package are the ones that succeed (US Department of Commerce, International Trade Administration 1993). Similarly, financial stability of the contractors is one of the decision criteria in contractor prequalification (Russell and Skibniewski 1988; Russell, Hancher and Skibniewski 1992).

One of the executives who participated in this study has made the following comment on the issue of financing:

> "Financing has always been important. But it has taken on a new dimension in the past few years. In today's cash-poor markets, many projects simply cannot be built unless the contractor arranges project financing. New financing methods are being used, some of them involving countertrade or various forms of privatization. The build-operate-transfer (BOT) method is being utilized on a number of large projects. The successful bidder must finance the project, design and build it, operate it for a specified period of time to earn back the investment and then transfer ownership to a public authority".

For instance, Eastern Europe presents a lot of opportunities for new projects, but lack of financing in that area poses a serious problem. A recent development is the formation of the European Bank for Reconstruction and Development (EBRD). One of the primary objectives of EBRD is to support infrastructure development in the region. Although the Bank does not finance the total cost of a project, it works to stimulate investment from other public and private sources (*International Construction Newsletter*, 18:4). In other words, in cash-poor countries where there is potential for many projects, outside financing may be necessary to create a market (US Congress, Office of Technology Assessment 1987).

For instance, in the project to build a terminal at Prague Ruznye International Airport in the Czech Republic, the Czech government could not raise capital to finance the project and invited bids for a BOT contract. The government formed a joint venture with the consortium that got the contract (*ENR*, August 8 1994).

Strassmann and Wells (1988) note that the market for international construction has switched from being a seller's market to being a buyer's market. They state that

> "...price becomes an increasingly important issue of contract - hence worldwide procurement of materials and low-cost but disciplined labor - and then finance" (p.241).

At the 1993 International Construction Forum, Jack Randolph from the US Department of Commerce noted that financing was the key for being competitive in international

construction contracts. He went on to add that with the growing trend in the world towards privatization and use of the BOT method, project financing has become even more critical (*International Construction Newsletter* 1993, 18:2). For instance, in 1993 the Turkish government announced an $18 billion infrastructure program which was intended to be financed through the BOT and build-own-operate (BOO) methods (*International Construction Newsletter* 1993, 28:3). Moreover, it is also reported that European contractors are looking for BOT contracts to expand their business (*ENR*, August 24 1992,).

The importance of financing in construction is particularly critical because of the lag between production and sale which is much more than any other industrial sector. When a contract is awarded, the contractor starts preparing the construction site, ordering the materials and digging the foundations. Hence, expenses start to accumulate immediately, but the project will usually take a number of years to be completed. So, the contractors need working capital to cover this lag in construction. On the other hand, a project will provide its income over a number of years causing an income lag. Hence, project financing is required to cover this income lag (Strassmann and Wells 1988).

The Japanese-led consortium that won the contract to build a bridge across the Bosphorous in Istanbul, Turkey provides a clear example of the effect of financing (Ingrassia 1990, reprint). The winning group was led by Ishikawajima-Haima Heavy Industries Co. (I.H.I.) of Japan. They made a surprising bid overthrowing the consortium led by Cleveland Bridge and Engineering who was backed up by the Bechtel Group. As Ingrassia puts it,

> "As if its huge price advantage weren't enough, the I.H.I. group's finance package clinched the deal" (p.427).

The finance package included Japanese government loans and Italian credits with very attractive interest rates and payment terms.

Entering collaborative ventures with foreign firms may be one way to have access to subsidized financing. Moreover, the contractor may need to be financially strong itself and take equity position in new projects. The protocol signed between Bechtel Power Corp. And the Turkish Electric Authority to build a $1 billion coal-fired powerplant provides an example of this. Bechtel and its partners will design, build and finance the project and also enter a 15-year joint venture with the Turkish Government. Some of Bechtel's revenues will come from the sale of power (US Congress, Office of Technology Assessment 1987).

Hence, partnerships or alliances provide an alternative medium to use the financial leverage and government support of foreign firms. Yates, Mukherjee and Njos (1991) report that US firms are seriously considering such partnerships to complement their construction management expertise and win contracts.

4.4.2 Government

Both the local governments in the country where the project is located and the home-country governments of the contractors effect strategies and competitiveness of the contractors. These effects are due to the requirements set by local governments and assistance provided by home-country governments of the contractors.

Partnering with a local contractor is a legal requirement set by many foreign governments which is a prequalification criterion that foreign contractors have to meet. Hence, foreign contractors have to select a local contractor to form a joint venture or

consortium to be able to enter the bidding. One of the executives who participated in this study made the following remark on this issue:

> "There are now regulations or established practices in a variety of countries which require substantial participation by local firms or effectively exclude US companies from many types of projects".

There are, of course, many benefits to collaborating with a local contractor such as making use of its local contacts, knowledge of the market, etc.. However, when it is a legal requirement, this mode of entry is the only way to have access to the market. In other words, there is no mode of entry decision to be made if that market is selected for entry.

The remark noted above about exclusion of US companies implicitly points out the fact that some governments may employ regulations to protect their national markets. Japan provides a clear example of this phenomenon whose market has been virtually closed to foreign contractors (US Department of Commerce, International Trade Administration 1993). Outsiders are excluded and foreign companies get only less than 1% of Japan's public works construction market (Schlesinger 1993). A foreign contractor has problems even in hiring subcontractors and suppliers in Japan since they are loyal to established companies in Japan. More than a year ago, however, Japan has approved a plan that would open the market for public works and through open and competitive government on central government contracts (*ENR*, Jan 24 1994).

Moreover, many governments insist for the engineering and design work for a project to be done locally. Transfer of proprietary technology is also sought by many governments. Hence, contractors desiring to do work in such countries have to satisfy the government in those countries (US Congress, Office of Technology Assessment 1987).

On the other hand, the home-country governments of the contractors also have a direct effect on the operations and strategies of their contractors through the assistance they provide. For instance, Japanese and European governments provide significant amount of subsidies and other types of financial assistance to their contractors when they enter foreign contract bids. In countries such as Japan, France, and Italy, government agencies provide both development aid and export credits at below-market interest rates (US Congress, Office of Technology Assessment 1987). As noted above, financing is a critical deciding factor in many contract awards. Hence, contractors from Japan or Europe have a significant advantage over their competitors from other countries, particularly the US, and can offer very attractive tenders. One of the executives participating in this study stated:

> "We are seeing more use of government sponsored "mixed credit" financing whereby foreign aid funds are combined with official export financing to effectively "buy-down" or reduce the effective interest rate on a project loan".

The Japanese and French governments are particularly very active in promoting their construction industries and providing different kinds of assistance to their contractors in foreign contract bids. The Japanese call the credit provided by the government "foreign aid", and not a subsidy (Ingrassia 1990, reprint). On this ground, they argue against the allegations raised against them for subsidizing their contractors. Strassmann (1989) notes that the French, Italian and Japanese governments are willing to transfer resources abroad which is the main reason for supporting their firms entering in international contracts.

The Korean government also appears to be very interventionist, following their contractors wherever they go (Strassmann and Wells 1988). Similarly, the Turkish government provides government-sponsored export promotion to their contractors. The

policies of many developing countries and NIC governments have also helped their construction industries to mature technologically (US Congress, Office of Technology Assessment 1987). The following remark made by one of the executives who participated in this study clearly show how the US contractors feel about the activities of their government:

> "Many of our foreign competitors receive substantial assistance from their governments in pursuing overseas business. This assistance generally takes the form of low-cost export financing, government funding of feasibility studies and risk insurance, tax breaks, and a variety of other programs. The US construction industry receives some limited government assistance in these areas, but the industry has traditionally had a hard time convincing Congress of the importance of the export side of the US design and construction industry. The US government has failed to appreciate the difficulties of doing business in foreign markets and has burdened the industry with regulations and restrictions making it more difficult for US companies to compete abroad. Among these regulations are the Foreign Corrupt Practices Act, Anti-Boycott Regulations and Onerous Tax Requirements".

In addition to providing loans or low-cost financing, home-country governments of the contractors may also provide financial assistance in the form of tax incentives. For instance, "Italy and Japan do not tax income earned abroad and have further tax concessions on the domestic income of exporting companies" (Strassmann and Wells 1988, p.239). Again, US government is the most reluctant to reduce taxes or provide financial leverage to its contractors that enter foreign contract bids. One of the participants in this study made the following comment on this issue:

> "US tax treatment of American firms conducting business in overseas markets remains a continuing stumbling block to their competitiveness. Complex and restrictive rules governing the use of foreign tax credit provisions present an unnecessary burden on corporations and their employees. Additionally, despite the fact that the Foreign Earned Income Act (Section 911) provides a limited exemption from taxation for certain qualifying income earned overseas, the US is still the only industrialized country which taxes the foreign earned income of its citizens abroad. These taxes make US workers more expensive than their European counterparts to hire and maintain on overseas projects. Studies have consistently shown that Americans working abroad buy American and sell American products, creating US exports and US jobs".

Home-country governments can also help their contractors in development of new technology which will be discussed in the next section below.

As one industry expert notes, as far as US contractors are concerned, their government has provided a lot of international project opportunities in the past which were government funded. Among these were embassy construction, overseas military construction projects or AID projects. The trend, however, is that there are less and less opportunities for overseas work from government agencies.

Hence, the effects of both local and home-country governments on the competitiveness in the industry are apparent. There is a lot of concerns voiced about government subsidies, but many governments still provide them. Moreover, the financial leverage introduced through these subsidies can be the deciding factors in determining who wins the contract bid. Furthermore, it is also apparent that when financing is the deciding factor in a contract award, US firms typically find themselves at a disadvantage against their foreign competitors.

4.4.3 Technology

Level of technological development is another factor affecting competitiveness in the global construction industry. As within most industries, contractors that utilize new methods and tools, which are a result of the application of new technology, have a differential advantage in the industry. Development of new technology and methods, however, requires significant amount of investment in R&D. Governments can have a significant effect on the technological development of their construction industries by making the necessary investment, facilitating the coordination of research conducted in the industry, or encouraging the firms to collaborate and invest in R&D.

The American contractors have had the leading edge in construction technology for many years after the World War II. Today, however, the Japanese have taken over in many areas. While the US has traditionally been the exporter of technology, it has become a technology importer with Japan taking over the technology leadership. Actually, as Strassmann and Wells (1988) note, the Japanese imported all-American construction technology, learnt from it, moved to European technology, and lastly began developing their own that now makes them the technology leader. Now, R&D is an integral part of large Japanese construction companies and The top 50 Japanese contractors are actively involved in R&D (Sidwell, Metzinger, and Tucker 1988). Large Japanese contractors annually commit as much as $100 million each to applying robotics and other automation techniques to construction. On the other hand, the budget for R&D is very limited in the US. Few of the large American contractors have people working directly on new construction methods. The following example shows that R&D is seen more as an expense rather than investment:

> "During a visit to a Japanese research laboratory, a vice president of a major US construction firm has been reported as saying that, if he were in charge, he would fire all the R&D staff and save the company $25 million a year (cited in US Congress, Office of Technology Assessment 1987, p.144, original citation at Final Report, Task 3, Technology in Architecture, Engineering, and Construction, op. cit., pp. 6-7).

The US industry is also reluctant to use new construction techniques due to litigation concerns in case of failure (US Department of Commerce, International Trade Administration 1993). In a CII study, Sidwell, Metzinger and Tucker (1988) note that:

> "The US construction industry undertakes virtually no research. That which is done is being performed primarily by materials and equipment producers" (p.30).

Seaden (1992) has identified three systems in the world for generation and transfer of knowledge in the construction industry which can be labeled the European, the North American, and the Japanese systems. In the European model, there is a highly structured, formal and centralized national system for research in construction. Specific national organizations generate research, while others transfer the results to the industry. The financing of the system comes from both the national government and the industry. As Strassmann and Wells (1988) note, the European governments do not only help their contractors with financial assistance, but also provide technological support.

In contrast to the system in effect in Europe, "there is little coordination or overall direction in the construction research effort in North America' (Seaden 1992, p.51). Most construction research is conducted at the universities, and national research institutions play a relatively limited role. Moreover, transfer of research results to the industry is much less institutionalized than in Europe. The commonality in both the European and North American systems is that most construction research is funded by the state and performed at universities and research institutes. In other words, private sector invests very little in construction research.

There seems to be more awareness building in the US construction industry that more attention needs to be given to research and some consolidated effort. In this regard, some institutions have been formed such as the Construction Industry Institute (CII) whose mission is stated as:

> "...to improve the total quality and cost effectiveness of the construction industry through research and implementation for the purpose of providing a competitive advantage to US business in the global marketplace" (*CII, 1992 Annual Report*).

Moreover, one of the obligations of membership to CII is stated as "Willingness to share, under appropriate safeguard, information with research teams and with the membership in general".

The situation is completely different in Japan where private sector is the engine behind construction research. Such research is conducted inside the large corporations, who make significant investments as noted earlier (Seaden 1992). Sidwell, Metzinger and Tucker (1988) have found that "Japanese builders view R&D as an essential investment for the future and have directly linked R&D to construction activity ..."(p.46).

The riskiness and high cost of R&D investments also make it hard for individual companies to handle on their own. Hence, instances of inter-firm collaborations are also observed in the construction industry with the objective of joint R&D by sharing risks and cost.

Although American firms have lost the technology battle on a number of grounds, they are still the unchallenged leader in construction management (CM), process plant design and computer aided design and drafting (CADD) (Sidwell, Metzinger and Tucker 1988). In fact, the edge that American firms have in computer-based technologies has helped them to hold a competitive place in the international market (US Congress, Office of Technology Assessment 1987). The Europeans and the Japanese lead in developing new site-oriented construction technology. The Japanese, for instance, are undoubtfully the leader in tunneling type of work (Strassmann and Wells 1988).

4.5 ALLIANCES IN INTERNATIONAL CONSTRUCTION

Examples of inter-firm collaborations have been steadily increasing in many industries and appear to be a global trend for doing business. As noted before,

international construction is an industry also characterized by such inter-firm collaborations that may take various forms. For instance, the contractor-subcontractor relationship is an inherent part of the industry; and collaborative ventures between contractors are also typical. The concern of this study, however, is the latter type which refers to collaborations between contractors.

J.T. Kavanagh (1990), chairman of the National Constructors Association (NCA) in 1990, had stated that strategic alliances with foreign contractors would be commonplace for NCA member companies. He had also noted that this would be true for both domestic and international projects.

4.5.1 Rationale for and Benefits of Alliances

International contractors have a number of reasons or motives for forming alliances. Although some of these also apply to firms that form partnerships in their industries, some are specific to the construction industry. The Construction Industry Institute in the US (hereafter referred to as CII) has commissioned a number of studies on the construction industry. One of these studies has specifically focused on alliances in international construction (Badger, et al. 1993). A group of researchers at Arizona State University, USA, has conducted this study which is one of the few that has investigated the issues surrounding such alliances in detail. Thirty personal interviews with senior level international construction executives were conducted during this study and the results presented in a detailed report (Badger, et al. 1993).

According to this study, the reasons for forming alliances in international construction and the benefits gained can be grouped into seven business areas (Badger, et

al. 1993): (1) Financial, (2) Marketing, (3) Operational, (4) Government, (5) Management and Personnel, (6) Technical, and (7) Labor.

In the financial area, international contractors form alliances to access financing, share and lower risk, enhance profitability, have survival and financial security, meet bonding requirements, and lower overhead costs. Since construction projects are very costly, contractors may consider them to be very hard and risky to undertake on their own. Hence, financial motives for forming alliances are particularly strong and effective in this industry. Secondly, through alliances, contractors gain a number of benefits from the marketing point of view as well. Broadening the client base, entering or having access to new geographical markets, increasing competitive position, maintaining and increasing market share, getting future project information and establishing a network, sharing long range plans, and being recognized as an international contractor are identified as the marketing related benefits.

Operationally, the partners in an alliance can service core clients in different parts of the world, have project and administrative diversity, experience and knowledge, access supply lines, and increase their flexibility. From a technical perspective, alliances provide a suitable medium to the contractors for accessing new technology and low-cost design/build services, and can be a source of R&D. In the management and personnel area, alliances enable contractors to enhance company culture and local expertise, increase and streamline management capabilities, level base the workload, and enhance employee relationships. Furthermore, in the labor area, the major motives for and benefits gained from forming alliances are accessing local labor and increasing quality of work and

productivity. Finally, contractors form alliances because of some governmental factors, such as government requirements, some political reasons, and bidding criteria as well.

According to the results of a study conducted by Price Waterhouse, 24% of all US firms who exported construction services in 1982 and 1983 participated in joint ventures. The main reasons for participating in joint ventures were found to be the complex nature of the projects, the need to increase bonding capacity or enhance financing capabilities, and foreign government requirements (*Price Waterhouse* 1985).

For instance, Hoffman (1992) points out that forming strategic partnerships with environmental design firms can be very effective as an entry strategy to the hazardous waste remediation market. He notes that the complementary assets to be brought together through such partnerships will give a significant competitive edge in this growing market.

Among all reasons and benefits noted above, the top four reasons for forming alliances in international construction appear to be accessing technology, sharing risk, securing financing, and entering new markets. The top four benefits, on the other hand, are enhancing competitive position, increasing market share, obtaining new work, and broadening client base (Badger, et al. 1993). Hence, technical and financial concerns appear to drive the formation of alliances in international construction; however, the major benefits gained seem to be marketing related.

4.5.2 Challenges in Alliances

Firms face many challenges in their own independent operations; however, entering into an alliance brings additional and different challenges. The major challenge in entering an alliance is forming the "right" alliance. There are a lot of factors to be considered for the alliance to be successful and for the alliance partners to reach their

objectives in entering the alliance. In a CII study, some of these factors were identified as duration and documentation of the alliance, difficulties to be encountered, contributions of the partners, confidentiality, and assessment of rewards and risks (Badger, et al. 1993).

Alliances are not easy and may take a significant amount of time to form. Hence, once formed, the expectation is for the alliance to last a long time. Contractually, an alliance may be based on informal agreements, such as a handshake or verbal commitment, or on complex legal contracts or both. Due to the long term nature and variety of contractual arrangements, there will be a number of difficulties that must be anticipated to be encountered. An alliance may be very difficult to maintain, manage and operate. Hence, great care and attention should be given to such possible difficulties before the alliance is formed. Furthermore, the identification of the contributions of each partner need to be clearly made. In the mutual relationship outlined by an alliance, all partners must contribute in some way for the alliance to be meaningful and successful. It should be realized that the alliance is formed in order to achieve objectives that the partners can not achieve by themselves.

Confidentiality in the alliance is another serious challenge. The disclosure of critical information to the alliance partners need to be carefully evaluated. Disclosure of some proprietary information may be inevitable during the operation of an alliance. Thus, confidentiality of such information needs to be ensured so that it does not pose any serious problems in a relationship based on trust. Finally, assessment of rewards and risks is of critical importance. This may be true of all business decisions. However, in forming alliances, a firm is entering into a long-term relationship with another firm and making commitments at the same time which may be very hard and/or costly to break. Hence,

alternatives need to be carefully considered and the risks associated with the alliance weighed against the potential benefits.

Another major challenge, maybe the most critical one, which is related to the factors noted above as well as others is selection of the partner(s). This is a critical challenge since evaluation of a potential partner needs to be done both on measurable or observable and unobservable characteristics. The conduct and success of the relationship will be mostly based on qualitative factors such as trust, honesty, motivation, ethics, and commitment. Since, once an alliance is formed, the partners will have to live together for a long time, the "fit" between them and clear understanding of the expectancies of each from the other are very important.

4.5.3 European, Asian and American Philosophies Towards Alliances

European, Asian and American contractors constitute the three major group of contractors active in international construction. There are, however, differences in their approaches to forming alliances (Badger, et al 1993).

European contractors maintain the same key personnel in the alliances they form. In other words, key personnel from European contractors who are involved in the alliance are not replaced in a couple of years. Europeans emphasize establishment of trust between the partners in an alliance. Establishment of trust is a long process where trust is developed through interactions between the partners. Hence, continuity of key personnel helps to develop and strengthen the level of trust between the partners. Moreover, open criticism or candor is not well accepted by Europeans. European contractors also tend to give their site managers a lot of autonomy, responsibility and authority to operate. Furthermore, they are very willing to change the way they do business when necessary.

European contractors are also very willing to form relationships and collaborate with other contractors. For instance, as Jashapara (1992) notes, joint venture is the most fruitful mode of entry to penetrate the French market. Most European contractors tend to be small and they enhance their leverage and market power through collaborating with each other. Collaborative ventures involving three or more partners are also not exceptional among European contractors. For instance, the mega project of the building of the Channel Tunnel involved a trans-European consortium comprised of five British and five French construction companies (*ENR*, May 2 1994).

Legal documentation and litigation issues are not too much of a concern for European contractors. They "rely more on human relationships and less on complex legal documentation" (Badger, et al 1993, p.4-6). Alliance relationships are based on mutual trust and long-term commitment of the partners.

The philosophy of the Asian contractors towards alliances exhibits some similarities to the European philosophy, but also has some unique aspects. The differences between the Asian and Western cultures are reflected in how Asian contractors view alliances. For Asian contractors, an alliance should be based on mutual trust and respect (Sidwell, Metzinger and Tucker 1988). The alliance is seen as a long-term commitment and treated as such. Asian contractors select their partners using criteria based on personal relationships more than anything else. They also value hierarchy, formality and patience in their interactions. This is also evidenced in their approach to negotiations which is comprehensive and long paced.

Badger, et al (1993) also note that Asian contractors have a strong cooperative group orientation and dislike direct confrontation. The time spent and the expenses

involved in developing an alliance are not seen as being unnecessary or as waste of resources, but rather as being absolutely necessary in establishing a sound and long term relationship.

Alliances have been an integral part of all areas of business in Asia. *Keiretsu* in Japan and *chaebol* in Korea are the outstanding examples illustrating how alliances have been integrated into the Asian business culture. Not surprisingly, the Asian contractors are very willing to form alliances and collaborate with other contractors. In addition to international alliances, Asian contractors are also very willing to form domestic alliances either on a long term or project-by-project basis.

Similar to the Europeans, but more so, Asian contractors consider establishment of mutual trust more important than a contractual agreement. Minimum amount of documentation is used in defining the alliance terms. Badger, et al (1993) have observed that "Asian alliance contracts are typically only a one page letter of understanding which primarily defines mutually agreed upon joint goals for the alliance" (p.4-13).

On the other hand, as the results of the Badger, et al (1993) study point out, the American philosophy towards alliances sharply contrasts with those of the Europeans and Asians. The formal and individualistic business style of the American contractors is very different from the European and Asian styles. American contractors prefer to rely on formal and detailed contractual agreements which are very well spelled out covering all possible contingencies. They are very disturbed if an alliance lacks such a formal framework and is mostly based on mutual trust and commitment. This is a result of the high level of litigation concerns and the directness prevalent in the American style of business. Open criticism and direct confrontation are very well accepted and exercised by

the Americans. Moreover, American contractors tend not to be patient and want to get right into business in their interactions during and after negotiations.

Moreover, forming alliances is not necessarily the preferred mode of doing business for the American contractors. They would rather go alone or acquire or merge with the potential partners. Hence, American contractors tend to form alliances more out of necessity rather than deliberately seeking them. The turnover of American expatriates at construction sites also tends to be rather high which disrupts the continuity of key personnel. This hampers the development of trust and understanding which requires continuity of interaction between the partners' personnel involved in the alliance. Moreover, the autonomy and authority given to the overseas managers of American contractors tend to be very limited.

American contractors appear to be delimited by some industry paradigms in their approaches to alliances. Badger, et al (1993) have identified nine such paradigms in their study on alliances in international construction which are listed below:

1. Lack of trust
2. Resistance to sharing information
3. Competitive spirit
4. Adversial relationship(s)
5. Lack of long-term commitment
6. A "US methods are always right " attitude
7. Lack of delegation of authority
8. Direct style of communication
9. US dependency on excessive legal documentation (p.5-6).

Each one of these nine paradigms is detrimental for an alliance in its own right. In fact, each one describes exactly the opposite of the kind of paradigm that should be prevalent in alliance formation and maintenance. Most, if not all, of these paradigms are contrary to the kind of industry paradigms prevalent in Europe or Asia. For instance, at the Construction Industry Presidents Forum, Henry Michel identified parochialism of the US contractors as one of the barriers to overcome in the construction industry (*The American Institute of Constructors Newsletter* 1993, 23:3)

Hence, breaking or changing these paradigms is crucial for American contractors to be more active and effective in the world of alliances. On the other hand, it should also be recognized that this is no easy task that can be accomplished in a short time. It is particularly hard in an industry that has been well entrenched domestically such as the construction industry in the US which operates in a big domestic market. Old traditions may be hard to break or change. Thus, overcoming any resistance that is highly likely to be encountered is the big challenge facing American contractors.

The first step in this direction should be a clear recognition and appreciation of the global trend towards collaborations and formation of alliances in international construction. The potential benefits of such collaborations need to be clearly understood. In their study on Japanese-style partnerships, Dyer and Ouchi (1993) have concluded that US companies need to effectively utilize partnerships and learn from the Japanese approach. Similarly, a clear understanding of the factors effective in the formation and maintenance of alliances is needed. In this regard, one of the main conclusions of the Badger, et al (1993) study was the following:

> "One necessary prerequisite crucial to prospering in the future international construction "arena" will be a company's awareness of the implications and ramifications in forming alliances with foreign entities" (p.5-13).

Badger, et al (1993) also state that:

> "The need for cooperation and mutual trust of the alliance partners seems to be the underlying "International Implication" behind forming alliances. In other words, what we have observed as being practiced overseas for many years, especially in Europe and the Pacific Rim areas, is a spirit of cooperation and team-work between competitive construction firms and with their governments. ..... if a US company is going to launch an effort to penetrate the international construction domain, they would be well-advised to research also the criteria and conditions necessary to form an alliance" (p.5-14).

4.5.4 The Future

The future in international construction is clearly going to be even more competitive than it is today. Moreover, alliances among construction firms are going to be even more important in the international construction market. In other words, forming well-structured alliances and maintaining them will be the key to remain competitive and sustain and increase market share. This is already evidenced by the increasing number of international alliances, consortia or other forms of collaboration formed in entering international construction contract bids.

For instance, nine consortia bided on the project to finance, design, build and own a $4.1 billion rail link between the Channel Tunnel and London in the United Kingdom (*ENR*, May 9, 1994). The $1.5 billion motorway construction project in Turkey was carried out by the joint venture formed between the Bechtel Corp. of the US and Enka of Turkey (*ENR*, July 6 1992). Ebasco Services Inc. of the US has formed a jointly owned engineering company with a Chinese government agency to handle power projects in China (*ENR*, June 21 1993). Another international joint venture carried out the $1 billion hydroelectric project in Venezuela (*ENR*, January 3 1994). The Bechtel Corp. of the US and IPL of Canada signed an agreement to combine their efforts in international markets

(*ENR*, June 28 1994). Such examples of collaborations are absolutely numerous and clearly show the definite trend toward formation of partnerships to compete in international markets.

A related trend in the industry is the teamlike approach to projects. Owners and contractors agree that teams bring more value. For example, five of the seven bidders for the expansion of the Chicago O'Hare International Airport were teams. The future of the construction industry lies in collaborative ventures. Such partnerships will cut down individual company profits, but will allow for the ability to grow and provide jobs at the same time.

Moreover, ongoing alliances in particular regions are also very likely to increase. For instance, a construction industry expert noted that some US contractors made agreements with some Finnish contractors to pursue work in Eastern Europe and Russia. In this relationship, the Finnish bring in their experience and knowledge of doing business in the ex-Soviet Union and Eastern Bloc countries, while the Americans bring in financial capabilities which the Finnish lack.

Firms also form partnerships with others not only for a specific bid or project, but also for strategic or long-term objectives. For instance, the Takenaka Corporation which is a construction firm has partnered with The Architects Collaborative (TAC) which is an architectural firm to be able to enter new markets worldwide (*ENR*, Jan 5 1989). Similarly, Dresser Industries Inc. (a US firm) has formed a joint venture with Komatsu Ltd. of Japan with the objective of increasing sales and expansion in North and South America (Krizan 1987). Moreover, as a result of the emergence of large scale

construction projects, design firms have been partnering with contractors to enter world markets (Reina and Hanan 1990).

The long term competitiveness of American firms will depend on how they respond to changing conditions in both domestic and foreign markets. Competition which is already tough will get tougher in projects where unskilled labor is the main component. Contractors from many countries, including NICs and developing nations, can now employ technologically based strategies through transfer of technology. Moreover, the US appears to be the lager in innovation while the European and Japanese contractors lead the way. Furthermore, government intervention in competition for international projects will continue. This may be either through providing aid to their domestic firms or through following policies aimed at protecting their home markets (US Congress, Office of Technology Assessment 1987).

In short, it is an era of new competition and the market conditions have changed. Staying alive and competitive requires recognizing these changes and adapting to them. As far as the US construction industry is concerned, as Yates, Mukherjee and Njos (1991) state:

> "A complete revamping of the US outlook to the international construction industry and the infusion of innovative methods to win contracts is urgently needed" (p.60).

CHAPTER FIVE

SURVEY RESPONSES AND PROFILES

5.1 Survey Responses

As noted in Chapter 3, the contractors included in the top 225 international contractors and the top 400 (US) contractors listings published by *ENR* in 1993 constituted the survey sample in this study. Since some US contractors are included in both lists, when double counting was taken into account, the actual number of contractors included in the sample was 561. The total of surveys returned back was 120 resulting in an overall response rate of 21.4%. Some characteristics of the survey response rates presented in Table 5.1 will be reviewed next.

Before describing survey response rates, however, it is important to note the distinction between a returned survey and a usable survey. The former simply refers to the fact that there has been some kind of mutual correspondence with the respondent. Except the cases where the respondent has notified the researcher of not being interested in participating in the study or where the respondents were not located at their addresses, a survey has been returned by the respondents. Usable surveys, on the other hand, refer to those which have been fully completed by the respondents. The distinction between a usable and a not usable survey comes from the respondent's response to the last question in Section B of the questionnaire. The question asked the respondent whether his/her firm has "ever been involved in a collaborative venture ... with a foreign OR domestic partner". If the answer was "No", the respondent was asked to stop and return the survey. If the

Table 5.1
Survey Response Rates

	US Contractors		Non-US Contract.		TOTAL	
No Interest	4	1.0%	2	1.3%	6	1.1%
No Address	2	0.5%	3	2.0%	5	0.9%
No CV	36	8.8%	4	2.6%	40	7.1%
Domestic CV	19		5		24	
International CV	15		30		45	
Total CV Participation	34	8.3%	35	22.9%	69	12.3%
CV Participation/ Returned	44.7%		79.5%		57.5%	
TOTAL (received)	76	18.6%	44	28.8%	120	21.4%
Total sent out	408	100%	153	100%	561	100%

NO INTEREST :	The contractor is not interested in participating in the study
NO ADDRESS :	The survey is returned without being delivered due to address change
NO CV:	The contractor has not been involved in any collaborative venture, domestic or international
DOMESTIC CV :	The contractor has reported on a collaborative venture they have had with another domestic contractor
INTERNATIONAL CV:	The contractor has reported on a collaborative venture they have had with a foreign contractors
TOTAL CV PARTICIPATION :	The total number of surveys returned that report on either a domestic or an international collaborative venture. These provide the data for hypotheses testing.
CV PARTICIPATION/ RETURNED :	The total number of surveys returned that report on a collaborative venture/The total # of surveys returned
TOTAL :	The total number of surveys returned

answer was "Yes", however, the respondent went on to complete the questionnaire in regards to a CV they had taken part in. The usable surveys are those where the response to the above cited question was "Yes". In that case, the respondents provided the requested information which constituted the primary data for the study. The bottom line is that the actual response rate to the questionnaire in terms of starting to complete it following the instructions, and returning it when done was 21.4%. However, of the total number of 120 surveys returned, only 69 were usable in the sense described above which constituted 12.3% of the total sample.

a. US Contractors: Of the 408 surveys sent out to US contractors only 76 were returned resulting in a response rate of 18.6% for US contractors. The interesting point was that half of the responding firms indicated that they never had any collaborative ventures with either foreign or domestic firms. Hence, only 34 of the total of 76 surveys were usable. In other words, almost half of the responding US contractors were never involved in CVs. This resulted in a usable/returned ratio of 44.7%. Moreover, of the 34 that were involved, more than half partnered with domestic contractors rather than foreign contractors.

b. Non-US Contractors: Of the 153 surveys sent out to non-US contractors 44 were returned resulting in a response rate of 28.8% for non-US contractors. The interesting point here is that the picture is completely opposite to what we saw with the US contractor response rates. First, the overall response rate was much larger in the case of non-US contractors. Second, only four contractors out of the 44 that responded reported that they never were involved in any CV. On the other hand, the number of

usable surveys were 35 which resulted in a usable/returned ratio of 79.5%. This ratio is almost twice that of US contractors. Third, of the 35 contractors that were involved in a CV, only 14.3% had partnered with a domestic contractor and 85.7% had foreign partners.

Hence, the response rates indicated that US contractors were involved less in CVs and when they did they tended to have domestic partners more than foreign partners. On the other hand, the non-US contractors were very much involved in CVs and tended to partner with foreign contractors.

c. Domestic vs. International CV: The split between domestic and international CVs was not equal among the 69 CVs that were reported on by the respondents. There were 24 domestic CVs and 45 international CVs in the data sample. In other words, domestic CVs accounted for 34.8% and international CVs accounted for 65.2% of the CVs included in the analyses.

5.2 Respondent Profiles

In this section, the profiles of the survey respondents are given. These are the contractors who have responded to the survey and reported on a collaborative venture they had participated in. As presented in Section 5.1, a total of 69 contractors were included in the study. Their profiles are presented next in Tables 5.2 through 5.10.

Rank of Respondents in ENR Listings

Table 5.2 presents the rank of the respondents in the top 400 and top 225 contractors listings of ENR. 34 of the respondents were among the top 400 US

Table 5.2
Number of Respondents in the ENR Rankings

	Top 400 US Contractors		Top 225 International Contractors	
Rank	**n**	**%**	**n**	**%**
1-50	5	14.7	9	22.5
51-100	6	17.6	9	22.5
101-150	4	11.7	10	25.0
151-200	3	8.8	8	20.0
201-250	5	14.7	4	10.0
251-300	3	8.8	not relevant	--
300 +	8	23.5	not relevant	--
Total	34	100.0	40	100.0
Mean	186.03		113.45	
Std. Dev.	119.26		66.28	
Median	195		115	
Minimum	11		10	
Maximum	372		225	

Table 5.3
Total Billings of Respondents (in million US$)

Range	**n**	**%**
0-100	17	25.0
101-1,000	32	47.1
1,001-10,000	15	22.1
10,000 +	4	5.8
Total	68	100.0
Mean	1,574.37	
Std. Dev.	3,306.26	
Median	208.65	
Minimum	10	
Maximum	15,477.2	

Table 5.4
Total International Billings of Respondents (in million US$)

Range	n	%
0	26	38.2
1-100	17	25.0
101-500	13	19.1
501-1,000	7	10.3
1,000 +	5	7.4
Total	68	100.0
Mean	244.28	
Std. Dev.	493.21	
Median	9.7	
Minimum	0	
Maximum	2,731	

Table 5.5
Years in Business

Range	n	%
0-25	12	17.6
26-50	18	26.5
51-75	18	26.5
76-100	8	11.8
100 +	12	17.6
Total	68	100.0
Mean	66.24	
Std. Dev.	51.48	
Median	54.50	
Minimum	8	
Maximum	360	

Table 5.6
Years of Involvement in International Contracts

Range	n	%
0	13	20.0
1-25	28	43.1
26-50	18	27.7
50 +	6	9.2
Total	65	100.0
Mean	23.4	
Std. Dev.	22.53	
Median	22	
Minimum	0	
Maximum	100	

Table 5.7
Current Involvement in International Contracts

	n	%
Yes	47	69.1
No	21	30.9
Total	68	100.0

Table 5.8
Country of Origin of Respondents

Country of Origin	n	%
Bahrain	1	1.4
Brazil	2	2.9
Canada	1	1.4
Denmark	1	1.4
Germany	1	1.4
Hungary	1	1.4
Italy	5	7.2
Japan	7	10.1
Korea	1	1.4
Philippines	1	1.4
Portugal	1	1.4
Singapore	1	1.4
Slovenia	1	1.4
Spain	1	1.4
Taiwan	2	2.9
Turkey	2	2.9
United Kingdom	4	5.8
U.S.A.	35	50.7
Yugoslavia	1	1.4
Total	69	100.0

Table 5.9
Region of Origin of Respondents

Region	n	%
US	35	50.7
European	16	23.2
Asian	12	17.4
Other	6	8.7
Total	69	100.0

Table 5.10
Whether Respondent is a US or Non-US Contractor

	n	%
US	35	50.7
Non-US	34	49.3
Total	69	100.0

contractors in 1993. About one third of these were among the first 100 and about one third was among the last 100 contractors in that ranking. The highest rank among the respondents was 11th place and the lowest was 372nd place in the list. The median rank was 195 which is practically also the middle point in the list. In other words, the respondents represented all levels in the ranking of top 400 US contractors.

Moreover, 40 of the respondents were among the top 225 international contractors listing of ENR in 1993. The highest rank among the respondents was the 10th place and the lowest was 225th place. The median rank for this group was 115 which is also more or less the midpoint in the total list. Moreover, each ranking range of 50 corresponds to 22.2% of the total of 225. The number of respondents falling into each ranking range of 50 presented in Table 5.2 constitutes a comparable percentage value. In other words, the respondents are representative of all levels of ranking of the top 225 international contractors. Furthermore, it is important to point out that the total number of respondents in the two lists is 74 instead of 69 due to the fact that five US contractors were included in both lists.

Total Billings and Total International Billings

The distribution of the total billings of the respondents is presented in Table 5.3. It is important to note that these reflect 1992 billings. A quarter of the respondents (25%) were small contractors in terms of their total billings which were below 100 million US$. Similarly, more than a quarter (27.9%) were large contractors with total billings exceeding 1,000 million US$. Among these five of them were particularly large contractors with total billings exceeding 10,000 million US$. The average total billings of the respondents

was 1,574.37 million US$ with the median set at 208.65 million US$. The minimum amount of total billings was 10 million US$ and maximum was 15,477.2 million US$

Table 5.4 presents the distribution of total international billings of the respondent contractors again for 1992. Nearly 40% of the respondents had no international billings and 25% had international billings of less than 100 million US$. About 20% had moderately high international billings with the rest reporting international billings of over 500 million US$. Only five contractors (7.4%) had a total of international billings in excess of 1,000 million US$. The average international billings was 244.28 million US$ with the median set at 9.7 million US$. The minimum was set at zero by those that had no international billings and the maximum amount was 2,731 million US$.

Years in Business

As presented in Table 5.5, on the average, the respondents were in business for about 66 years. The youngest contractor was eight years old and the oldest one had been around for more than three centuries. An equal percentage of the respondents constituted the youngest group (less than or equal to 25 years old) and the oldest group (more than a century old). There were 12 contractors in each group.

Years of Involvement in International Contracts & Current International Involvement

In terms of the years of involvement in international contracts, the respondents were relatively less experienced with an average involvement of about 23 years. The data are presented in Table 5.6. One fifth of the respondents had had no international involvement at all, whereas, close to one tenth was pretty experienced having been involved in international contracts for more than 50 years. The majority (43.1%),

however, had been involved in international contracts for not more than 25 years. The most experienced contractor among the respondents had one century's worth of experience in international contracts.

As it can be seen in Table 5.7, close to 70% of the respondents also indicated that they were currently involved in an international contract.

Country of Origin/Region/US or NonUS Status of Respondents

Tables 5.8 through 5.10 present the profile of the respondents in terms of their origin. There were a total of 19 different countries of origin of the respondents. A little over 50% of these were US contractors. The next largest group represented was the Japanese contractors which constituted 10.1% of the respondents. The European contractors constituted 23.2% and the Asian contractors constituted 17.4% of the respondents. The remaining 8.7% of the respondents were from other regions of the world such as the Middle East, Latin America and Canada. Overall, nearly half of the respondents were non-US contractors.

5.3 Partner Profiles

Only nine of the partners of the contractors out of the total of 69 belonged to the sample used in the study. Hence, we were able to extract the ranks and billings information only for these nine cases. Two belonged to the top 400 US contractors list and were ranked 35th and 142nd. The other seven belonged to the list of top 225 international contractors. These were ranked 1st, 28th, 31st, 38th, 59th, 70th and 94th in that list.

The total billings for these nine partner contractors ranged from 158.1 to 23,656.8 million US$. The international billings of these contractors ranged from zero to 15,172.6 million US$. Other characteristics of the partners described below and are presented in Tables 5.11 through 5.16.

Country of Origin/Region/US or NonUS Status of Partner

Table 5.11 through 5.13 present the profiles of the partners in the collaborative ventures included in the study in terms of their origin. The partner contractors represented 21 different countries. More than one third of the partners were from the US. The other countries that also represented relatively larger groups of partner contractors were Germany (8.8%), Italy (5.9%), and Japan (5.9%). Close to one third of the partners were European contractors and Asian contractors as partners constituted 17.6% of the respondents. The remaining 16.2% represented countries from the Middle East, Latin America, Africa, etc. Overall, close to two thirds of the partners in the collaborative ventures studied were non-US contractors.

# of Employees of Partner

More than half of the partners were large contractors that had more than 1,000 employees. Furthermore, seven of these had more than 10,000 employees. On the other hand, 8.8% were small with less than 100 employees and close to one fifth were moderately large that had more than 100 but less than 500 employees. The data for the distribution of the partners in terms of the number of employees they had are presented in Table 5.14.

Table 5.11
Country of Origin of Partners

Country of Origin	n	%
Australia	3	4.4
Belgium	1	1.5
Canada	1	1.5
France	2	2.9
Germany	6	8.8
Holland	3	4.4
Indonesia	2	2.9
Italy	4	5.9
Japan	4	5.9
Korea	1	1.5
Mexico	3	4.4
Philippines	1	1.5
Portugal	1	1.5
Russia	1	1.5
Saudi Arabia	2	2.9
Singapore	2	2.9
Spain	1	1.5
Turkey	3	4.4
United Kingdom	2	2.9
U.S.A.	24	35.3
Zambia	1	1.5
Total	68	100.0

Table 5.12
Region of Origin of Partners

Region	n	%
US	24	35.3
European	21	30.9
Asian	12	17.6
Other	11	16.2
Total	68	100.0

Table 5.13
Whether Partner is a US or Non-US Contractor

	n	%
US	24	35.3
Non-US.	44	64.7
Total	68	100.0

Table 5.14
# of Employees of Partner Contractors

Range	n	%
Less than 100	5	8.8
100-499	11	19.3
500-999	10	17.5
1,000-9,999	24	42.1
10,000 or more	7	12.3
Total	57	100.0

Table 5.15
Whether There Has Been Any Prior Transactions With The Partner

	n	%
Yes	30	44.8
No	36	53.7
Don't know	1	1.5
Total	67	100.0

Table 5.16
Likelihood of Doing Business Again

	Mean*	Std. Dev.	n
Likelihood of your firm doing business with this firm again	4.076	1.127	66
Likelihood of this firm doing business with your firm again	4.169	1.054	65

* 1-5 scale, 1 = Very unlikely, 5 = Very likely

Prior Transactions With Partner

As the data presented in Table 5.15 indicate, more than half of the respondents had had some business transactions with their collaborative venture partner prior to the collaborative venture. On the other hand, for nearly 45% of the respondents, the collaborative venture was the first time they had business transactions with the partner contractor.

Likelihood of Doing Business Again

The respondents were also asked to rate their likelihood of doing business with their partner again as well as the likelihood of their partner doing business with them in their opinion. As presented in Table 5.16, the mean values of the responses to these two questions were pretty high (more than 4.0). Hence, both firms appeared to be interested in doing business with each other again if the opportunity arises in the future.

5.4 Profiles of the Collaborative Ventures

In this section, profiles of the collaborative ventures included in the study will be described and the various characteristics of the CVs will be presented in Tables 5.17 through 5.32.

# of Firms in the CV

As it can be seen in Table 5.17, a great majority (72.1%) of the CVs analyzed included two contractors as partners. On the other hand, a considerable portion of the CVs (16.2%) were three partner collaborations. There were also some CVs where four or more firms partnered together. There were even one 7-firm and one 10-firm partnership among the CVs studied.

Table 5.17
# of Firms in the Collaborative Venture

# of Firms	n	%
2	49	72.1
3	11	16.2
4	3	4.4
5	3	4.4
7	1	1.5
10	1	1.5
Total	68	100.0

Table 5.18
Whether the CV is On-going or Not

	n	%
Ongoing project	24	36.9
Completed project	41	63.1
Total	65	100.0

Table 5.19
Project Timing (for completed projects only)

	n	%
Ahead of schedule	7	17.1
On schedule	22	53.7
1-6 months delay	5	12.2
7-12 months delay	2	4.9
1-2 years delay	1	2.4
More than 2 years delay	4	9.8
Total	41	100.0

Table 5.20
Whether Project Within Budget or Not (for completed projects only)

	n	%
Within budget	13	30.2
Over budget	30	69.8
Total	43*	100.0

* In addition to the 41 completed projects, two of the ongoing projects were also found to be already over budget

Table 5.21
Project Location

Country	n	%
Angola	1	1.5
Australia	3	4.3
Bahrain	1	1.5
Belgium	1	1.5
Canada	1	1.5
China	2	2.9
Egypt	1	1.5
Germany	1	1.5
India	1	1.5
Indonesia	2	2.9
Japan	2	2.9
Lesotho	1	1.5
Libya	1	1.5
Malaysia	2	2.9
Mexico	3	4.4
Morocco	1	1.5
Mozambique	1	1.5
Philippines	1	1.5
Portugal	1	1.5
Saudi Arabia	3	4.4
Singapore	2	2.9
Taiwan	1	1.5
Tanzania	1	1.5
Thailand	1	1.5
Turkey	1	1.5
Turkmenistan	1	1.5
United Arab Emirates	2	2.9
United Kingdom	2	2.9
U.S.A.	23	33.3
Yugoslavia	1	1.5
Zambia	1	1.5
Africa	1	1.5
Armenia, Georgia, Azerbeijan, Kazakhistan	1	1.5
TOTAL	68	100.0

Table 5.22
Project Region

Region	n	%
North America	24	35.3
Europe	6	8.8
Asia	19	27.9
Middle East	7	10.3
Africa	9	13.2
Latin America	3	4.4
Total	68	100.0

Table 5.23
Partner-Project Location Combination

	n	%
Domestic partner in home country	21	30.9
Domestic partner in foreign country	4	5.9
Foreign partner in home country	11	16.2
Foreign partner in his country	16	23.5
Foreign partner in a third country	16	23.5
Total	68	100.0

Table 5.24
Project Owner

	n	%
Local government	39	56.5
Private enterprise	24	34.8
Government & private enterprise	3	4.3
Other	3	4.3
Total	69	100.0

Table 5.25
Whether Local Government Influenced the Relationship in the CV

	n	%
Yes	10	14.5
No	56	81.2
Don't know	3	4.3
Total	69	100.0

Table 5.26
Nature of Project

	n	%
Industrial/Petroleum	8	11.8
Manufacturing plant	4	5.9
Transportation	20	29.4
Power	9	13.2
General Building	19	27.9
Sewerage/waste control	3	4.4
Water	2	2.9
Other	3	4.4
Total	68	100.0

Table 5.27
Type of General Building (only for general building projects)

	n	%
Office/garage	9	56.3
Residential	1	6.3
Hospital	2	12.5
Prison	1	6.3
School	1	6.3
Sports/recreation facility	1	6.3
Archeological park	1	6.3
Total	16	100.0

Table 5.28
Form of Collaboration

	n	%
Joint venture	52	77.6
Consortium	11	16.4
Cooperative contract	3	4.5
Joint bidding	1	1.5
Total	68	100.0

Table 5.29
Type of Collaborative Venture

	n	%
Equity	29	46.0
Non-equity	34	54.0
Total	63	100.0

Table 5.30
Type of Work Done in the Project

	n	%
Design-build	12	17.4
Construction management	6	8.7
Operating and Maintenance (O&M)	1	1.4
Turnkey	9	13.0
Design-Build-Operate	1	1.4
Construction only	30	43.5
Multiple types of work	10	14.5
Total	69	100.0

Table 5.31
Type of Contract Bid

	n	%
Open competitive bid	38	55.9
Negotiated bid	25	36.8
Other	5	7.4
Total	68	100.0

Table 5.32
Whether There Was Any Team Building Program

	n	%
Yes	10	14.9
No	57	85.1
Total	67	100.0

Ongoing Project or Not

More than one third of the 65 CVs for which the data were available were ongoing projects at the time of the study. The majority, however, were completed projects. The data were not available for four of the CVs included in the study. Table 5.18 presents the results.

Project Timing

Project timing information could be assessed for the completed projects and Table 5.19 presents the results. 7 out of the 41 projects (17.1%) were completed ahead of schedule and 22 projects (53.7%) were completed on schedule. The delayed projects were delayed 1 month to more than two years. 1-6 months delayed projects constituted 12.2% of the completed projects. On the other hand, almost 10% of the projects were delayed more than two years.

Project Within Budget or Not

Budgetary performance of the CVs were assessed for the 41 completed projects as well as two of the ongoing projects. The ongoing projects had already exceeded their budgets at the time of the study. Overall, more than two thirds of the 43 projects for which the data could be obtained were over their budgets.

Project Location & Region

Tables 5.21 and 5.22 present the data about the location of the projects included in the study. The projects took place in 35 different countries plus an unidentifiable African country. Most of the projects (33.3%) took place in the US. The other countries where relatively more projects took place at were Australia (4.3%), Mexico (4.4%), and Saudi

Arabia (4.4%). More than one third of the projects (35.3%) took place in North America. The next largest project region was Asia with 27.9% of the projects. Latin America, on the other hand, had the least amount of projects (4.4%)

Partner Country of Origin & Project Location

The combination of the country of origins of the partner firms and the project location was also assessed for the CVs included in the study. The results are presented in Table 5.23. In most of the projects (30.9%), the respondents had partnered with another domestic contractor for a project in their home country. Partnering with a foreign contractor for a project either in his country or in a third country also appeared to be very common. The least common combination was partnering with a domestic contractor for a project in a foreign country which constituted 5.9% of the projects.

Project Owner

Table 5.24 presents the data for the project owners. More than half of the projects were owned by the local governments. Private enterprises were the project owners in 34.8% of the projects.

Local Government Influence

The respondents indicated that in the great majority (81.2%) of the projects the local government did not influence their relationship with their partners in any way. Such local government influence was present in about 15% of the projects.

Nature of Project

The nature of the projects included in the study were varied as the data presented in Table 5.26 indicate. Transportation and general building projects constituted the largest

groups in terms of project markets with the former constituting 29.4% and the latter 27.9% of the projects included in the study. These project markets were followed by power (13.2%) and industrial/petroleum (11.8%) project markets. The smallest project market among the projects studied was water with only two projects that constituted 2.9% of the total.

Type of General Building

Table 5.27 presents the distribution of the types of buildings built in the general building market. The type of building could be identified for 16 of the 19 general building projects. Among these 16 projects, office/garage building was the most common (56.3%) followed by hospital construction (12.5%).

Form of Collaboration

As the data presented in Table 5.28 indicate, joint venture was the most common form collaboration in the ventures studied. 77.6% of the CVs involved joint ventures. The next most common form of collaboration was formation of consortia which accounted for 16.4% of the CVs studied.

Type of CV

From a financial stand point, the CVs studied were more or less equally distributed among equity and non-equity CVs. Non-equity CVs were slightly more than equity CVs and accounted for 54% of the CVs. Table 5.29 presents the results.

Type of Work Done in the Project

The type of work done in the projects were also varied as indicated by the results presented in Table 5.30. Projects that involved construction only accounted for the

majority of the projects (43.5%). The next most common types of work were design-build projects (17.4%) and turnkey projects (13.0%). On the other hand, 14.5% of the projects involved multiple types of work. The least common types of work were operating and maintenance (1.4%) and design-build-operate (1.4%) which were identified in only one project each.

Type of Contract Bid

Table 5.31 presents the distribution of the CVs in terms of the type of contract bid used. Open competitive bid was the most common type of contract bidding procedure followed which was the case in 55.9% of the CVs studied. Negotiated bids took place in 36.8 % of the cases.

Team Building Program

In the great majority (85.1) of the CVs studied, there was no formal team building program to facilitate the relationship between the partners. Such programs were identified in only 10 of the cases.

CHAPTER SIX

UNIVARIATE & MULTIVARIATE ANALYSIS

Univariate and multivariate methods of analyses were used to analyze the data and test the hypotheses. The results of these analyses are presented below. Moreover, Figure 2.1 which illustrates the proposed and tested theoretical model is presented here again as Figure 6.1 for easy reference.

6.1 UNIVARIATE ANALYSIS AND RELIABILITY OF THE CONSTRUCT MEASURES

In this study, the proposed model for collaborative venture (CV) performance included fifteen constructs of interest. As stated in Chapter 3, the data for the model were collected through a survey instrument. Fifty eight items of the questionnaire were designed to measure these constructs and test the proposed hypotheses. Based on the initial results of the reliability analyses of the construct measures, four items were deleted and the total number of items used to measure the fifteen constructs was reduced to fifty four. The results of the univariate analyses of these measures and the reliability of the construct measures are reported next.

The statistics reported are the statistical means, standard deviations and frequencies of the fifty four items used to measure the constructs in the model. In Tables 6.1 through 6.15 these statistics are presented. Moreover, the computed Cronbach's alpha values used as the measure of reliability for each construct are reported at the end of each table.

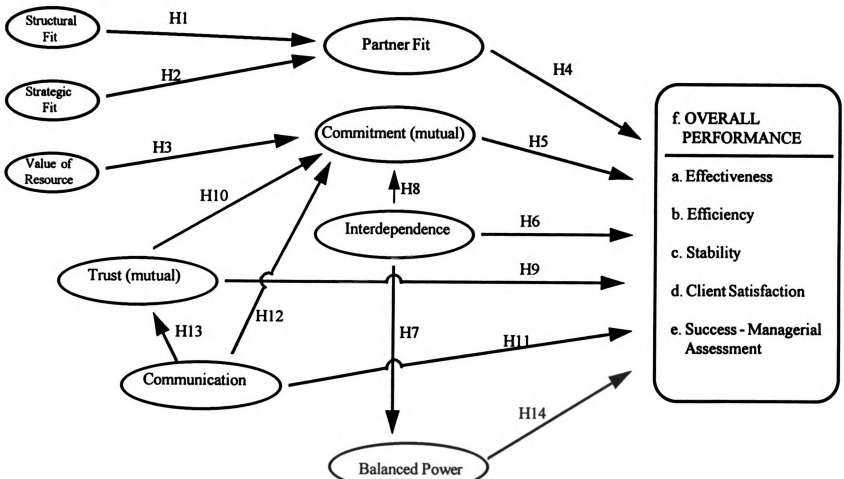


Figure 6.1 (Figure 2.1 repeated)

PROPOSED MODEL FOR INTERNATIONAL COLLABORATIVE VENTURE PERFORMANCE

Table 6.1
Effectiveness Measures

ITEM	Mean*	Std. Dev.	n
The collaboration provided a very effective medium of learning for both firms	3.70	1.047	69
Both firms carried out their responsibilities and commitments in this relationship	4.20	0.867	69
The collaboration met its objectives for both firms	4.19	0.902	68
The owner's objectives (in terms of specifications, schedule, quality) were met	4.49	0.680	68
Cronbach's alpha = 0.672			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.2
Efficiency Measures

ITEM	Mean*	Std. Dev.	n
In general, resources were used very efficiently in this relationship	3.93	0.896	69
Overall, the project was efficiently carried out	4.10	0.866	68
Cronbach's alpha = 0.750			

* 1-5 scale, 1 = Strongly Disagree, 5 = Strongly agree

Table 6.3
Stability Measures

ITEM	Mean*	Std. Dev.	n
Overall, the working relationship in this partnership was stable	4.12	0.802	68
This partnership lasted as long as it was intended	4.49	0.859	67
Cronbach's alpha = 0.663			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.4
Client Satisfaction Measures

ITEM	Mean*	Std. Dev.	n
At the completion of the project, the credibility of the project partners was confirmed or enhanced in the eyes of the owner	4.29	0.776	62
The owner was not satisfied with the outcome of the project (R)	4.57	0.531	61
The owner was proud of the project at its completion	4.63	0.554	59
The owner perceived the partnership as one united team.	3.98	0.967	62
Cronbach's alpha = 0.780			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

Table 6.5
Success Measures

ITEM	Mean*	Std. Dev.	n
Our strategic objectives going into the venture were achieved	4.34	0.940	68
The venture was profitable for our firm	4.23	1.107	66
We regret getting into this venture (R)	4.53	0.969	68
Collaborating with this partner in this project was a wise business decision	4.35	0.877	68
Cronbach's alpha = 0.837			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

Table 6.6
Overall Performance Measures

ITEM	Mean*	Std. Dev.	n
The collaboration provided a very effective medium of learning for both firms	3.70	1.047	69
Both firms carried out their responsibilities and commitments in this relationship	4.20	0.867	69
The collaboration met its objectives for both firms	4.19	0.902	68
The owner's objectives (in terms of specifications, schedule, quality) were met	4.49	0.680	68
In general, resources were used very efficiently in this relationship	3.93	0.896	69
Overall, the project was efficiently carried out	4.10	0.866	68
Overall, the working relationship in this partnership was stable	4.12	0.802	68
This partnership lasted as long as it was intended	4.49	0.859	67
At the completion of the project, the credibility of the project partners was confirmed or enhanced in the eyes of the owner	4.29	0.776	62
The owner was not satisfied with the outcome of the project (R)	4.57	0.531	61
The owner was proud of the project at its completion	4.63	0.554	59
ITEM	**Mean***	**Std. Dev.**	**n**
The owner perceived the partnership as one united team	3.98	0.967	62
Our strategic objectives going into the venture were achieved	4.34	0.940	68
The venture was profitable for our firm	4.23	1.107	66
We regret getting into this venture (R)	4.53	0.969	68
Collaborating with this partner in this project was a wise business decision	4.35	0.877	68
Cronbach's alpha = 0.913			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

Table 6.7
Structural Fit Measures

ITEM	Mean*	Std. Dev.	n
The organizational values and social norms prevalent in the two firms were congruent	3.26	1.080	69
Technical capabilities of the two firms were compatible with each other	3.75	1.049	69
The organizational procedures of the two firms were compatible	3.33	0.995	69
Employees of both firms had similar professional or trade skills	3.48	1.009	69
Cronbach's alpha = 0.755			

*1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.8
Strategic Fit Measures

ITEM	Mean*	Std. Dev.	n
Executives from both firms involved in this project had compatible philosophies/approaches to business dealings	3.67	1.010	69
Each partner enabled the other to reach strategic objective(s) that it could not reach alone	3.91	1.134	69
The goals and objectives of both firms were compatible with each other	4.09	0.781	69
The resources brought into the venture by both partners were complementary	4.15	0.809	69
Cronbach's alpha = 0.627			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.9
Partner Fit Measures

ITEM	Mean*	Std. Dev.	n
Both partners were very suitable for each other	4.12	0.832	69
There was a poor match between the two firms	4.37	0.976	68
The chemistry was right between the two firms	3.81	0.944	69
Cronbach's alpha = 0.744			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.10
Commitment Measures

ITEM	Mean*	Std. Dev.	n
Both firms made several adaptations in their processes and/or procedures to better satisfy each other's needs	3.52	0.949	69
Both firms were willing and/or actively seeking for a substitute to replace each other's place	4.65	0.783	69
Both firms were willing to dedicate whatever people and resources it took to make this project a success	4.15	0.809	69
Both firms provided experienced and capable people to the project	4.16	0.868	69
Both firms were committed to making this project a success	4.54	0.698	69
Cronbach's alpha = 0.716			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.11
Value of Resource Measures

ITEM	Mean*	Std. Dev.	n
Both firms needed each other's resources to accomplish their goals and responsibilities	4.07	0.967	68
The resources contributed by both firms were significant in getting the bid	4.12	1.015	68
Resources brought into the venture by each firm were very valuable for the other	4.07	0.935	68
Cronbach's alpha = 0.778			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree

Table 6.12
Interdependence Measures

ITEM	Mean*	Std. Dev.	n
If the relationship between the two firms was terminated, both firms would suffer significantly	3.28	1.282	69
One of the two firms (or both) could easily replace the other with another firm (R)	3.49	1.133	69
Either of the firms could easily leave the partnership at any time (R)	4.12	1.086	68
Both firms absolutely needed each other for the project	3.37	1.280	68
Cronbach's alpha = 0.671			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

Table 6.13
Trust Measures

ITEM	Mean*	Std. Dev.	n
Both firms were perfectly honest and truthful with each other	3.87	0.969	69
Both firms treated each other fairly and justly	4.12	0.850	69
Relying on each other was risky for both firms (R)	4.06	1.110	69
Both firms found it necessary to be cautious in dealing with each other (R)	3.78	1.083	69
Both firms had established reputations for trustworthiness	4.23	0.910	69
Cronbach's alpha = 0.799			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

Table 6.14
Communication Measures

ITEM	Mean*	Std. Dev.	n
There was frequent communication between the two firms (e.g. visits to each other's firms, meetings, written and telephone communications)	4.36	0.822	69
Exchange of information in this relationship took place frequently and informally	4.25	0.775	69
Overall, people from both firms found it hard to communicate with each other (R)	4.09	1.040	69
Making contact with people from the other firm was hard for both firms (R)	4.32	0.781	68
Problems between the two firms tended to get worse before they discussed them (R)	4.22	0.895	68
Both firms kept each other well informed about their operations	3.80	0.797	69
Cronbach's alpha = 0.721			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

Table 6.15
Balanced Power Measures

ITEM	Mean*	Std. Dev.	n
Decisions regarding the project were made unanimously in joint meetings with managers from both firms	4.03	0.977	68
Both partners had equal potential to influence each other	3.59	1.102	69
Power in this relationship was equally distributed between the partners	3.33	1.245	69
Either you or your partner dominated the decisions regarding the project (R)	3.24	1.294	68
Cronbach's alpha = 0.860			

* 1-5 scale, 1 = Strongly disagree, 5 = Strongly agree
R: Reverse scale

6.1.1. Effectiveness

For this construct, data are presented in Table 6.1. All of the items had pretty high mean values which indicated, on average, that the managers were in agreement about the effectiveness of the collaborative ventures (CVs) they reported on. Meeting the project owner's objectives had the highest mean value (4.49). On the other hand, the CVs included in the study were less effective in providing an effective medium of learning for both partners in comparison to other aspects of effectiveness.

Overall, the results suggest that the CVs were effective in terms of their performance. The four items resulted in an alpha value of 0.672 as the reliability measure. Hence, four items were used to measure CV effectiveness.

6.1.2. Efficiency

Two items were used to measure CV efficiency and both had high mean values as presented in Table 6.2. Of these, overall efficiency of the project had a slightly higher mean value than that of efficient use of resources in the collaboration. Hence, overall, the managers reported that the CVs were efficient in terms of their performance. The alpha value computed for efficiency was 0.750 which was measured by two items.

6.1.3. Stability

As presented in Table 6.3, two items were used to measure this construct both of which had high mean values. In particular, managers reported that their partnerships lasted as long as they were intended. The results also suggest that, overall, the working relationships between the partners in the CVs studied were stable. The alpha value computed for CV stability measured by two items was 0.663.

6.1.4. Client Satisfaction

This construct had four items as its measures all of which had high mean values. Two of them were particularly high (more than 4.5) indicating that the owners were (a) proud of the project upon its completion, and (b) satisfied with the outcome. Although the other two items had relatively lower mean values, the managers also agreed that the project owner's perception of the credibility of the project partners was confirmed or enhanced and they perceived the partnership as one united team. The results are presented in Table 6.4.

Hence, overall, the results suggest that the CVs performed well enough to satisfy the project owners. The measures were found to be reliable as indicated by the alpha value of 0.780.

6.1.5. Success

Four items were used to measure managers' perceptions of CV success. All four items had high mean values (more than 4.2). Managers strongly indicated that they did not regret getting into the CV (mean = 4.53). Moreover, the results suggest that the responding contractors achieved their strategic objectives they had for going into the venture and that the collaboration was a wise business decision. Overall, the ventures had also been profitable for the responding contractors.

All in all, as the data in Table 6.5 indicate, the managers perceived the CVs as being successful. The four items used to measure the success of the CV also resulted in a high alpha value of 0.837 as the reliability measure.

6.1.6. Overall Performance

The sixteen items related to CV effectiveness, efficiency, stability, client satisfaction and success were also grouped together to construct an overall measure of CV performance. The data are presented again in Table 6.6 which represent the data presented in Tables 6.1 through 6.5.

As it can be seen in Table 6.6, all of the items had high mean values with the smallest one being at 3.70. However, the items with the five largest mean values indicate that the managers strongly agreed that (a) the owner was proud of the completed project

and satisfied with its outcome, (b) they did not regret getting into the venture, (c) the owners' objectives were met at the end of the project, and (d) the partnership lasted as long as it was intended. It is also interesting to note that both of the items related to CV efficiency were among the ones with the least mean value among all sixteen items.

The overall performance measure had a very high reliability as indicated by its alpha value at 0.913.

6.1.7. Structural Fit

For this construct, all four items had average values of more than 3.0 as presented in Table 6.7. The compatibility of the technical capabilities of the partner firms had the highest mean value followed by similar skills of both firms' employees. The other two items had smaller mean values that indicated moderate agreement among the managers for the congruency of the organizational values and social norms prevalent in the partner firms and compatibility of the organizational procedures. Hence, compatibilities of the capabilities of the partners tended to be more than their organizational compatibilities. The alpha value for the measure of the structural fit construct was 0.755.

6.1.8. Strategic Fit

The construct for strategic fit was measured with four items as presented in Table 6.8. The complementarity of the resources brought into the venture by both partners had the highest mean value (4.15) followed by that of the compatibility of the partner firms' goals and objectives. The compatibility of the philosophies of the executives from both firms involved in the project had the least mean value (3.67). Although these four items

resulted in a relatively low alpha value of 0.627, this measure of reliability was deemed to be acceptable for the purpose of this research.

6.1.9. Partner Fit

Three items were used to measure the partner fit construct that refers to the "fit" between the CV partners. As presented in Table 6.9, among these three items, the one indicating that there was not a poor match between the partners had a much higher mean value (4.37) than the other two. Results also suggest that managers agreed upon the suitability of the CV partners for each other. The item with the least mean value (3.81) referred to the existence of the right chemistry between the partners. The overall reliability measure of Cronbach's alpha for the partner fit construct was 0.744.

6.1.10. Commitment

The commitment construct was measured by five items whose data are presented in Table 6.10. The reverse coded item for the willingness and/or intent of both firms to seek for a substitute to replace the other one had the highest mean (4.65) indicating that neither party wanted or tried to replace the other one in the CV. The second highest mean value (4.54) was for the commitment of both partners to make the project a success. The least mean value was obtained for adaptations made by both firms to better satisfy each other's needs. The other two items that dealt with the human and other resources provided to the venture by both firms had relatively high mean values (about 4.0). The reliability measure of Cronbach's alpha was found to be 0.716.

6.1.11. Value of Resource

Three items were used to measure this construct whose data are presented in Table 6.11. These items dealt with the partners' need for each other's resources, the importance of these resources in winning the project bid and their value for each other. All of these had high mean values (about 4.0). Hence, the results suggest that managers agreed on the value of resources contributed to the venture by each partner. The Cronbach's alpha for this construct was computed to be 0.778.

6.1.12. Interdependence

Interdependence was measured by four items as presented in Table 6.12. Among these, the reverse coded item measuring the ease of leaving the partnership at any time for either partner had the highest mean value (4.12). The other three items were on the criticality of the relationship for both firms, substitutability of each partner and the need of each partner for the other. These had moderately high mean values (about 3.3). Overall, the results suggest that interdependence of the CV partners was not very high. The computed alpha value for this construct was 0.671.

6.1.13. Trust

For this construct, data for the five items used are presented in Table 6.13. Among these, partners' reputation for trustworthiness, fair and just treatment of each other, and the reverse coded item for riskiness of reliance on the other partner had average values of 4.0 or more. How honest and truthful the partners had been with each other and the reverse coded item of necessity to be cautious in dealing with the partner had relatively

smaller mean values, but, they also indicated some agreement among the managers. The calculated alpha value for the trust construct was 0.799.

6.1.14. Communication

Six items were used to measure this construct and their data are presented in Table 6.14. Frequency of communication and the reverse coded item of ease of contacting people from the partner firm were the two items with the highest means. There also appeared to be agreement among the managers about the frequency of exchange of information and the reverse coded item related to the evolution of problems between the partners. The other two items also had reasonably high mean values indicating further agreement among the managers regarding extent and ease of communication between the partners. The Cronbach's alpha value computed for this construct was 0.721.

6.1.15. Balanced Power

The balanced power construct was measured by four items and their statistics are presented in Table 6.15. As it is evident from the table, unanimous decision making in the project in joint meetings with managers from both partners had the highest mean value (4.03). The results suggest that the managers moderately agree on the other three items which have smaller mean values. These relate to the partners' potential to influence each other, distribution of power in the relationship, and one-sided domination in decision making. The Cronbach's alpha for this construct was pretty high which was computed to be 0.860.

Table 6.16 presents a summary of the reliability measures of the fifteen constructs. The Cronbach's alpha values for these constructs range from 0.627 to 0.913. Overall, the alpha values are considered to be satisfactory for the purpose of this research (Nunnally 1967). One interesting observation is that the alpha value for the overall CV performance measure is much higher than those of the five measures referring to different dimensions of CV performance.

6.2 PEARSON CORRELATION COEFFICIENTS

There are six dependent constructs in the proposed model which are overall performance (PALL), effectiveness (PEFFE), efficiency (PEFFI), stability (PSTAB), client satisfaction (PSATI), and success (PSUCC). The Pearson correlation coefficients between each of these and each of the six relationship constructs, namely partner fit (PARTFIT), commitment (COMMIT), interdependence (INTER), trust (TRUST), communication (COMMUN), and balanced power (BALPOW) are presented in Table 6.17.

All of the predictor constructs except interdependence were significantly correlated with all six dependent constructs. Interdependence was significantly correlated with only overall performance, effectiveness and stability. The correlations will be reviewed for each performance construct next.

1. Overall Performance: All of the relationship constructs except interdependence were associated with overall performance at 0.01 level of significance. Interdependence was significantly correlated with overall performance at 0.05 level. Commitment appeared to be the most correlated with overall performance followed by partner fit and trust. Interdependence, on the other hand, had the smallest correlation.

Table 6.16
Construct Measures and Their Reliabilities

CONSTRUCTS	SCALE	# OF ITEMS	CRONBACH'S ALPHA
Overall Performance	PALL	16	0.913
Effectiveness	PEFFE	5	0.672
Efficiency	PEFFI	2	0.750
Stability	PSTAB	2	0.663
Client Satisfaction	PSATI	4	0.780
Success	PSUCC	4	0.837
Structural Fit	STRUFIT	4	0.755
Strategic Fit	STRAFIT	4	0.627
Partner Fit	PARTFIT	3	0.744
Commitment	COMMIT	5	0.716
Value of Resource	VALRES	3	0.778
Interdependence	INTER	4	0.671
Trust	TRUST	5	0.799
Communication	COMMUN	6	0.721
Balanced Power	BALPOW	4	0.860

Table 6.17
PEARSON CORRELATION COEFFICIENTS

	Overall Performance (PALL)	Effectiveness (PEFFE)	Efficiency (PEFFI)	Stability (PSTAB)	Client Satisfaction (PSATI)	Success (PSUCC)
Partner Fit (PARTFIT)	0.676***	0.563***	0.569***	0.594***	0.549***	0.542***
Commitment (COMMIT)	0.711***	0.659***	0.637***	0.513***	0.639***	0.478***
Interdependence (INTER)	0.259**	0.283**	0.177	0.247**	0.225	0.122
Trust (TRUST)	0.645***	0.513***	0.585***	0.635***	0.530***	0.468***
Communication (COMMUN)	0.509***	0.382***	0.517***	0.481***	0.426***	0.385***
Balanced Power (BALPOW)	0.590***	0.630***	0.404***	0.603***	0.366***	0.459***

1 Cell contents are the Pearson correlation coefficients (r)
*** Significant at $p < 0.01$
** Significant at $p < 0.05$

2. Effectiveness: All of the relationship constructs except interdependence were significantly associated with effectiveness at the 0.01 level. Interdependence was significantly correlated with effectiveness at the 0.05 level. Commitment had the highest correlation followed by balanced power and partner fit. Interdependence was the least correlated with effectiveness.

3. Efficiency: With the exception of interdependence, all of the relationship constructs were significantly correlated with efficiency at the 0.01 level. Interdependence, on the other hand, had a pretty low level of correlation ($r=0.177$) and was not significantly correlated with efficiency. Among the other five constructs, commitment had the highest correlation followed by partner fit and trust.

4. Stability: Interdependence was correlated with stability at 0.05 level of significance and the other five constructs were correlated at the 0.01 level of significance. Trust had the highest correlation followed by balanced power and partner fit. Interdependence was the least correlated evidenced by its relatively low significance level.

5. Client Satisfaction : All of the relationship constructs except interdependence were significantly correlated with client satisfaction at the 0.01 level. Correlation between interdependence and client satisfaction, on the other hand, was not significant. Among the constructs, commitment had the highest correlation followed by partner fit and trust.

6. Success : All of the constructs except interdependence were significantly correlated with CV success at the 0.01 level. Interdependence, on the other hand, was not significantly correlated with success. Partner fit had the highest correlation followed by

commitment and trust. Despite significant correlations, the correlation coefficients between the relationship constructs and success were relatively low compared to those for the other five performance constructs.

In addition to the relationships proposed between the six relationship constructs in the model and the six performance constructs, there were some other proposed relationships in the whole model. These were between (a) strategic and structural fit with partner fit, (b) value of resource, trust, communications and interdependence with commitment, (c) communication with trust, and (d) interdependence with balanced power. The results of the Pearson correlation analyses for these relationships are described next.

a. Partner Fit: Both structural fit and strategic fit were found to be significantly correlated with partner fit at the 0.01 level. The Pearson correlation coefficients are presented in Table 6.18 below. Both structural and strategic fit had moderately high correlation coefficients which were also very close to each other.

Table 6.18
Pearson Correlation Coefficients - Partner Fit

	Structural Fit	Strategic Fit
Partner Fit	0.544***	0.554***

*** Significant at $p < 0.01$

b. Commitment : Value of resource, trust and communication were significantly correlated with commitment at the 0.01 level. Interdependence, however, was significantly correlated with commitment at the 0.05 level. Among the four constructs, trust had the

highest correlation coefficient with commitment followed by communication. Interdependence was the least correlated as evidenced by its lower significance. The Pearson correlation coefficients between commitment and the mentioned constructs are presented in Table 6.19 below.

Table 6.19
Pearson Correlation Coefficients - Commitment

	Value of Resource	Trust	Communications	Interdependence
Commitment	0.376***	0.516***	0.483***	0.261**

*** Significant at $p < 0.01$
** Significant at $p < 0.05$

c. Trust: Communication was found to be significantly correlated with trust at the 0.01 level. The correlation coefficient between these two constructs was moderately high. The Pearson correlation coefficient is presented in Table 6.20 below.

Table 6.20
Pearson Correlation Coefficients - Trust

	Communication
Trust	0.554***

*** Significant at $p < 0.01$

d. Balanced Power: Interdependence was found to be significantly correlated with balanced power at the 0.05 level. The correlation coefficient between these two constructs was not high despite its significance. The Pearson correlation coefficient between balanced power and interdependence is presented in Table 6.21 below.

Table 6.21
Pearson Correlation Coefficients - Balanced Power

	Interdependence
Balanced Power	0.286**

** Significant at $p < 0.05$

6.3 MULTIPLE LINEAR REGRESSION

In order to further investigate the relationship between the relationship constructs and the CV performance constructs, multiple linear regression analysis was used (Goldberger 1964, Kennedy 1985). First, the six performance constructs were individually regressed on the six relationship constructs that were the model predictors. The dependent variables were overall performance (PALL), effectiveness (PEFFE), efficiency (PEFFI), stability (PSTAB), client satisfaction (PSATI), and success (PSUCC). The linear regression equations tested were of the following form:

$$\text{Dependent varb.} = \text{Constant} + \beta_1 \text{PARTFIT} + \beta_2 \text{COMMIT} + \beta_3 \text{INTER} + \beta_4 \text{COMMUN} + \beta_5 \text{TRUST} + \beta_6 \text{BALPOW}$$

The results including the regression coefficients and the F-tests are presented in Table 6.22 and described below.

Equation 1 - Overall Performance

The overall performance construct was regressed on the six relationship constructs. The overall linear model was significant at $p<0.01$ and explained 64% of the variance. All of the beta weights had a positive sign, however, not all were significant.

Table 6.22
RESULTS OF REGRESSION ANALYSES

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
	Overall Performance (PALL)	Effectiveness (PEFFE)	Efficiency (PEFFI)	Stability (PSTAB)	Client Satisfaction (PSATI)	Success (PSUCC)
Partner Fit (PARTFIT)	0.207**	0.208**	0.134	0.264**	0.091	0.394**
Commitment (COMMIT)	0.317***	0.330**	0.587*	-0.027	0.537*	0.128
Interdependence (INTER)	0.036	0.044	0.041	0.074	0.085	-0.055
Trust (TRUST)	0.139	0.041	0.282*	0.255**	0.199	0.022
Communication (COMMUN)	0.055	-0.058	0.240	0.096	0.126	0.104
Balanced Power (BALPOW)	0.088	0.219***	-0.091	0.242***	-0.134	0.192*
R2	0.668	0.568	0.530	0.569	0.516	0.380
Adjusted R2	0.636	0.527	0.484	0.527	0.463	0.319
F	20.79	13.60	11.65	13.45	9.76	6.24
Signif. F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

1 Cell contents are the regression (Beta) coefficients
*** Significant at 0.01
** Significant at 0.05
* Significant at 0.10

Overall performance was positively related to commitment (beta weight significant at $p<0.01$), and partner fit (beta weight significant at $p<0.05$).

Equation 2 - Effectiveness

CV effectiveness was regressed on the six relationship constructs. The overall linear model was significant at $p<0.01$ and explained 53% of the variance. All of the beta weights except that for communication had positive signs, however, only three were significant. Effectiveness was positively related to partner fit (beta weight significant at $p<0.05$), commitment (beta weight significant at $p<0.05$), and balanced power (beta weight significant at $p<0.01$).

Equation 3 - Efficiency

CV efficiency was regressed on the six relationship constructs. The overall linear model was significant at $p<0.01$ and explained 48% of the variance. All of the beta weights except that for balanced power had positive signs, however, only two were significant. Efficiency was found to be positively related to commitment (beta weight significant at $p<0.01$), and trust (beta weight significant at $p<0.10$).

Equation 4 - Stability

CV stability was regressed on the six relationship constructs. The overall linear model was significant at $p<0.01$ and explained 53% of the variance. All of the beta weights except that for commitment had positive signs. Three of these weights were significant. CV stability was found to be positively related to partner fit (beta weight significant at $p<0.05$), trust (beta weight significant at $p<0.05$), and balanced power (beta weight significant at $p<0.01$).

Equation 5 - Client Satisfaction

Client satisfaction was regressed on the six relationship constructs. The overall linear model was significant at $p<0.01$ and explained 46% of the variance. All of the beta weights except that for balanced power had positive signs. However, only the beta weight for commitment was found to be significant. In other words, client satisfaction was positively related to commitment (beta weight significant at $p<0.01$).

Equation 6 - Success

The final CV performance construct, success was regressed on the six relationship constructs. The overall linear model was significant at $p<0.01$ and explained 32% of the variance. All of the beta weights except that for interdependence had positive signs. Of these, however, only two were significant. CV success was found to be positively related to partner fit (beta weight significant at $p<0.05$) and balanced power (beta weight significant at $p<0.10$).

Another way to look at Table 6.22 is to examine it by rows. This type of analysis of the regression results would indicate the significance of each relationship construct for each performance construct. Partner fit is found to be significantly related to overall performance, effectiveness, stability and success. Commitment is significantly related to overall performance, effectiveness, efficiency, and client satisfaction. Trust is significantly related to efficiency and stability. Balanced power is found to be significantly related to effectiveness, stability, and success. Interdependence and communication, however, are not found to be significantly related to any of the six performance constructs in the six equations derived involving all six predictors.

In other words, partner fit, commitment, trust and balanced power stand out as the predictor constructs that are significantly related to the performance constructs. Moreover, of the six linear performance models, that for overall performance was found to have the most explanatory power, followed by those for effectiveness and stability. On the other hand, the model for success had the lowest explanatory power despite its significance.

Two other multiple regression analyses were also carried out to further investigate the other relationships proposed in the overall model. The first was where partner fit was regressed on structural fit and strategic fit, and the second was where commitment was regressed on value of resource, trust, communication and interdependence. The results are presented below.

Partner Fit

Partner fit was regressed on structural fit and strategic fit. The linear model was significant at the 0.01 level and explained 38% of the variance. Partner fit was found to be positively related to structural fit (beta weight significant at $p<0.01$) and strategic fit (beta weight significant at $p<0.01$). The results are presented in Table 6.23 below.

Table 6.23
Multiple Regression Analysis - Partner Fit

$$PARTFIT = Constant + \beta_1 STRAFIT + \beta_2 STRUFIT$$

	Structural Fit	Strategic Fit	R2	Adj. R2	F	Signif. F
Partner Fit	0.351^{***}	0.373^{***}	0.40	0.38	21.77	0.0000

*** Significant at $p < 0.01$

Commitment

Commitment was regressed on value of resource, trust, communication and interdependence. The linear model was significant at the 0.01 level and explained 38% of the variance. Commitment was found to be positively related to value of resource (beta weight significant at $p<0.05$), trust (beta weight significant at $p<0.05$), and communication (beta weight significant at $p<0.05$). Interdependence, however, was not significantly related to commitment. The results are presented in Table 6.24 below.

In summary, significant correlations have been found between a great majority of the relationship constructs and performance dimensions. The results of the regression analyses, on the other hand, suggest that partner fit and commitment are the major factors affecting collaborative venture performance. Results of additional analysis further suggest that there are some relationships among the constructs themselves as well. For instance, trust, values of resource and communication appear to effect commitment. Similarly, interdependence appears to effect balanced power, and strategic and structural fit effect partner fit.

Table 6.24
Multiple Regression Analysis - Commitment

$$COMMIT = Constant + \beta_1 VALRES + \beta_2 TRUST + \beta_3 COMMUN + \beta_2 INTER$$

	Value of Resources	Trust	Communication	Interdependence	R2	Adj. R2	F	Sig. F
Commitment	0.215***	0.313***	0.265***	0.141	0.41	0.37	10.78	0.0000

*** Significant at $p < 0.01$

CHAPTER SEVEN

CONCLUSIONS and IMPLICATIONS

In this chapter, first an overview of the findings related to the proposed theoretical model and collaborative ventures in the global construction industry will be presented. This will be followed by contributions made to the literature and, managerial and policy implications of the findings. Limitations of the study will be highlighted and finally directions for future research will be suggested.

7.1 EVALUATION OF THE MODEL

As noted in Chapter 1, this study has been designed to address issues related to relationship development and performance in international collaborative ventures. The specific focus of the study has been on the relationship among partners in a horizontal collaborative venture and its effects on venture performance. In this regard, an integrated theoretical model of international collaborative venture performance has been developed using an interdisciplinary approach and tested with firms in the global construction industry. In addition, an exploratory study of the global construction industry has been conducted to get a better understanding of the industry and supplement the findings.

The basic proposition behind the study is that collaborative ventures represent a form of interorganizational interaction involving an exchange relationship. Based on this general proposition, the following research questions have been investigated:

1. What is the impact of the six relationship constructs which are partner fit, mutual commitment, mutual trust, interdependence, two-way communications and

balanced power on overall collaborative venture performance and on different dimensions of performance which are effectiveness, efficiency, stability/durability, client satisfaction and managerial success assessment?

2. What are the impacts of structural and strategic fit on overall partner fit?

3. What is the impact of value of resource on commitment?

4. What are some of the relationships among the relationship constructs noted above?

Forty-four hypotheses reflecting the relationships proposed in the theoretical model were generated and tested. Forty-one of the hypothesized associations among the constructs were found to be significant. Moreover, all six linear regression models tested were found to be significant overall and eighteen of the hypothesized relationships were found to be significant as a result of the regression analyses.

The first three hypotheses were on the relation of structural and strategic fit with partner fit and value of resource with commitment. All of these relationships were found to be positive as hypothesized. In other words, as structural and strategic fit among the partners increased, so did the overall partner fit. Similarly, as value of the resource received through the CV increased, so did the firms' commitment to the venture.

Selection of partner is one of the most critical decisions facing managers in entering a joint venture (Geringer 1991). In this regard, such a decision entails an assessment of structural and strategic fit between the partners which are the determining factors of partner fit. Structural fit refers to areas of organizational compatibility and strategic fit refers to the match between goals and objectives and strategic resources.

There needs to be a congruency in the organizational values and norms prevalent in the partner firms, and compatibility in technical capabilities, organizational procedures and human resources of the partners for structural fit to exist (Badarocco 1991; Lasserre 1984). From a strategic point of view, goal compatibility and resource complementarity stand out as the driving factors for the partners to be fit for each other. The partners in a collaborative venture need to have complementary strengths which will strengthen the opportunity to obtain mutual benefits (Sengupta 1993; Turner 1986). Equally important is the compatibility of the partners' individual goals in entering the collaborative venture. Rodcliffe and Clowes (1993) stress that healthy relationships can develop when the partners have compatible goals.

Each partner will develop their strategies based on their goals. If the goals clash, so will the strategies and the partners will not be able to work together. If for instance, one partner's goal is to establish a long-term ongoing relationship and the other partner has a short-term goal of having access to the other partner's resources for one specific venture, the outcome of the relationship is very likely to be unsatisfactory for at least one of them.

The value of resource obtained in an exchange relationship and the mutual commitment of the parties involved are positively related. This relationship is derived mainly from social exchange theory. As the value of resource to be obtained through an exchange relationship increases, the more important that relationship will be for the party receiving that resource. This will result in increased commitment to the relationship. In

other words, if the resource obtained from a partner firm is valuable, the receiving firm will be more committed to the collaborative venture.

Such a resource may be valuable if the firm needs, but lacks it and/or if it is not widely available (Emerson 1981). A particular technology or know-how developed by a firm may be one such valuable resource to have access to. In such a case, the partner who obtains the benefits of using the technology through collaborating with the owner of the technology will be highly committed to a collaborative venture with that firm.

The first group of hypotheses (H4a-f) on collaborative venture performance focused on the effect of partner fit on overall performance and its various dimensions. A significant positive relation was found between partner fit and overall performance of the collaborative venture. The relations between partner fit and collaborative venture effectiveness, stability and success were also positive and significant. Partner fit was also positively and significantly correlated with collaborative venture efficiency and client satisfaction, but was not found to be significant in the regression analysis of the linear equations for these dimensions of collaborative venture performance.

Hence, as expected, partner fit appears to be an important construct in explaining collaborative venture performance. This is in line with previous empirical findings or conceptualization suggested in the literature (Bucklin and Sengupta 1993; Geringer 1991; Harrigan 1985; Seabright, Levinthal and Fichman 1992).

The following remarks made by the executives interviewed for this study demonstrate the importance of partner fit and issues in its assessment:

- "Congruence of organizational and social vales [among partners] is needed."

- "Our partner should be complementing our capabilities."
- "There needs to be people chemistry among partners."
- "Partner fit will effect internal synergy and communication, not the output."
- "Partners must have compatible cultures."
- "Both parties have to bring something the other party does not have."
- "Assessment of the type of firm you are and the type your partner is very important."

When the collaborative venture partners are not fit for each other, the performance of the collaborative venture is significantly affected. Many problems are very likely to arise among the partners due to areas of misfit which may lead to dissolution of the partnerships. Bleeke and Ernst (1991) provide many such examples. To be able to work together towards a common objective, the chemistry between the partners must be right. There must be a match between the partners, both structurally and strategically. Otherwise, organizational, cultural or technological clashes will be inevitable which will have disruptive effects on the collaborative venture. This does not mean that the partners in a collaborative venture absolutely need to be of comparable size or capability. What it means is that the partners need to have compatible and complementary structures and strategies.

The second group of hypotheses (H5a-f) concerned the effect of mutual commitment of the partners to the performance of the collaborative venture. Mutual commitment had a significant positive relation with overall performance of the collaborative venture, its effectiveness, efficiency and client satisfaction, as hypothesized. It also had significant and positive correlation with collaborative venture stability and

success but, was not found to be significant in the regression analysis of the linear equators for these two dimensions of performance.

Clearly, commitment of the collaborating firms to the venture is very critical for its performance outcomes. The effect of commitment on collaborative venture performance has been pointed out in other studies as well (Beamish and Banks 1987; Jain 1987; Sheth and Parvatiyar 1992; Subieta 1991). A committed partner will try to solve problems that may arise and keep its relationship with the other partner(s) healthy. It will also look for ways to develop a positive and productive relationship among the partners. If all partners are highly and equally committed to the collaborative venture, the probability of success in the collaborative venture will be highly enhanced. That will indicate that all partners will do their best to keep the collaborative relationship going and ensure the success of the venture.

The effect of the interdependence of the collaborative venture partners to the performance of the collaborative venture was the focus of the third group of hypotheses (H6a-f). Interdependence was significant and positively correlated with overall collaborative venture performance, collaborative venture effectiveness and stability only. Moreover, it was not significant in any of the six equations tested with regression analyses. In other words, interdependence did not appear to be an important construct affecting neither overall collaborative venture performance nor specific performance dimensions directly.

On the other hand, these results do not mean that interdependence does not have a role in a collaborative venture relationship. As noted before, the proposition underlying

this study is that collaborative ventures are based on exchange relationships. Mutual dependence arises in the process of the development of an exchange relationship (Emerson 1981). Moreover, Schermerhorn (1975) asserts that the lowest common denominator in interorganizational cooperation is organizational interdependence. Van de Ven and Ferry (1980) note that in interorganizational relationships division of responsibilities among the parties leads to interdependencies which lead to specializations and development of expectations from each other. Hence, interdependence is a critical ingredient in interorganizational relationships and hence, in collaborative ventures. In other words, interdependence is an inherent characteristic of collaborative ventures arising directly from the nature of the collaboration itself.

In fact, a number of construction industry executives interviewed for this study indicated that interdependence in a collaborative venture is a given, fundamental characteristic. One executive has stated that,

> "In a collaborative venture, each party has .... to contribute what the other does not have and that's why the collaborative venture exists in the first place".

Another executive has noted that

> "Interdependence is not an issue of output, but an issue of dynamics that needs to be healthy".

The executives also noted that recognition of this interdependence by all partners is required.

Hence, interdependence can be treated as an intervening variable effecting collaborative venture performance indirectly through its effects on other variables such as commitment and balanced power. In fact, interdependence was found to be positively and

significantly correlated with commitment and balance of power as hypothesized. If two partners are equally dependent on each other, balance of power will be achieved (Emerson 1962). Moreover, the interdependence of partners would imply that each needs the other. Due to this mutual need, each partner would be more committed to the collaborative venture (Hallen, Johanson and Mohamed 1991). This increased commitment would in turn affect collaborative venture performance.

On the other hand, Parvatiyar (1993) argues that interdependence should be the main construct of interest in studies on alliances. Hence, clearly more research is needed to probe into the effect of interdependence on collaborative venture relationships and performance.

The fourth group of hypotheses (H9a-f) focused on the effect of mutual trust among partners on collaborative venture performance. Trust was found to significantly correlate with overall collaborative venture performance and all performance dimensions as hypothesized. In the regression analyses, however, it was significant only in collaborative venture efficiency and stability.

The importance of trust in a collaborative venture relationship has been stressed in many studies reported in the literature (Beamish and Banks 1987; Buckley and Casson 1988; Lorange 1989; Morgan and Hunt 1994; Ring and Van de Ven 1992; Spekman and Sawhney 1990). Subieta (1991) and Anderson and Narus (1990) have found that trust has a positive effect on partner satisfaction in a collaborative venture. Moreover, Wallace (1993) has found empirical support for the effect of mutual trust and confidence on joint venture success. Thorelli (1990) has pointed out that trust is required for stability in

interorganizational networks. Sheth and Parvatiyar (1992) have noted that trust among partners is critical in alliances.

The following remarks made by construction industry executives who participated in this study also reflect how critical trust is in a collaborative venture:

- "The most significant item lacking was a dependable, reliable international justice system that can enforce contractual agreements between parties from different countries. Our partner did not report the final payments from the owner. They kept them for themselves."

- "The key to a successful joint venture is mutual trust and respect. The terms and conditions of the joint venture agreement are secondary, although it is important that each firm understands its role and responsibilities. Because of the success of the project described here, we have another project underway with [the same company], and we will continue to bid together when appropriate opportunities arise."

- "An integrated joint venture is as successful as the relationship between the partners. This relationship can only be enhanced in an atmosphere of mutual trust between the companies at the top and operational levels. This atmosphere can be generated by clearly establishing objectives and modus operandi through a detailed action plan before beginning work on the project."

- "Lack of trust brings partnerships down."

- "Mistrust breeds mistrust, trust breeds trust. You can't put everything in the contract".

On the other hand, one of the executives interviewed for this study has stated that trust is not a factor in a collaborative venture and that there is no reason for the partners to trust each other. He added that if you have enough safeguards, there is no need for trusting your partner.

Despite this final opposing view, there seems to be a relative consensus that trust among partners is important for a collaborative venture to work and perform. Trust, however, was also found to be significantly related to commitment as hypothesized.

Hence, the insignificant effect of trust on overall performance in the regression equation may be explained by its indirect effect through increased commitment. In fact, Moorman, Zaltman and Deshpande (1992) have found empirical support for the positive effect of trust on commitment. The findings of another study has also provided further empirical support for the effect of trust on commitment (Morgan and Hunt 1994). Dwyer, Schurr and Oh (1987) and Doz (1988) have also argued for such an effect in their conceptualizations.

The effect of two-way communications among partners on collaborative venture performance was investigated through the fifth group of hypotheses (H11a-f). Communication was found to be significantly correlated with all six performance constructs. On the other hand, it was not significant in any of the six regression equations tested for collaborative venture performance.

When the relation of communications with trust and commitment were investigated, significant and positive correlations were found as hypothesized. Moreover, communication was also significant when regressed with commitment being the dependent variable. In other words, increased communication has positive effects on trust among partners and their commitment to the collaborative venture. Hence, similar to interdependence, communication also seems to be an intervening construct effecting collaborative venture performance through its effects on trust and commitment. In fact, the importance of communication among partners has also been stressed by the executives interviewed for this study as exemplified by the following remarks:

- "Lack of communication is a reason for the downfall of a collaborative venture. Partners have to talk to each other".

- "Communication is very important. Bad communication can definitely be harmful".
- "Unless there is open communication, there will be gaps leading to unproductive performance".
- "Nothing happens unless there is communication".
- "Ability of people to communicate with each other openly and honestly affects performance in a collaborative venture".

The final group of hypotheses (H14a-f) focused on the effect of balanced power among partners on collaborative venture performance. Balanced power was significant correlated with overall collaborative venture performance and all five dimensions of performance. In the regression analyses, however, balanced power was significant only in collaborative venture effectiveness, stability and success.

As noted before, the notion of power has been central in studying exchange relationships (Emerson 1962; Gaski and Nevin 1985). According to power and resource dependence theories, power differentials among partners reflect unbalanced relationships which are prone to be unstable (Cook 1977; Emerson 1962). Jain (1987) has found shared power to be one of the characteristics of successful strategic alliances. Similarly, the positive effect of balanced power on the perceived effectiveness of co-marketing alliances has been empirically supported (Bucklin and Sengupta 1993).

On the other hand, some opposing remarks to the effect of balanced power have been made by some executives interviewed for this study such as

- "Balance of power is not a factor; it is defined by the contract."
- "Balance of power should not effect outputs; it should have least influence on any output. Whether 10% or 90%, you are still a partner."

- "Balance of power has no effect because it will not be an issue if the other five factors [partner fit, commitment, interdependence, trust, communication] are in place."

- "Even in 60/40 collaborative ventures, some decisions are made on a 50/50 basis."

- "Balance of power has no effect on performance. There has to be a leader."

Hence, despite some empirical support in the literature for the effect of balanced power on collaborative venture performance, the remarks cited above by the managers and the findings of this study clearly indicate that more research is needed before a more definite conclusion can be made.

In summary, partner fit and commitment of the partners to the collaborative venture appear to be the main factors affecting overall collaborative venture performance. Mutual trust, interdependence and two-way communications appear to effect collaborative venture performance through their effect on commitment. When the five dimensions of performance are analyzed one by one, the linear model for collaborative venture success has the least explanatory power where partner fit and balanced power appear to be significant factors. These two plus mutual commitment are found to have significant effect on collaborative venture effectiveness. Mutual commitment and trust significantly effect collaborative venture efficiency. Collaborative venture stability is significantly affected by partner fit, mutual trust and balanced power. Mutual commitment appears to be the only factor affecting client satisfaction at the outcome of the collaborative venture.

7.2 CONTRIBUTIONS TO THE LITERATURE

Based on its approach, conceptualizations and findings, this study has made a number of contributions to the existing literature. First of all, an interdisciplinary approach was taken in the conceptual development of the theoretical model tested in the study. The same approach was also used in developing the measurement scales for the constructs in the model. The issues surrounding collaborative ventures and the dynamics of such organizational arrangements bring together a number of disciplines such as sociology, organizational psychology, psychology, economics, management and organizational behavior and of course marketing. The need to use an interdisciplinary approach in studies on international business has been stressed in the literature (Dunning 1989).

The study of collaborative ventures definitely needs such an approach since such inter-firm arrangements are shaped around concepts that have originated in behavioral sciences such as psychology and sociology. Concepts such as trust, commitment, dependence, and power that are characteristics of interpersonal and inter-group relationships have been widely studied in those disciplines. This study has attempted to integrate various concepts and relationships suggested in studies in different disciplines. The proposed theoretical model on collaborative venture performance contributes to the literature as an integrated model synthesizing the suggestions and findings of previous studies. This study makes an attempt to standardize the constructs and definitions used in research on international collaborative ventures. Such a standardization is necessary to

make any significant progress in international marketing (Albaum and Peterson 1984). Hence, it is an attempt towards convergent thinking in this area of research (Kuhn 1970).

Another contribution of this study is the development and empirical test of measurement scales for various relationship constructs. Similar to the approach used in model development, various scales suggested in the literature have been integrated. The reliability measures found for these scales appear to be encouraging (Nunnally 1967; Peter 1979). However, further verification in other studies is needed.

Unidimensional treatment of collaborative venture performance has been noted as a limitation of many studies reported in the literature (Chakravarthy 1986). This study makes a contribution by employing a multidimensional perspective on performance (Salk 1993). Collaborative venture performance was analyzed in five separate dimensions which were effectiveness, efficiency, stability, client satisfaction and managerial assessment of success.

Moreover, a combination of qualitative, secondary and primary data was used in the study. Qualitative data were obtained through in depth personal interviews, secondary data through published information in *ENR*, and primary data through a mail survey. The qualitative and secondary data enabled an overall industry analysis and better interpretation of the empirical findings, while the primary data were used for empirical testing of the proposed model.

This study also helps to fill the gap in the literature regarding empirical studies on international collaborative ventures. There have been many conceptual studies reported in

the literature, however, empirical studies appear to be rather scarce. Hence, this study contributes to research on international collaborative ventures as an empirical piece.

The study makes a further contribution by focusing on an understudied industry. Its focus on the global construction industry provides a better understanding of this very important and large industry about which little is known. In addition to shedding light in this closed industry, the study's single industry focus presents a contribution on its own right. Such an approach allows for a more in-depth understanding of the industry. Differences that may exist between industries do not bias such single industry studies.

In addition to the contributions made to the literature as noted above, this study also contributes to managerial thinking and public policy development. The managerial and policy implications of the study will be reviewed next.

7.3 MANAGERIAL IMPLICATIONS

The findings of the study also has a number of managerial implications that would be very helpful for company managers. Since both the qualitative and quantitative data used in this study were collected from construction industry executives, the references given below are on collaborative ventures in the construction industry. Nevertheless, the findings and the remarks made provide helpful insights to the formation and management of collaborative ventures in other industries as well.

First of all, the importance of collaborative ventures in the world economy needs to be clearly recognized and understood (Morita 1992). The global construction industry presents an excellent example to illustrate how important partnerships are in order to remain competitive. On the other hand, different philosophies or approaches that firms

from different countries may have towards partnerships also needs to be analyzed and understood. The differences between European, Asian and American approaches to alliances in the construction industry were discussed in Chapter 4 above. As that discussion clearly showed, forming partnerships is the preferred way of conducting business for European and Asian contractors, but not for American contractors. The latter group gets involved in collaborative ventures mainly due to circumstances that demand it Unless there appears to be an absolute necessity to enter a collaborative venture, American contractors prefer to go alone. Hence, the desire of the American firms to be independent must be tempered with the need for cooperation in the industry through partnerships (Nevaer and Deck 1990).

The following self-explanatory remarks made by the executives participating in this study provide additional insights as to why collaborative ventures are needed and formed:

- "The question of collaboration in international projects is at best rhetorical. In certain areas and regions, US construction firms can not even access projects except through a consortium or joint venture with a local partner. Japan in The Pacific Rim and Mexico in North America are examples of countries that are effectively impenetrable except through the aegis of a partnership arrangement of some kind with a local construction entity. In the case of Europe, on the other hand, the issue is reduction of risk and exposure, which makes collaboration with a local construction partner imperative in many cases, especially for inexperienced companies. On the other hand, [our company] would not contemplate undertaking a project in Japan, China or the seven Dragons except in some form of partnership, whether with a local architectural firm or a local general contractor."

- "Partnerships are essential for minimizing risk, bringing finance, optimizing resources, and competitiveness."

- "Because of bonding requirements and risk sharing, most large projects must be done on a collaborative basis."

- "More and more, it will be necessary to offer all kind of services in order to provide competitiveness in the Global Construction Industry. Under this point

of view, partnerships represent an important mechanism to complete performance and to offer required competencies."

- "The Global Construction Market is highly competitive. Partnerships may broaden knowledge in approaching projects and spread the risks."

- "Collaborative ventures are positive events in that they allow the partners to widen their international know-how and to learn from each other's experience. They are essential in areas with high potential of political risks. They represent an excellent formation ground for young managers, who will learn the skill of jointly discussing and deciding while confronting themselves with different cultures."

- "Unfortunately, Japanese contractors are suffering from severe shortage of domestic construction demands due to an unprecedented economic depression. We, therefore, need to extend our business activities to overseas market. We must collaborate with foreign contractors in setting up international organizations such as joint ventures and the like from the globalization and competitiveness point of view."

- "Most important is to choose appropriate local partners in foreign countries due to differences in culture, labor laws, political ties, etc."

- "Our firm is located in a small country in Central Europe. Not having enough domestic possibilities we have to look for foreign partners for almost all of our contracts. We normally look for partners for license, production process, and training facilities. Equipment is usually bought on subcontractual basis."

- "Increasing competition in the international construction sector, is emphasizing importance of partnerships, high technology, financing, cheap labor and governing factor of speed. Completion is forcing the companies to seek a different type of partnership in each new project. Companies who are able to establish international partnerships will be more successful in the international market."

- "According to our experience, joint venture between the local partnership where the construction is being carried out has proven to be very successful. In such partnership, the local resources are used to its maximum."

All the remarks cited above clearly indicate how important collaborative ventures are. Although companies may have different motives for collaborating, all converge to the point that collaboration is the way to go in order to remain competitive. Hence, there

appears to be a clear trend towards formation of partnerships. Only the few largest companies are capable of competing on their own in today's growing global markets (Nevaer and Deck 1990). Partnering appears to be necessary for competitiveness and the practices of the Japanese companies provide good examples for this (Morita 1992). Such arrangements provide a competitive edge to the companies either through sharing risk, sharing cost, increasing financial or technological leverage or providing access to new markets to give a few examples. In other instances, collaboration with a local contractor is part of a government regulation. Nevertheless, due to the nature of international construction, it is often necessary to have a local partner, regardless of government requirement (US Congress, Office of Technology Assessment 1987). Many scholars have also stressed the importance of collaborative ventures in today's highly competitive global markets. (Dunning 1988; Hamel, Doz and Prahalad 1989; Ohmae 1989) and this has been exemplified by an ever increasing number of collaborations among companies in a variety of industries.

The next important issue is how to make collaborative ventures work. In this regard, the question is how to assess the different aspects of the internal dynamics of such inter-firm relationships. A good understanding of the factors that are likely to affect the performance of a collaborative venture is absolutely necessary so that such arrangements do not turn into disappointments or nightmares for any of the collaborating parties. The findings of this study provide some insights in this regard.

First of all, partner fit and mutual commitment of the partners appear to be the most critical factors that have a direct effect on the performance of the collaborative

venture. In other words, there needs to be good match and understanding between the partners and each should be committed to the venture. The following remarks provided by some executives in this study are important to note as examples of real life experiences:

- "[our company] was the 'foreign partner' that was placed in the position of doing it their way or no way. Cultural differences both between the countries and the business cultures are overwhelming."

- "[Collaborative venture] requires that each partner appreciate, understand, and support as much as possible the culture, morals, and customs of the other. Each should look upon the work together as an adventure, creating something new for the benefit of mankind."

- "Difficulties that occurred in the relationship were normal. They happened due to difference between the languages and because of the different way of managerial approach between a capitalist firm and a socialist firm."

- "Each item of work, who would do what was spelled out before hand - our person was Construction/Project Manager- their person Construction superintendent. Some problems occurred with proper managing of crew areas and equipment to complete certain items within schedule- but we knew how each other operated so we pretty much knew what to expect (very important) - with the extra quantities and time constraints (with bad weather), the project was successful."

- "You should do your homework and know your partner before meeting him."

- "A partnership is very much like a personal relationship (e.g. marriage). Nobody tells about bad aspects of himself; but, it is not hard to find out the reputation of a partner."

There are also other factors at work that shape a partnership. Among these are the trust of the partners for each other, the amount and extent of communications between them, recognition of the interdependence that exists among the partners and the distribution of power in the relationship. Firms collaborate with each other expecting benefits that the other would provide. Hence, there is a certain level of interdependence that exists between the partners right at the outset of the collaboration. Similarly, there is a

particular level of trust established among the partners evidenced by the formation of the partnership. The findings of this study also suggest that mutual trust increases with increased communications among the partners. The findings of this study also suggest that trust, interdependence and communications effect collaborative venture performance through their effects on commitment. In other words, the relationship between partners in a collaborative venture has a very dynamic nature developing as the interaction and exchange between the partners increase.

The findings and the executives' remarks clearly indicate that the partnering firms should act and perform as a unified team. Referring to a collaborative venture they have had, one executive said that the owner of the project looked at the partnership as a whole, not as a collection of individual components. Another executive noted that sophisticated owners look for a team approach. Still, another executive even went on to say:

> "For a joint venture, the degree to which the owner, trade contractors and designers perceive the joint venture as one project organization and can not tell that they're working with two companies is an indication of success. If you don't have that, the concept of the joint venture is negative to all outside parties."

The team's success should be the main line of thought in the partnership. The success of the team would mean realizing the expected benefits for the partners. Hence, it is a win-win situation.

The need for joint management of the collaborative venture was also stressed by other executives who noted that the venture needs to be managed by a project staff put together from qualified staff from each partner firm.

Assignment of qualified personnel to the venture is also very important in ensuring quality output. Commenting on this issue, one of the executives interviewed for this study

noted that the specific people assigned to the venture determine its success. One executive also noted that having a fair and equitable agreement makes it more conducive to have a successful relationship.

Some practical suggestions can be made to managers of companies entering a collaborative venture based on the remarks provided by the executives interviewed for this study. Assessment of whether a potential partner can be trusted or not is a very tough job. Relying on intuition alone does not suffice in this regard. The reputation of the partner in the industry and its previous experiences with other firms need to be checked. One should check to see whether the firm has taken advantage of its partners in previous partnerships or not. It appears to be almost impossible to be 100% comfortable and totally trust your partner. Moreover, a committed partner would come to meetings prepared. He would have a plan and be knowledgeable about the project. Furthermore, if the people for the potential partner firm coming to the meetings are those to be assigned to the venture, this would also be a sign of commitment to the venture. Furthermore, each partner must clearly need each other. In other words, a level of interdependence must exist between the partners.

The partners also need to keep each other up-to-date on what stage they are at in terms of their responsibilities. Hence, a healthy dialogue needs to be established back and forth among the partners. Furthermore, written or spoken communication should be frequent and informative. As one executive noted, coordination absolutely requires communication.. The partnering firms need to get the understanding that the team needs to satisfy the owner rather than team members battling among each other. Problems have

to be discussed when they come up and alternative solutions explored. It is also advisable to start slow and grow together with your partner. Partnering firms also need to recognize that a collaborative venture will have its ups and downs. Mutual commitment of the partners and understanding of each other are particularly critical to keep the partnership going when things go sour. Establishment of a long-term relationship is important to overcome non-profitable times.

Another point shared by all executives was that responsibilities of each partner had to be clearly defined. These responsibilities, as understood by the partners, will shape their expectancies from each other. Any ambiguity or misunderstanding regarding what each partner is supposed to do, how and when, is very likely to lead to serious problems either in the relationship or in the performance outcome of the venture. One executive has suggested the following recipe for a successful joint venture:

> "A 50-50, joint and several contract, parent company guaranties, consensus requirement by joint venture committee (no voting), best people from both companies to fill positions, no redundancy, team building at start and throughout, client involvement and satisfaction throughout are the key ingredients for a successful joint venture."

Managers need to have a good understanding of the trends in the industry as well. For instance, as Seaden (1992) notes for the construction industry "the general trend in industrial research and development is towards ...., strategic alliances and joint ventures to reduce the high risks and share the ever increasing costs" (p.53). Moreover, the growing markets for construction exports appear to be in Europe and Asia. China alone is expected to provide mega transportation projects totaling $300 billion in the next 15 years (*ENR*, May 16 1994). In order to benefit from this growth and not to lose market share in world

construction exports, US contractors need to be more active in these markets. However, to be able to compete with European and Japanese contractors who appear to be well-established in these markets, US contractors need to form partnerships with local firms. Collaborative ventures appear to be the way to break into these markets.

Moreover, market conditions have changed in international construction. Competition has gotten even more severe. European and Japanese contractors appear to be increasing their market shares in international construction exports. There also appears to be important technological know-how and expertise developed by these contractors. Hence, US contractors should seek for ways to transfer this know-how and utilize it not to be left behind in technology. More important, however, is that they should invest themselves to develop proprietary know-how. US contractors definitely need to catch up with new technology both to be more competitive in international markets and to be able to protect their home market from foreign contractors who have already moved in. Sidwell, Metzinger and Tucker (1988) suggest that the US contractors should capitalize on their strengths in software and construction management systems.

There are other possible strategies to follow in order to remain competitive. One strategy is to develop new product offerings for the international market which will provide a differential advantage and more latitude. Besides that, contractors may allocate more resources to management technologies and construction methods which will reduce costs and improve productivity. A report by the US Congress, Office of Technology Assessment (1987) has also concluded that in order to be competitive in the future, US

engineering and construction firms "will have to rely heavily on advanced construction techniques" (p.150).

In summary, managers should recognize the growing trend towards formation of partnerships and the need for such arrangements to remain competitive in the world. In entering a collaboration with one or more firms, however, managers should also be aware of the internal dynamics of such inter-firm relationships and the various factors at work. Moreover, a valid assessment of these factors is equally important and absolutely necessary. Overall, a partnership should be viewed as a win-win situation where partnering firms come together to obtain mutual benefits.

7.4 PUBLIC POLICY IMPLICATIONS

The findings reported in this study have implications for public policy developers as well. The importance of collaborative ventures for competitiveness is well noted and public policy makers may play a vital role to help the firms from their countries.

First of all, policy makers need to be aware of the global trend towards formation of partnerships. The fact that collaboration and competition may coexist needs to be clearly noted. As Nevaer and Deck (1990) state, "For US firms to compete in today's global marketplace, a policy of growth through strategic alliances must be implemented" (p.199). The global construction industry presents a very good example of this phenomenon. The American contractors surrounded by strict antitrust laws have a relative disadvantage against their foreign competitors in this regard. As noted by one of the executives, "Round 1 is over" and big foreign contractors have already moved into the US taking market share away from American contractors. In other words, in addition to

stronger competition in overseas markets, there is also new competition at home (US Congress, Office of Technology Assessment 1987).

Construction is a very critical industry for all countries due to its effect on national economy. However, American contractors have a harder time to collaborate with each other in order to increase their competitive leverage due to strict legislature. Hence, the US government needs to review its legislature governing inter-firm collaborations and adapt it to the changing conditions in the domestic and international construction markets.

The United States has lost its dominant position in the global construction industry which it had enjoyed for a long time after the World War II. This has been due to the erosion of American contractors' competitiveness, particularly in foreign markets (Yates, Mukherjee and Njos 1991). Other countries' governments provide significant assistance and support to their contractors in different ways. Encouragement of within industry cooperation is clearly seen in countries outside the US. Moreover, foreign governments provide financial incentives in different forms such as tax incentives, low-cost funds or subsidies. The non-US contractors have a better financial leverage with this kind of support behind them. Hence, on one hand, the US government should closely follow any practices of unfair trade in other countries. On the other hand, the financial pressures put on the construction industry may be relaxed a little bit to give the US contractors a break to be able to price competitive as well.

Additionally, many governments explicitly support R&D activities in their construction industries which does not appear to be the case in the US. In some countries, such as Japan, the government invests in R&D itself and/or makes it a legal requirement

for firms to make a particular amount of investment in R&D. This kind of support obviously helps the level of technology to increase, and the firms gain a technological advantage as well. The US government may play a key role to promote technological development in its construction industry. It can create infrastructural mechanisms, similar to those in Japan and Europe, for R&D on construction methods and dissemination of the results to the industry. In fact, there are some good news in this regard. A federal subcommittee was formed on March 18, 1994 to focus on construction R&D. The construction industry officials have made suggestions to the subcommittee on how the federal government can cooperate with the industry to stimulate R&D (*ENR*, April 18 1994).

Additionally, the philosophy towards partnerships appears to be positive in Europe and Japan, but not so positive in the US. American firms appear to be limited by some industry paradigms which favor doing it alone and not sharing. The case for European and Japanese firms is exactly the opposite. Again, US policy makers may help to change these paradigms and encourage collaborations.

Policy makers should also carefully observe the practices of other governments. Government subsidies in countries outside the US appear to be reality and they hurt American firms' competitiveness. Hence, such practices should be followed and grounds for practice of fair trade should be sought.

7.5 LIMITATIONS OF RESEARCH

In addition to the findings, managerial and policy implications and theoretical contributions of this research, its limitations also need to be recognized. The major limitations of the research will be reviewed next.

The major limitation of the study is its small sample size (N=69). This was the result of the low response rate (12.3%). As noted in Chapter 4 above, the total number of questionnaires returned corresponded to a response rate of 21.4 %. However, because 40 of these contractors indicated that they did not participate in collaborative ventures, and another 11 did not participate, these did not provide any data for the study and were excluded reducing the number of valid cases to 69 in a total sample of 561. The low response rate was also partially due to the mail survey methodology used. Limitations of using this methodology in research equally apply to this study as well.

A further limitation of the study is that none of the top ten contractors in the top 400 US contractors list and only one of the top ten contractors in the top 225 international contractors list provided data for the study. In other words, the biggest players in the industry were not included in the empirical testing of the model. Some of these returned the questionnaires back stating that they are overwhelmed with such surveys and do not want to participate.

Another limitation of the study may be seen as the subjectivity introduced by asking managers to evaluate a collaborative venture they had. The evaluation of each of the items related to the relationship in the collaborative venture in response to the questions obviously reflect how the respondent felt about them. On the other hand, it can

be argued that this kind of subjectivity should be deliberately sought since in evaluating a relationship, the perception of the manager is more important than a more objective view. Perceptual measures can better capture whether objectives have been reached or not which the objective measures may not.

Even though the proposed theoretical model in the study implied causal links between constructs, such causalities were not testable due to sample size limitations. Correlation does not imply causation on its own right. Hence, the correlates that are established may or may not be real determinants.

Moreover, many of the individual constructs had insignificant Beta weights in the six regression equations tested. Plausible explanations were suggested for these insignificant results; however, this limitation needs to be recognized.

Another limitation is due to the cross-sectional nature of the study. In a cross-sectional study, it is impossible to thoroughly reveal the temporal sequences of the constructs of interest if there are any. The main assumptions were that there were linear relationships among the constructs, additive effects of the independent variables and one way causation.

Furthermore, the model was tested in one industry which limits its potential generalizability. This is also one of the strengths of the study since between industry differences do not bias the results. On the other hand, the applicability of the results to other industries is not explored, but only suggested.

7.6 SUGGESTIONS FOR FUTURE RESEARCH

With the growing importance of collaborative ventures in international business and marketing activities, a better understanding of the formation, operation and maintenance of collaborative ventures is definitely needed. In this regard, various suggestions for future research both to complement and supplement the findings and conclusions of this study are made below. The bottom line of all the suggestions is that more empirical rather than conceptual studies are desperately needed.

First of all, the scales developed for the constructs in the proposed theoretical model should be tested in other studies on domestic and international collaborative ventures. Particularly, these scales should be tested in other industries. So far, there has not been a consensus on what scale to use in studies on collaborative ventures. The scales used in this study were developed through a synthesis of those suggested or used in other conceptual or empirical studies. An agreement on scales to use for the same constructs is definitely needed to be able to establish a stream of research in this area that provides comparable findings.

Secondly, the proposed model should be tested with a larger sample size. In that case, more rigorous statistical methods can be used to test causalities. For instance, the proposed model needs to be tested using structural equations methodology (e.g. LISREL, EQS). Similarly, the temporal sequences among the constructs need to be investigated.

Testing the proposed model in other industries presents another area of research. The results of such studies would provide an assessment for the generalizability of the results across industries.

In addition to the contractor-contractor horizontal relationship studied in this research, there are other relationships in the construction industry. For instance, the contractor-subcontractor relationship is an inherent characteristic of the industry and represents a vertical relationship. Similarly, the contractor-owner relationship is also very critical in the industry, particularly with the recent emphasis on the concept of partnering. Hence, development and maintenance of these other types of relationships and performance outcomes also need to be studied.

There are also a number of areas of research on collaborative ventures that were not covered in this study. The effect of conflict on inter-firm relationships and on collaborative venture performance present areas of research that are equally important to investigate. The relation between inter-firm cooperation and adaptation also needs to be studied. Moreover, other possible relationships between the constructs suggested in the proposed model of this study may be sought and studied.

A different, but related area of research is on why firms enter collaborative ventures. Results of specific studies focusing on motives for entering such relationships would enable a better understanding of formation of collaborative ventures and supplement the findings of research on collaborative venture performance.

Finally, expert system models may be developed to evaluate collaborative ventures. Such systems would provide a very efficient and effective medium to disseminate research findings and expert knowledge across the industry (Cavusgil 1990).

Research on application of expert systems in the domain of international business and marketing has already been on its way, producing very interesting and useful

applications (Evirgen and Cavusgil 1994). There has been extensive research done in this area by a group of researchers at Michigan State University Center for International Business Education and Research (MSU-CIBER). In fact, one of the expert system modules developed has been on international collaborative venture partner selection (Evirgen 1993). The theoretical conceptualizations and conclusions suggested in this study can be used as a basis to develop a similar module on international collaborative venture performance evaluation.

In short, still there is a lot of room for research on domestic or international collaborative ventures. Moreover, there is still a need for more empirical studies. Hence, study of collaborative ventures remains a very interesting and fruitful area of research with a lot of potential and gaps to be filled.

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