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**An Investigation of the Factors Influencing the
International Collaborative (Technology Transfer)
Agreement Mode Selection of Turkish
Manufacturing Firms**

by

Sadrettin C. Dai, B.B.A. (Honours)

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Master of Management Studies

**School of Business
Carleton University**
Ottawa, Ontario

May 7, 1993

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Acceptance Sheet

The undersigned hereby recommended to
the Faculty of Graduate Studies and Research
acceptance of the thesis,

**"An Investigation of the Factors Influencing the International Collaborative
(Technology Transfer) Agreement Mode Selection of Turkish Manufacturing Firms"**

submitted by

Sadrettin C. Dai, B.B.A. (Honours)

in partial fulfillment of the requirements for
the degree of Master of Management Studies

Thesis Supervisor

Thesis Supervisor

Director, School of Business

*to my mother and
the memory of my father*

ABSTRACT

This thesis investigates the factors which influence the international collaborative (technology transfer) agreement mode selection of technology recipient firms in Turkey, which is an industrially developing country. Personal interviews were conducted with executives of twelve Turkish firms who were knowledgeable about selection processes leading to collaborative agreements. The sample consists of companies that had engaged in either licensing agreements or joint ventures with foreign firms.

Results from the study indicate differences between the factors that managers consider in the selection of the collaboration mode and the factors suggested in the literature for a successful technology transfer. The findings of the study were used to explain the rationales and motives of the recipient firms entering licensing agreements or joint venture agreements with foreign firms. The findings indicated that the commercial use and aspects of collaboration agreements were more important than the technology transfer concerns.

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STATEMENT OF CONFIDENTIALITY

Due to the nature of the information gathered in this study and at the request of some of the respondents, the identity of the sample firms must remain confidential. The anonymity of the respondents has been assured as a condition of the data collection.

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LIST OF ABBREVIATIONS

FDI	Foreign Direct Investment
GNP	Gross National Product
JV	Joint Venture (plural, JVs)
MNE	Multinational Enterprise (plural, MNEs)
NPV	Net Present Value
R&D	Research and Development

Chapter 1: INTRODUCTION

Science and technology play a significant role in the economic growth of developing¹ as well as developed countries (Frame, 1983). Ninety-seven percent of technological innovations have been developed in industrialized countries; only 3 percent have been developed in developing countries (Stewart, 1979). Furthermore, only 5 percent of the world's total R&D takes place in developing countries (Frame, 1983). Thus, as a result of this oligopolistic situation, organizations in developing countries have limited opportunities for obtaining new technologies. Their only opportunity lies in the acquisition of technology which has been transferred from technology supplier firms of developed countries (Kiggundu, 1989). Hence, the transfer of technology from developed countries is not an alternative to in-house R&D activities for most developing country firms, rather the major way to acquire technology. Technology transfer is defined as "the transmission, revision (adaptation) and implantation (absorption) of such accumulated knowledge and know-how that are actually put to productive use" (Erdilek, 1985 p.91). Effective transfer of technology, knowledge and skills to developing countries requires building local technological capacities. These can be developed and sustained only through collaboration between strong and effective indigenous organizations and technology supplier organizations of industrialized countries (Kiggundu, 1989).

Since the Second World War the recipients of technology transfer have had many more alternative sources to choose from. During the same period governments have become extremely influential in the transfer process (Calantone et al., 1990). According to Frame (1983) international technology transfer is a major element of international business. Some of the commonly used modes of technology transfer are turnkey agreements (e.g., the one-

¹The only developing country that the proposed study investigates is Turkey. Turkey ranks 65th in GNP per capita out of 127 countries and is considered to be a lower middle-income developing country (World Development Report 1990). It is an industrially developing country.

time purchase of a whole factory), licensing agreements, international joint ventures, and foreign direct investment (FDI). Technology transfer in FDI takes the form of intra-firm transactions across national borders. In joint ventures, technology transfer is usually from one partner to the child company, which is created and owned by both partners. Turnkey and licensing agreements involve the purchase of technology from external sources. However, unlike turnkey agreements, licensing agreements are not limited to the purchase of physical technology (machinery), but may also provide the transfer of know-how and patents (Calantone et al., 1990). Technology is defined as the knowledge or methods that are necessary to carry out or improve upon existing production and distribution of goods and services (Santikarn, 1981). Kiggundu (1989) defined technology as a complex, dynamic process of organizational interactions, not just hardware, machinery or equipment, and cannot be purchased at a single point in time. He also stated that technology transfer is a continuous learning process.

Collaboration agreements are contractual agreements where two or more companies cooperate in order to achieve their goals. Cooperation may involve research activities, manufacturing and/or distribution (Berg, 1991). Each party involved in the agreement has its own reasons for collaborating and its own expectations from the collaboration. Joint ventures and licensing are collaborative agreements that enable firms of developing countries to acquire technology by collaborating with companies of developed countries. Unlike FDI or turnkey agreements, licensing and joint ventures are collaborative agreements that enable indigenous companies to participate in the continuous process of technology transfer to developing countries. Consequently, as key technology transfer mechanisms, joint ventures and licensing agreements were considered in the present research study.

Joint ventures are partnerships that form an entity (the child company) to pursue some strategic purpose (Harrigan and Newman, 1990). A joint venture occurs when two or

more companies form a third company for the purpose of producing a good or service jointly. Sharing operating costs and risk are important motivations for creating joint ventures. Another motivation that is common for pursuing international joint ventures is the desire and necessity to share technical, marketing, production and managerial skills (Frame, 1983). In joint ventures parent companies hold shares of the joint company and receive dividends.

Licenses are contractual agreements that allow technology recipient companies to employ the supplier's technology. They are subject to certain conditions that are agreed upon by the parties involved (Frame, 1983). The licensor provides the technology or know-how which is used by the licensee for manufacturing abroad. With international licensing, technology, but not capital resources, is transferred to foreign markets. Licensees obtain know-how and technology by paying a royalty (Killing, 1977). Licensing is the appropriate mode of technology transfer for collaborations where the technology recipient has a high capacity to absorb the technology being transferred (Frame, 1983). For these companies, licensing supplements in-house research and development programs.

The actual mode of technology transfer used can be fairly complicated (Calantone et al., 1990). Mixed strategies are a type of collaboration in which the joint venture partner that supplies the technology issues a license to the recipient child company to use its technology in the production of goods or services. Technology supplier firms which have monopolistic advantages or very valuable technology prefer to make separate know-how agreements with joint companies in order to capitalize on their monopolistic advantage (Davies, 1977).

The literature on technology transfer to developing countries has documented many examples of the ineffective acquisition of technology and dissatisfied technology recipients (Kiggundu, 1989). These cases show that ineffective transfer of technology occurred when local technological capacity for technology transfer did not develop (Kiggundu,

1989). One means of developing local technological capacity is collaboration with technology supplier firms of industrialized countries. The need for learning in order to develop technological capacity on the part of technology recipient firms depends on two factors: first, the extent to which it is moving away from its established knowledge and skills (i.e., the absorptive capacity of the recipient); and second, the technological and marketing skills needed to operate the technology transferred (i.e., the complexity of the technology). There is a positive relationship between knowledge acquisition and the strength of the linkage between supplier and recipient parties of the technology transfer agreement. That is, the more the technology recipient firm needs to learn about the transferred technology and its business, the stronger the linkage required between the two entities. The strength of the linkage between technology supplier and recipient is a function of the amount of contact between the two parties and the degree of commitment of the technology supplier firm to ensuring that real learning takes place. Both of these factors are functions of the type¹ of collaboration agreement chosen (Killing, 1980). A loose linkage between the parties may cause ineffective technology transfer. On the other hand, the cost of the agreement goes up as the strength of the linkage and the commitment of the supplier increases. If technology recipients are not able to develop their technological capacity, a strong linkage between the parties may cause the recipient to become highly dependent on the technology supplier firm. Hence the strength of the relationship, and consequently the type of collaboration agreement, is a major factor of successful (effective and efficient) technology acquisition by developing country firms (Janaro and Bommer, 1992). In one form or another, one does not want to overdo and use a stronger link than required. The object is to match the strength of the linkage with the requirement of the recipient.

Basic elements of the technology transfer process are: the transfer item (i.e., product, process, or know-how), the technology supplier, the technology recipient, the transfer

¹The types of collaboration agreements investigated in this study are licensing agreements and joint ventures.

mechanism (mode of the technology transfer), the rate of diffusion of technology and the absorptive capacity of the recipient (Frame, 1983). The result of technology transfer depends on the decisions and trade-offs made at the acquisition stage (Kiggundu, 1989). The focus of Frame's study was the potential impact of variations in five of the technology transfer process elements (i.e., transfer item technology, technology recipient, technology supplier, rate of diffusion of technology and absorptive capacity of the recipient) on the recipient's process of selecting the sixth element —the transfer mechanism (i.e., licensing or joint venture). The transfer mechanism (technology transfer mode) is the form of collaboration between the companies.

Chapter 2: BACKGROUND AND OBJECTIVES OF THE STUDY

This research was conducted in order to gain an understanding of whether or not the technology recipient firms of a developing country fulfill the supposed requirements of successful technology transfer. Kiggundu (1989) has shown that the technology transfer process between private sector firms is an important element of the development process of developing countries. Killing's (1980) research revealed the normative factors which are important in the selection of a technology transfer mode.

In this study "technology transfer agreement" and "collaboration agreement" will be used interchangeably. I observed that international collaborative agreements (i.e., licensing, distribution agreements, joint ventures) with foreign MNEs are an important factor in inducing growth and success of indigenous firms.

The question of whether or not Turkish recipient firms consider the technology transfer mode selection factors that researchers report to be important to the success of technology transfer, and consequently, the development of the country was investigated. What are the factors that affect their selection of a collaboration mode? This study was conducted to answer this question.

Chapter 3: LITERATURE REVIEW

Most of the literature that has been written on the subject of technology transfer and international business addresses the issue from the point of view of technology supplier firms, where collaboration agreements with firms in developing countries are viewed as alternative market entry strategies (Stobaugh, 1984; Root, 1987; Young et al., 1989). Consequently, the literature under the title of "collaboration agreements," "licensing" or "joint ventures" with developing country firms has analyzed the subject as a low-risk strategy which is an alternative to wholly-owned direct investment or exporting for entering developing country markets (Contractor, 1981, 1985; Davidson and McFetridge, 1985; Anderson and Gatignon, 1986; Root, 1987; Hennart, 1989). Hence the selection of collaborative agreement type is seen as a choice that MNEs will make depending on their risk-taking policies and expected investment returns.

"The local partner in a joint venture, or the licensee in a license agreement, is always assumed to be waiting and available ready to go along with whatever the scheme the technology supplying firm has decided best suits its own interest" (Killing, 1983; p.87).

Technology recipient firms are practically always seen as the passive party in collaborations.

Jeannet and Liander (1978) defined technology as "the application of science to the solving of well-defined problems." "Manufacturing technology" was defined as consisting of research, development and engineering. Jeannet and Liander defined "technology transfer" as the transfer of any element or combination of research, development and engineering across national borders. Kiggundu (1989) defined collaboration agreements between organizations in developed and developing countries as the main channel of technology transfer to developing countries. Objectives for each side of a collaboration where technology transfer occurs differ. The impact of technology transfer on each side (interest groups) of the collaboration and their views regarding the technology transfer process

differ, because of the difference in their objectives and needs, and their perceptions and policies (Perlmutter and Sagafi-nejad, 1981). The technology supplier firms from developed countries view these agreements as market entry and development tools (Young et al., 1989). In contrast, technology recipient firms from developing countries approach these agreements as technology acquisition and development tools (Killing, 1977). This dual approach is illustrated in Figure 1.

Figure 1: Objectives of the Parties for the Collaborative Agreement

This thesis outlines the literature in the area of international market entry mode selection of technology supplier MNEs, host government views of technology transfer via international collaboration agreements, the concept of technology transfer as it relates to developing countries and the critical success factors of technology transfer to developing countries. The literature on the characteristics of Turkey as a technology recipient host country, and Turkish perceptions towards foreign investment¹ and international collaborations are

¹ In Turkish literature the term "foreign investment" was used for both wholly foreign owned firms and joint ventures with foreign partners. Most of the firms classified under "foreign investments", however, were joint venture firms of Turkish and foreign parents.

reviewed. The foreign investment regulation and foreign capital legislation concerned with the international joint ventures in Turkey are reported.

The following part of this section reviews the technology transfer modes which are included in the investigation of this study. These modes were gathered from Killing's (1980, 1983) studies and other related literature.

3.1 Collaboration Agreement Modes:

Two types of joint ventures and two types of licensing agreements were outlined by Killing (1983). Mixed strategies will also be considered in this study as possible collaboration modes for transferring technology.

1-Current technology licensing agreements provide only the transfer of existing know-how and technologies from the licensor. Future developments made by the licensor are not included in the agreement. This kind of licensing agreement does not require continual communication links between the parties. Since this kind of agreement does not provide frequent help to the licensee, future development of production technology should be made by the licensee. Licensees should have a high capacity to absorb the technology being transferred (Calantone et al., 1990).

2-Current and future technology licensing agreements, require the transfer to the licensee of any developments which are made by the licensor, relating to the product under license during the term of the license.

3-Dominant parent joint venture: The technology recipient firm is dominant, and the technology supplier is the passive parent. The child company is managed by one parent. The dominant parent selects all functional managers for the child company.

4-Shared management joint venture: The technology recipient firm and supplier firm own equal shares (approximately) of the joint venture company. Both parents participate in the management of the child company and contribute functional personnel. Generally, shared management may cause conflicts in the management of the child company. However, shared management is most common and preferable in developing country joint ventures where one parent is supplying technology and the other knowledge of the local market.

5-Mixed Strategies: The technology supplier partner in the joint venture agreement which has monopolistic advantages includes a separate know-how agreement or marks up the prices of the intermediate goods or equipment sold to the 'junior' partner. In this way, the technology supplier firm can get the extra profits accruing to the joint venture by virtue of the technology owner firm's monopolistic advantages (Davies, 1977).

Killing found that the mode of technology transfer influences the cost of the technology transfer (via joint ventures or licensing agreements) to the technology recipient and the effectiveness of the technology transfer process. If a firm is moving into an area of business which is not related to its existing business, it will need a strong link with its technology supplier. Hence transfer of technology will cost more to the recipient.

Current technology licensing agreements involve little commitment on the part of technology-supplying licensor firms to transfer technology. As a result, the contact time between the parties of the agreement is shorter. Current and future technology licensing agreements provide more contact between parties and provide a better process of information transfer, but at higher cost. Dominant parent joint ventures have a higher cost, in that equity is often given in exchange for technology, but the commitment of technology-supplying firms and the strength of the relationship between the parties will be higher. In his research concerning developed country firms, Killing (1982, 1983) found that shared management has the highest costs and the highest probability of failure. However, if successful, shared management joint ventures provide the most effective transfer of

technology (Killing, 1983). Furthermore, considerable benefits from an equal partnership with a world leader in the technology may accrue to the recipients (Killing, 1980). Beamish (1985) determined that shared management joint ventures had a positive effect on the success of collaborations in developing countries.

3.2 Determinants of Technology Transfer Mode:

Interrelated factors affecting technology transfer logistics are defined by Baranson (1970) as:

Nature of the transferred technology, the complexity of the product and production techniques being transferred: Characteristics of the product design and the sophistication of the production process are found by Baranson to affect the investment-licensing decisions of MNEs. He found that technology supplier firms are less likely to license in products when they have invested substantial R&D funds or have a technological advantage in the industry. However, the shorter the product life-cycle, the more likely technology supplier firms are to license in residual markets.

The transfer environment in supplier and recipient countries: The mode of international technology transfer that is chosen is influenced by legal restrictions and tax structures of both supplier and recipient countries. The competitive position of the technology supplier firms in home and host markets and their experiences in developing countries have been found to affect supplier firms' willingness to license or invest. Developing countries are usually short on the skills needed to run successful manufacturing operations, yet they insist on some degree of national ownership and staffing.

Recipient firm's characteristics: It is suggested that MNEs should consider the absorptive capability of recipient firms and their potential in competitive markets as major factors in the selection of a technology transfer mode. Technology licensing is suggested for

collaborations with industrially-advanced recipient partners. Supplier firms have been found to be more willing to disclose technical know-how to less sophisticated partners in developing countries than to industrially-advanced firms which may become competitors in third-world markets. However, supplier firms' strong technological lead and dynamic R&D activities aimed at maintaining this lead tend to eliminate these concerns.

Supplier firm characteristics: The transfer capability, financial position and corporate philosophy of technology supplier firms have been found influential in determining which mode of technology transfer will be preferred. The profit-maximizing strategies and risk taking policies of supplier firms have a strong influence on the technology transfer mode that will be chosen.

MNEs' choice of ownership structure for the foreign subsidiary depends on factors in two different but interactive processes (Gomes-Casseres, 1990). One set of factors affects *what the supplier firm wants* (i.e., MNEs prefer ownership structures for foreign subsidiaries). These factors include the capabilities of technology supplier firms, their strategic needs, and the transaction costs of different ways of transferring capabilities. Another set of factors determines *what the supplier firm can get*, which may be different from what they want. The authors (Contractor, 1990; Gomes-Casseres, 1990) claim that the ownership structure of foreign subsidiaries is determined in negotiations between MNEs and the national governments of technology recipients. The preferences of technology recipient firms have not been taken into consideration in studies on the selection of technology transfer mode. Figure 2 is a diagram of technology transfer mode selection as suggested by the literature.

Figure 2: The Selection Process of the Technology Transfer Mode

This view supports Killing's (1983) assertion that there has been an omission in the literature concerning the participation of technology recipient firms in decisions regarding technology transfer issues (see p. 7).

There are two schools of thought explaining how MNEs select ownership structures of their overseas co-operations (i.e., selection of technology transfer mode):

The transaction cost approach: MNEs prefer to minimize the transaction cost of doing business abroad (Buckley and Casson, 1976). MNEs weigh the costs and benefits of wholly-owned subsidiaries against that of joint ventures or licensing agreements and choose the one that is most profitable (Chaudhuri, 1988). It is suggested that in the face of political risk and large amounts of fixed capital investment, MNEs should prefer joint ventures.

Bargaining power approach: Ownership structures are determined by negotiations with host governments (Contractor, 1990). Modes of technology transfer depend on the bargaining power of the parties (i.e., MNE and host government).

3.2.1 Technology suppliers' rationale:

Anderson and Gatignon (1986) have developed an economic approach, based on transaction cost analysis, to evaluate foreign entry and development mode decisions of MNEs. They determined control to be the most important determinant of both risk and return. High-control modes of entry (e.g., wholly-owned subsidiaries, majority foreign-owned joint ventures) increase return, but also risk. Low-control modes (licensing) reduce resource commitment and hence risk, but often at the expense of return. The foreign market entry mode decisions of MNEs, therefore, involve a rational trade-off, whereby firms trade various levels of control for reductions in resource commitment, in the hope of reducing risk while increasing returns. Anderson and Gatignon described four factors affecting the degree of control attempted by MNE's in the choice of entry mode: transaction-specific assets (e.g., product and process investments that are specialized to a few users); external uncertainty (e.g., the unpredictability of the external environment); internal uncertainty (e.g., international experience, socio-cultural distance between home and host countries); and free-riding potential (e.g., valuable brand names).

Baranson (1976) stated that MNEs prefer investment rather than licensing when:

- financial and human resources are available;
- the product and technology have longer life-cycles;
- the firm fears licensing will result in the give-away of valuable know-how;
- the transfer involves a broad line of products;

- the technology is highly complex or the foreign affiliate lacks industrial sophistication and the transfer requires a prolonged and sustained relationship; and/or
- there is a concern over protecting the product standards or trade name.

MNEs prefer licensing over investment when:

- the market is too small to invest or the product life-cycle is short;
- the firm has a marketable technology but lacks the resources or experience for direct investment;
- direct investment is precluded by legal constraints or seems to involve high risk and uncertainty of a political or economic nature;
- reciprocal benefits are obtainable through cross-licensing; or
- patent litigation or competitive technological development may be avoided (Baranson, 1970).

Baranson (1970) stated that MNEs perceive that it is only through the incentives and sustained relationships associated with significant ownership and control that technology can be transferred to developing countries effectively and that the MNE can earn a sufficient return.

Each firm has a somewhat different transfer policy reflecting different, corporate capabilities and policies, market position and profit-maximizing strategies. MNEs were found willing to join with local partners that afforded unique access to local markets or provided needed capital.

Stobaugh (1984) examined how technology suppliers decide whether to license the technology to an unrelated party or whether to invest in a facility to use the technology (either enter a joint venture or form a wholly-owned subsidiary). The licensing versus investment decisions were found to be dependent upon whether the transfer was

international or domestic, the characteristics of the host country (i.e., the stage of industrial development and size of the market), the competition faced by the technology supplier firm, and the characteristics of the supplier firm (e.g., size of the firm).

Stobaugh found that managers of technology supplier firms prefer to license technology rather than invest when: the technology transfer was an international one, the host country was developed and had a large market, a large number of companies owned the technology transferred, and the size of the company was small. Managers found it preferable to enter a joint venture rather than a wholly-owned subsidiary when: the technology transfer was an international one, the host country was developed and had a large market, and the size of the company was small. Stobaugh also determined that as the age of the product increases, licensing becomes a more favourable channel of international technology transfer for the supplier companies. Investment was preferable for younger products.

Berg (1991) studied the cooperative linkage type selection process of small size New Zealand firms. The cooperation types considered were complex contracts (e.g., licensing), joint ventures, and mergers and acquisitions. Berg investigated the cooperation linkage selection of the firms depending on the changes in environmental conditions. Influential country environmental factors on technology supplier small firms' cooperative linkage choice were investigated. He found that when a country's economy changes from being highly regulated towards being deregulated, technology supplier firms tend towards increases in equity-ownership. Trade compacts between countries increase the interest of technology supplier firms in cooperation, and the tendency towards equity ownership increases. High political risk in host countries reduces technology supplier firms' degree of investment (a shift from mergers and acquisitions towards licensing). Berg's final finding was that as global competition increases, the tendency for technology suppliers' towards equity-ownership in cooperation increases. The firms that were investigated were small technology supplier firms.

Root (1987) listed the external and internal factors influencing the choice of international market entry mode (e.g., indirect and direct exporting, licensing, joint ventures, service contracts) of MNEs.

The most important external factors are: Target country market factors (e.g., size and growth prospects, competitive structure, etc.); target country environmental factors (e.g., political, economic and socio-cultural factors, government policies regarding foreign investment, etc.); target country production factors (e.g., the availability, quality and cost of material inputs, labour and other factors of production, etc.); home country factors (e.g., market, production, competitive and environmental conditions).

The most important internal factors are: Company product factors (i.e., the extent of product differentiation, the service content, technology intensity, and the ability to standardize products globally) and company resource/commitment factors (i.e., management, capital and technology resources, production and marketing skills, and the company's overall commitment to international business).

Root's (1987) model for choosing the right international market entry mode is a *rational-analytical* model which involves a number of stages for determining the most profitable entry mode. First, it requires the rejection of modes which are not possible because of the influence of external factors. Second, the most profitable entry mode within the remaining possibilities is selected under political and market risk considerations.

Gomes-Casseres (1990) observed that ownership structures of MNE foreign subsidiaries are determined by a mixture of these two processes. The results of his study suggest that a theory about the MNEs' selection of technology transfer mode behaviour consists of not only the costs and benefits perceived by the firm, but also the impact of relations between firms and host country governments.

Davidson and McFetridge (1985) examined the joint impact of receiving countries, and company and technology characteristics on the choice of transfer mechanism. They found that the age of the technology, prior transfers of the technology, the relationship of the technology to suppliers' principal line of business, the suppliers' R&D intensity, and the prior existence of affiliates in receiving countries and other prior aggregate transfer activities of the suppliers affect the choice of transfer mode. Close relationships among the mode of technology transfer and the characteristics of the technology, technology supplier firms and certain demographic and geographic characteristics of receiving countries were found. They did not find a strong relationship between mode of transfer and public policies of receiving countries. Moreover, they found no relationship between transfer mode and economic characteristics of receiving countries.

3.2.2 Host government foreign investment mode preferences and regulations:

Chaudhuri (1988) pointed out that there is a common conclusion in developing countries on the importance of MNEs as suppliers of new technologies. The only point of conflict is the mode of transfer. He found that those countries prefer to acquire technology through *unbounded* channels like joint ventures, licensing and turnkey projects rather than FDI, in order to save foreign exchange by having their national firms produce items that might otherwise be imported (i.e., import substitution). Chaudhuri determined that business leaders in developing countries are aware of all the opportunities that exist in collaborative agreements with MNEs and therefore will try to extract a high share of the total profits from the proposed project. Developing countries seek to minimize the surrender of control to foreigners, while at the same time maximizing technology acquisition (Wright and Russell, 1975).

3.3 Characteristics of Turkey as a Technology Recipient, Host Country:

In the previous section the characteristics of the host country were defined as a significant factor affecting the entry mode of technology owner MNEs. They could also affect the collaboration mode selection of technology recipients. There are three points concerning host country environmental conditions that influence the selection of collaboration modes. They are related to foreign investment and hence the mode of technology transfer, and are described below.

3.3.1 Economic reforms towards liberalization and market-driven economy:

In January, 1980 the Turkish Government announced a major stabilization and economic liberalization programme. The short-term objectives of the January, 1980 decisions were to reduce inflation, improve the balance-of-payments situation through rapid export growth, and re-establish Turkey's international creditworthiness (Baysan and Blitzer, 1990). The essential characteristic of the new Turkish economic policy was primarily outward-oriented. Reforms called for a move away from the historical economic regime that was primarily inward-oriented and characterized by protectionism. Baban (1987) stated that stemming from the products which were produced as import substitutes and which did not have competitive power in the world markets, Turkey faced a balance of payment crisis. As a result of these import substitution policies, an industry which did not have competitive power in the international arena was created.

Furthermore, the principal objective of this policy was to allow market forces, specifically competition, to play a greater role in the economy (OECD, 1983). It was thought that to close the gap with the industrialized countries, Turkey needed both capital, and technical and commercial know-how. Since 1980, the Government has adopted explicit long-term objectives of a more market-directed system of resource allocation; in general, an outward-

oriented trade strategy based on comparative advantage. Trade strategy has shifted from indiscriminate import substitution to export-oriented development. The specific policy objectives included: (i) the adoption of a realistic and fluctuating exchange rate policy; (ii) liberalization of interest rates; (iii) more effective export promotion measures to encourage rapid export growth; (iv) gradual import liberalization, including the dismantling of quantitative restrictions and the rationalization of the tariff structure; (v) a greater role for the private sector by encouraging privatization and limiting the range of sectors dominated by public enterprises; (vi) steps to improve institutional efficiency in key sectors (Baysan and Blitzer, 1990).

Baysan and Blitzer (1990) observed that the most frequently cited positive result of the liberalization programme was Turkey's spectacular export performance, particularly the growth of manufactured exports. Depressed domestic demand and excess capacity have been crucial to the supply-side of this growth. It was found that the growth in manufactured exports did not stem from the establishment of new export industries, but from existing capacity in industries that before had been producing mostly for the domestic market (that is, industries which had originally been established for import substitution). The period after 1980 was one of macroeconomic stabilization, characterized by austerity policies that depressed domestic incomes and demand. In this environment, exports provided an alternative to falling domestic demand. Diversion of production into exports may have been necessary for many firms to avoid bankruptcy. Aricanli and Rodrik (1990) stated that Turkey was perceived as an example of a successful change from inward- to outward-oriented policies during the turbulent economic conditions of the 1980s.

In his study Erdilek (1988) focused on the 1980 economic stabilization and liberalization programme in Turkey from a macro economic and financial perspective. Erdilek defined a significant role for foreign investment in the economic reform as an alternative financial mechanism to external debt in the balance of payments. He stated that the new outward-

looking, export orientation of the economy would benefit greatly from larger capital and technology inflows via FDI.

3.3.2 Foreign investment legislation:

The 1980 economic stabilization and liberalization reforms assigned a significant role to foreign investment. In order to guarantee this, Turkey's foreign investment environment had to be improved substantially (Erdilek, 1988). The bureaucratic practices that had discriminated against foreign investors were eliminated. With the 1980 economic reforms, while the foreign investment law (number 6624) was preserved, some significant modifications were introduced to the application of this legislation. The most important modification was the establishment of a "Foreign Investment Directorate" and consolidation of the various functions of foreign investment procedures under this organization. The long bureaucratic procedures for foreign investment were simplified, and equal treatment to foreign and indigenous investments were enacted. Fundamentally, the legal and commercial environments for foreign investors were liberalized and foreign investment was encouraged (Senses, 1990). Turkish income and corporate tax legislations were amended, and the conditions for foreign tax-payers were improved. Avoidance of double taxation treaties were enacted with other countries (Erdilek, 1988). In addition, to gain the confidence of foreign investors, since 1985 Turkey has been negotiating and signing Reciprocal Promotion and Protection of Investment Agreements with various countries. Then, in 1986, Turkey withdrew the general derogation to the Codes of Liberalization of Capital Movements and Invisible Transactions included within the OECD, aiming to liberalize capital movements and invisible transactions among the member countries. Furthermore, in 1987, Turkey has signed and ratified the Convention on International Center for Settlement of Investment Disputes (ICSID) and Multinational Investment Guarantee Agency (MIGA).

3.3.3 Present situation of foreign investment and the new perception of recipient firms towards collaboration modes:

It was observed that foreign firms were becoming increasingly interested in investing (FDI and joint ventures) in Turkey and Turkish firms were showing greater willingness to enter closer collaborations with foreign partners (OECD, 1983). During the period after 1980 Turkey attracted larger amounts of foreign investment than previously. Expansion of foreign investment in the 1980s was due in part to the improvement in investment legislation and the acceleration of approval procedures. Furthermore, Turkish business community was largely in favour of the move away from protectionism and Government regulation towards market-oriented policies. They recognized that in many sectors there were large and long-lasting opportunities for them if they accepted the law of competition and aligned themselves with world markets. These new attitudes in the Turkish private sector also gave rise to a growing interest in economic co-operation with foreign participation (OECD, 1983).

It was found that the growing number of firms seeking collaboration was not simply an indication of a changed attitude with regard to foreign participation. Rather, it was based on motives which were equally interesting for both partners. The Turkish firms realized that if they were to produce at internationally competitive standards and prices they needed new technologies, the technical know-how, and managerial experience which only foreign partner firms could give them (OECD, 1983).

3.4 Characteristics of Technology Transfer to Developing Countries:

3.4.1 Peculiarities of collaboration objectives in developing countries:

Harrigan and Newman (1990) defined coalition strategies as ways for firms to cooperate. Typically, any firm considering a collaboration wants access to a particular resource (e.g., a specific distribution channel, use of a patent, employees with unusual knowledge and capabilities, an efficient manufacturing plant, or a well-known brand name). Parties to the collaboration should continually need each other's skills in order to maintain an effective collaboration.

Killing (1983) found 3 reasons for creating joint ventures in developed countries: (i) government suasion or legislation; (ii) partner's need for other partner's skills; and (iii) partner's need for the other partner's attributes or assets. Beamish's findings on joint ventures with developing countries are significantly different from Killing's developed country study. Government suasion/legislation was found to be a significantly more important influence on joint venture formation in developing countries (Beamish, 1985; Kiggundu, 1989). Legal requirements and incentives to involve local partners influenced joint venture formation in developing countries. Partners' needs for the others' skills was found to be an important reason for establishing collaborations in both developed and developing countries. The main skills required of local partners were knowledge of the local economy, politics, and culture. Partner's needs for the other partner's attributes (i.e., rights to use or manufacture certain products) and assets (i.e., cash or patents) were found to be important in developed countries, but not in developing countries.

3.4.2 Major concerns in the technology transfer process:

Beamish (1985, 1988) studied joint ventures in developing countries. Data for his investigation were gathered from local partners, MNE partners, and joint venture general

managers of 66 joint ventures in 27 developing countries. Beamish observed that characteristics of joint ventures in developing countries differ from those in developed countries in terms of stability, performance, ownership, reason for creation of the joint venture, frequency of government partners, and autonomy. He suggested that decision-making control in joint ventures in developing countries should be shared with the local partner. It is hypothesized that greater need and commitment between partners results in more satisfactory performance (Beamish, 1988). Killing (1982) analyzed the distribution of decision-making authority between parents of joint ventures, and found that most successful international joint ventures occur when one parent is willing to accept a passive role. On the other hand, Beamish (1985) determined that the management contribution of local parents is crucial to joint ventures in developing countries. He found that performance problems were more serious in developing country joint ventures than those in developed countries. Davies (1977) acknowledges that the lack of expertise, which is the problem of most developing country firms, requires more knowledge transfer.

Kiggundu (1989) stated that most developing countries lack both the technology and the local technology absorptive capabilities for effective technology acquisition. The effective transfer of technology depends on the quality of the working relationship, effective communication, mutual understanding, and the mechanisms for problem solving, decision making, and conflict resolution between technology supplier and recipient organizations. Kiggundu found that in the majority of technology transfer cases in developing countries, little or no effort is spent on the development of this relationship. Kiggundu defined local technological capacity as the entrepreneurial, technical, managerial, intellectual, institutional, socio-political, cultural, and physical resources and infrastructure that exist in an organization (or country) and its immediate environment. General management skills are found necessary for developing effective local technological capacity through technology transfer because they enable recipients to define and identify appropriate

technology transfer procedures. Technology should not be acquired unless recipients have the capacity to operate, maintain, and service it.

Recipients' ability to acquire and operate technology and to build local technological capacity depends on the internal and external factors of the recipient firm (Wallender, 1979). Internal factors are: the firm's history of technology acquisition, present technological skills, organizational structure and climate, present managerial skills, and availability of technical personnel and financial resources. External factors are: availability of markets for inputs and outputs, competition, environmental conditions, government action, local technological infrastructure, and the cost and appropriateness of the technology.

Baranson (1970) stated the major conflicts over technology transfer between supplier firms and recipient firms (and their governments) concern pricing, ownership and long-term technological development. The pricing of technology and the mode of transfer are determined by the relative bargaining power of the contracting parties and the regulation imposed by the recipients' government. Developing countries favour developing indigenous technological capability and prefer licensing to majority control.

Baranson (1970) found developing countries to be in a disadvantageous position in acquiring technology at competitive cost because of a shortage of financial resources, technological absorptive capacity, and production and marketing capabilities. He found developing countries preferred the acquisition of needed technologies through licensing agreements which avoided foreign ownership and ambiguous control, due to the lower bargaining power of developing countries. Baranson observed that MNEs are faced with particular difficulties in developing countries. These originate from lower industrial development and a lack of the skills which are needed to run successful manufacturing operations. The developing countries' desire for rapid industrialization often runs counter to their insistence on national ownership and local staffing in international collaborations.

Commercial expressions of nationalism are undermined by low technological capabilities and a workforce with limited skills.

Aydin and Terpstra (1981) studied the transfer of marketing know-how to the majority and minority owned joint ventures of Western enterprises in Turkey. They found that only 4 of 28 subsidiaries engaged in local research and development. All of these 4 companies were minority foreign-owned. Less foreign control over the minority foreign-owned joint venture companies was found to be the reason for relatively higher local R&D activities.

Aydin and Terpstra found that degree of ownership was the most important firm variable affecting transfer of know-how. The higher the degree of foreign ownership, the more know-how was transferred. However, majority foreign-owned companies were found not to engage in local product development activities.

Leontiades' (1978) study of MNE subsidiaries found that technology supplier firms transferred all their marketing advantages in the home country to recipient firms in developed countries, but only a fraction to the recipient firms in developing countries. This supports the idea of differential transfers between developed and developing countries. It may explain the reason for the difference between Killing's and Beamish's results in their studies of the effects of ownership structures on the collaboration success in developed and developing countries.

Frame (1983) found that MNEs have little incentive to set up R&D facilities in developing countries. MNEs are concerned that such facilities would ultimately work to their disadvantage since they may improve the host developing country's bargaining position in technological matters and may enable host developing countries to develop their own national technology. MNEs are protective of technology they have developed at a large expense — technology which may be vital to the MNEs' international competitive position. This contradicts the successful technology acquisition strategies of the recipient firms

which were mentioned by Killing. Technology recipient firms should be able to develop their own R&D facilities over the time when technology is being acquired so as to not be overly dependent on supplier firms.

Germidis (1977) focused on MNE direct investment in developing countries. He determined that developing countries may acquire higher levels of technology through joint ventures or licensing agreements in such situations: the richer the developing country and the better its indigenous scientific and technological capabilities, the greater advantage it may take of joint ventures and licensing agreements.

3.5 Elements of Successful Technology Transfer:

Perlmutter and Sagafi-nejad (1981) defined six parameters of technology transfer between North and South. These are: the impetus for transfer, which is different in supplier and recipient firms and is self-centred; transfer mode; the four actors (technology supplier, technology recipient, and the governments of the two countries between which technology is being transferred); the content, which includes the characteristics and nature of the technology transferred; methods; and impacts. Perlmutter and Sagafi-nejad (1981) stated that the content and price of the technology and the development impact on the recipient firm and host country differ depending on the mode of technology transfer. The dynamics of technology transfer are governed by the nature of the relationship between supplier and recipient, and the nature of the relationship is governed by the mode of transfer.

Janaro and Bommer (1992) developed an international technology transfer strategy model based on a technology transfer case from the U.S.A. to Mexico. The selection of a particular transfer mode was found to influence the success of the international technology transfer process. The transfer mode was affected by "corporate objectives", the "purpose

of transfer” and “environmental factors”; and was found to affect the marketing and manufacturing strategies of the recipient firm.

Baranson (1970) linked the success of technology transfer (Baranson used the term “transplantation”) as much to the supplier’s willingness and ability to transfer technical knowledge and skills, as to the absorptive capabilities of recipients. He found that the more adverse the environment and the more complex the technology, the less willing or able MNEs may be to fulfill the transfer unless sufficiently compensated. For a successful transfer a sustained relationship between the supplier and recipient is required, especially in the case of less sophisticated partners. Baranson ordered the modes of technology transfer from FDI to joint ventures and licensing along the dimension of ownership and level of control of MNEs and studied the factors influencing technology transfer logistics of MNEs. The focus of his study was the conflict of interests in licensing versus investment (wholly-owned or joint venture with local partner) decisions of technology supplier MNEs.

Elements that may affect the successful transfer of technology to technology recipient firms have been summarized from the literature. These are: transaction costs of recipients, required attributes for recipients, and utilization of the appropriate technology transfer mode.

3.5.1 Transaction costs of recipient firms:

Davies (1977) investigated collaboration agreements between British and Indian firms. The decision making processes of British firms in their entrance to the Indian market and their choice of strategy were studied. Davies also investigated the technology licensing decisions of local Indian firms (technology recipients). He suggested that licensing should be used to acquire technology if it increases the net present value (NPV) of the new investment by more than the cost of the royalty fees payable as a result of licensing. Davies

was concerned about the lack of expertise in developing country firms and the consequent necessity of transferring more knowledge resources of the technology supplier firm.

Brewester (1958) described some required conditions for making licensing profitable for the licensee. The licensee company has production cost, location, import quota or tariff advantages which protect it from foreign competition. If freight costs are a small part of delivery cost, then it has no production cost advantages and local customer relations and servicing are not important. Furthermore, if import tariff levels are not high enough to offset high costs of manufacturing, the exposure of licensees to foreign competition increases. Under these conditions the licensees lose their competitive advantage.

Contractor (1981, 1985) focused on pricing, profitability, and policy implications of licensing agreements. He noted that if the cost of licensing (royalty) for the licensee is higher than developing the technology itself, licensing is not a favourable option. However, this consideration is relevant only for companies which are capable of developing technology.

3.5.2 Required attributes for recipient Firms:

Killing (1977, 1980, 1983) studied licensing and joint ventures from the point of view of technology dependent firms. He analyzed (1980) licensing and the formation of joint ventures from the standpoint of technology recipient firms. He acknowledged the conditions under which a firm without technology should attempt to acquire it, via either of two kinds of licensing agreement or two kinds of joint venture. The normative model was described the conditions under which technology-deficient firms should and should not make use of current technology licensing agreements, current and future technology licensing agreements. The two types of joint ventures included joint ventures where technology recipients would own a strong controlling interest and joint ventures in which they are approximately equal owners with technology suppliers.

3.5.2.1 Absorptive capacity:

In his study —Reverse Licensing—, Shahrokhi (1987) analyzed international technology transfer to the U.S.A.. This study investigated characteristics of licensee companies, their motivation for acquiring foreign technology, the extent of technology licensing, and the types of licensing agreements in the U.S.A. from the standpoint of licensees. The importance of licensing in international transactions was emphasized. The transfer of technology was found to take place at the science, technology, or production levels. For the transfer of technology, at the technology level the licensee must have technical competence (i.e., development, manufacturing and marketing capabilities) in order to understand, develop and adopt the technology. Licensees must have some engineering competence in order to adopt technology at the production level.

Shahrokhi emphasized the important factors for an effective technology transfer. These are: absorptive capabilities of the licensee, type of technology transferred and effective communication between licensor and licensee.

The absorptive capacity of technology recipients was found by Frame (1983) to strongly affect the international transfer and adoption of technology. If technology recipients have substantial scientific and technological capabilities, they can readily absorb technology and will have little dependence on the technology suppliers. In this case adoption may occur rapidly and the transfer of technology may be profound, giving recipients new capabilities that will enable them to become technologically self-sufficient. If technology recipients have weak scientific and technological capabilities, the adoption of technology might be rather slow and the transfer superficial. In this case, recipients will be heavily dependent on supplier firms.

In his study of international technology transfer in the Middle East, Erdilek (1985) determined that the greater the capability of recipients to transmit and receive information,

the greater the reduction in costs associated with transferring technology. This subsequently led to the possibility of more and faster technology transfers.

3.5.2.2 Minimal level of technical skills and developing in-house technological competence:

Technology acquiring firms should have the technical expertise to evaluate technology that has been offered and the R&D facilities and skills to improve the manufacturing technology (Killing, 1977). It was necessary for recipients to judge which supplier firms would be capable of remaining with, or ahead of, the competition and be able to transfer the required technology for at least the period of the technology transfer agreement. Erdilek (1985) stated that recipients must have adequate education or experience to at least recognize that the knowledge being transferred is useful for their firms.

Killing stated that, under conditions in which technology recipients are not able to develop their own R&D facilities and technological capabilities following technology transfer, purchasing technology was found as a non-viable strategy for continued development. According to Killing's "Licensing Cycle" model, at the later stages of the licensing agreement licensees should start to develop their own technological capabilities and in the course of time should reduce their dependence on licensors. Otherwise, licensees will be detrimentally dependent on licensors. The recipient would then settle into a state of permanent dependence on the supplier. He found that technology recipient firms with strong R&D capabilities often obtained technologies early in their life cycle and faced no export restrictions. His conclusion was that although manufacturing under license may provide a continuous flow of skill improvement for long-term growth, an unhealthy degree of dependence upon the licensor may result. He argued that licensing is beneficial only to firms that use it as a means to an end—that "end" being the establishment of in-house R&D competence.

Erdilek (1985) stated that the long-run viability and continued growth of a firm in international competition depends on its progression from initially being a mere purchaser-adaptor of all technology to eventually becoming a creator-seller of at least some technology.

3.5.3 Selection of the appropriate technology transfer mode:

Calantone et al. (1990) presented a framework of international technology transfer. They referred to prior experiences of firms and cultural, economic, and political conditions as factors that affect firms' selection of technology transfer mode. In their international technology transfer strategy model, Janaro and Bommer (1992) stated that the transfer mode was an outcome of "corporate objectives", "purpose of transfer" and "environmental factors".

Killing's prescriptive model created a set of guidelines to help select the appropriate mode of technology transfer for the recipient firms. The appropriate mode varies with the degree of learning required by the recipient and the scale of the project.

In evaluating the types of collaborative agreements, the cost of these agreements to technology acquiring firms and the effectiveness of the information transfer process between the firms are the critical factors. Killing (1980) outlined a set of guidelines to help technology seeking firms to choose among the modes of technology transfer. Choice of the mode of technology transfer is based on the knowledge needs of the technology recipient firm. The more technology recipient firms need to learn about new businesses, the stronger the linkage they need to form with technology suppliers. The need for learning on the part of recipient firms will depend: on the extent to which they are moving away from their established base of knowledge and skills; and upon the complexity of the technology transferred. The conditions required by technology recipient firms to acquire technology vary with the type of collaboration agreement.

Davies (1977) investigated the differences between joint ventures and licensing agreements with respect to the transfer of technology packages (i.e., the information and know-how embodied for transfer), assistance with management, access to techniques, and adaptation of British technologies to Indian firms. He noted that in joint ventures there are equity shares and hence profit accruing incentives and capital loss risk for technology supplier firms. There is greater motivation and opportunity for contacts between technology suppliers and the technology receivers, and positive incentives for assistance to child firms.

3.5.3.1 Selection logic flow:

The main concerns for efficient transfer of technology via collaborative agreements are to ensure a smooth flow of information and continual contact between the parties. The strength of the linkage between technology supplier and receiver is a function of the contact between personnel of the two firms and the technology supplier firm's degree of commitment so as to ensure real absorption of technology by the recipient. Both contact time between the parties and the supplier's level of commitment will depend on the type of collaboration agreement chosen. According to Killing's (1980) "logic flow" of recipient firms' technology transfer mode selection, the "degree of diversification intended by technologically dependent firm" determines the "degree of learning" required. Subsequently, the "degree of learning required" determines the "strength of relationship necessary between sending and receiving firms." Finally, the "strength of relationship necessary between sending and receiving firms" determines the type of license agreement or joint venture that should be selected. The further acquired technology moves away from the existing skills and knowledge of technology recipient firms, the more learning, and hence the more contact time and the stronger the relationship between the parties, is required.

3.5.3.2 The functions of technology transfer which influence the selection:

Shahrokhi (1987) acknowledged the motivations of licensees for entering licensing agreements. These are: to acquire the needed technology and avoid the risk of R&D expenditures, to supplement their own existing R&D, to acquire the right to operate (because of an existing patent on technology), to diversify and expand to related or unrelated operations and to cash in on the name and product of licensor. It was stated that the major disadvantage for recipients was the danger of high dependence on suppliers.

Killing (1980) suggested four functions of technology acquisition which are associated with the relatedness of the recipient's existing skills with the skills required to operate the technology:

1-Strengthening the Existing Business: Firms enter collaboration agreements for the acquisition of technology in areas of their existing business. The required technical and marketing skills already exist in the firm. Companies may be compelled to strike cooperation agreements (licenses) in areas of existing business for two reasons: the company's operations may be blocked by a patent, so it needs to obtain a license in order to obtain the rights to use it; or, if companies prefer to use standard components in production, they must license.

2-Closely Related Diversification: Technology seeking firms operate in closely related industries and acquire technology in order to make close product diversification. In this case either or both technical and marketing skills are related to the existing skills of the firms.

3-Loosely Related Diversification: Firms introduce new products by acquiring technology. In loosely related diversification, firms take a technology for which they have some of the skills to support production and marketing, but not enough. Either marketing or technical skills needed are unrelated to those existing in the firm, but not both. Technology seeking

firms are extremely dependent on technology supplying firms and usually get maturing product technologies. A strong linkage between technology suppliers and receivers is required.

4-Unrelated Diversification: Technology seeking firms wish to be involved in a new business which requires technical and marketing skills which are unrelated to the firms' existing skills. Technology recipient firms will be extremely dependent on technology supplying firms. Strong linkage and the participation of technology suppliers in management are required for the effective transfer of technology.

In Killing's study the very low investment figures for loosely related and unrelated diversifications suggest these recipients acquire product technologies which may be manufactured on the existing general purpose production equipment and do not entail an expansion of capacity.

3.5.3.3 Selection model:

The functions of technology transfer (i.e., the degree of diversification that occurs with the technology transfer) are related to the presence of the (or, relatedness of the existing skills of the recipients with) technical and marketing skills required for the operation, and therefore, recipients' familiarity with the technology. The conditions required for technology acquisition are defined by the recipient firms' familiarity with the technology that they plan to acquire. Recipients' familiarity with acquired technology and the scale of the investment determines the required strength of the linkage with the technology supplier, which determines the appropriate type of collaboration agreement. These relationships are illustrated in Figure 3. As a principle, it was stated that, as a project increases in scale and degree of diversification, the necessary strength of linkage between parties increases and the mode of specified collaboration agreement reflects this (Killing 1980, 1983).

Figure 3: Killing's Prescriptive Model

The model above reflects the belief that recipients should be more conservative as the required financial investment in their diversification rises. To the degree that the diversification involves higher capital outlay, the recipient will require a stronger linkage with its technology supplier (Killing 1980, 1983).

Summary:

In order to define the determinants of the international technology transfer mode, literature from various fields has been reviewed. The interrelated factors affecting technology transfer logistics are defined by Baranson (1970). The literature reviewed focused on the preferences of technology supplier MNEs and technology recipient host countries for each technology transfer mode. The bargaining power of host countries and technology supplier MNEs was found to be a factor in technology transfer mode selection.

The characteristics of technology, government legislation, taxation, and market conditions of both technology recipient and supplier firms and their countries were found to affect the choice of technology transfer mode. Researchers have focused on international market entry and technology transfer mode selections of MNEs (Anderson and Gatignon, 1986). Alternative international market entry modes and possible trade-offs in non-equity versus equity investment decisions of MNEs were investigated. Comparative analysis between FDI (i.e., wholly-owned subsidiaries), joint ventures and licensing agreements was done (Stobaugh, 1984).

Influences of host government foreign investment legislation on market entry mode were discussed by Gomes-Casseres (1990). Technology recipient host country governments' preferences (i.e., macro economic factors) affecting the choice of technology transfer mode (i.e., FDI, turnkey agreements, joint ventures, licensing agreements) were emphasized by Chaudhuri (1988).

The literature includes the preferences of technology supplier firms and technology recipient countries. However, the issues considered by the recipients which are the closest parties to the transferred technology, on the selection of a technology transfer mode have been ignored. The factors affecting the technology recipient firms' transfer mode preferences have not been emphasized in the literature.

The factors that were found to affect international market entry mode decisions of MNEs' were used to understand the technology transfer mode selection process. Host government influences, which have a common effect on both parties in the agreement; and the transfer mode preferences of technology supplier firms with regard to the nature (age, complexity, value and importance) of the technology were also adopted from literature and used to define the key points of technology transfer mode selection.

Internal and external factors affecting the choice of international market entry (technology transfer) mode were gathered from Root's (1987) and Wallender's (1979) studies. Wallender focused on technology recipients, Root focused on the technology supplier MNEs internal and external factors. A combination of these factors were used in the present study as the technology recipients' expected internal and external factors affecting the technology transfer mode selection.

Strategies to ensure the successful transfer of technology via collaborative agreements have been studied by various authors (Contractor and Sagafi-nejad, 1981; Harrigan, 1985, 1986; Geringer, 1988). Peculiarities of technology recipients from developing countries was studied by Beamish (1988). The implications of technology transfer to developing countries and their recipient firms were derived from a synthesis of the literature concerning technology supplier MNEs and a few studies that have investigated the issue from the point of view of developing country recipient firms. Relevant technology transfer concepts of technology recipient companies were identified and defined. Factors affecting the success of collaborations in developed and developing countries, from Killing's (1977, 1980, 1983), Beamish's (1985-1988) and Kiggundu's (1989) studies, were reviewed.

Killing, who is one of the rare researchers who studied technology transfer from the recipient firms' standpoint, suggested a number of conditions that should exist in a technology recipient company depending on the type of collaboration agreement (Killing, 1980). The concerns of technology recipient firms in developing countries with regard to

Killing's required conditions (e.g., required skills for technology transfer versus existing skills of the recipient and scale of the project) should be considered when making the decision to select a collaborative agreement type that will be used for the technology transfer. Recipients' technological and managerial capabilities are seen as critical issues in the success of technology transfer (Kiggundu, 1989). The objectives of technology recipient firms to acquire technology, and their familiarity with acquired technology were identified as the factors crucial to the success of technology acquisition (Killing, 1980; Kiggundu, 1989). The mode of technology transfer was identified as the basis of successful technology transfer by Killing's studies in this field. His prescriptive model was used as the principle specifying the "correct" use of two types of license agreements and two types of joint ventures. An investigation of whether Turkish recipient firms behave as the model suggests was the foundation for this thesis.

Characteristics of Turkey as a technology recipient host country were gathered from the related literature in order to understand the possible effects of these characteristics on the recipient firms' collaboration mode selection. The country characteristics were reviewed under three prominent issues: economic reforms in Turkey towards liberalization and a market-driven economy; new approach to the implementation of foreign investment legislation subsequent to the economic reforms; and the present situation of foreign investment and the new perception of recipients towards technology transfer modes.

The above factors, from Killing's studies of issues concerning technology recipient firms and Beamish's complementary studies of the perspective of developing countries, were used as the model for the correct use of each type of collaboration agreement by the recipient companies in developing countries. The validity of this model was examined in the case of Turkish recipient firms which have entered collaborative agreements with foreign firms.

Chapter 4: RESEARCH QUESTION

The major research question for this study was:

What are the major issues and significant factors that technology recipient firms consider during their selection of a technology transfer mode?

An empirical study was conducted in order to investigate the collaboration mode selection rationale of Turkish technology recipient firms. The data were utilized in order to verify whether Turkish firms satisfy the norms that the literature suggests as necessary for successful technology transfer.

Chapter 5: RESEARCH METHODOLOGY

In this ex-post facto exploratory field study the data were collected by personal interviews with twelve collaboration partner manufacturing companies or groups of companies located in Turkey. The purpose of the interviews was to explore the technology transfer mode selection rationale and to provide insights into the factors which affected the collaboration mode selection of the technology recipient firms. Interviews were conducted with Turkish executives (one or more from each firm, depending on requirements for gathering the necessary information) who were knowledgeable and associated with the planning and/or execution of the collaboration.

5.1 Population:

The population for the study was Turkish manufacturing companies (and their subsidiaries which operated as marketing, distribution or trading divisions) which entered collaboration agreements (i.e., licensing or joint ventures) with foreign companies. There were no time restrictions in terms of the dates when collaborations were established (so long as someone in the company could provide the required information). In all cases, the agreements had already been implemented.

5.2 Sampling Frame:

The sampling frame of the study was the "Foreign Investment Report (1983-1986; 1987-1989)" of the Republic of Turkey (Prime Ministry, State Planning Organization, Foreign Investment Directorate). These reports included a list of all companies which had foreign capital investment (wholly foreign-owned or joint venture) and licensing agreements

between Turkish and foreign companies located in Turkey up to the date of the reports. Hence the sampling frame was the entire population.

5.3 Sample Size and Selection:

Twelve Turkish collaboration participant companies or groups of companies from various industries comprised the sample. Four licensee firms and eight joint venture partner firms were investigated. The companies were selected by convenience sampling because of the difficulty in gathering information about such historic, strategic decisions, and because it could be difficult to find and interview one or more managers with knowledge about such decisions. In an attempt to minimize the effects of sectorial characteristics, companies were selected from different industries. The twelve sample firms belonged to eleven different industries.

5.4 Data Collection:

Data were collected by personal interviews with the executives who were knowledgeable about past collaborative agreement mode decisions. Semi-structured interviews were conducted in Turkish with executives who had authority and knowledge about strategic planning in the company (The English version of the interview schedule is shown in Appendix I and the original in Turkish in Appendix II).

It was felt that possible response bias would be minimized with open-ended questions. However, possible problems with extracting data from respondents via open-ended questions was kept in mind when the questionnaire was designed. The close-ended section enabled the interviewer to obtain specific information on the collaboration mode selection if the required information could not be obtained with the open-ended questions.

Due to possible response errors based on question structure and sequence, the interview schedule was tested, in English, on two Canadian companies that had been involved in collaborative agreements. The interview schedule was translated to Turkish by the author. In order to reduce potential respondent error, particular attention was paid to finding the right person in the company to interview. Contact was first made by letter (shown in Appendix III) and then the person from whom the required data could be obtained was identified by phone. The possibility of an interview was determined by ascertaining whether or not there was a knowledgeable person at the company who could be interviewed and who was willing to participate in the research.

Due to possible errors in measuring the success of the collaborations, subjective performance measures were utilized. Because of various disadvantages of financial and objective measures of evaluating the performance of international collaborations these methods were not used exclusively. Subjective measures were preferred for providing information regarding the extent to which the technology recipient achieved its overall objectives with regard to the international collaboration (Geringer and Hebert, 1991). The present study shows that the satisfaction of the recipient with the collaboration was not always necessarily positively related to the financial or market success of the firm.

5.5 Field Work Procedures:

Letters signed by the thesis supervisors, which briefly explained the research and the type of desired information (Appendix III), were faxed to potential participants. Phone contact was then established within a few days and the possibility of an interview was explored. Some Turkish firms close for a month during the summer and maintain only skeleton staff levels during this period on duty status. Therefore, due to a restricted data collection period for this research, the holiday closures of the firms were determined and considered when

scheduling interviews. The purpose of the study was explained to executives. All contacted firms except one (Appendix IV) agreed to participate and were subsequently interviewed.

5.6 Data Analysis:

Qualitative data analysis of the personal interviews was performed in order to determine the factors affecting the collaboration mode selection of the recipients. They were compared to earlier findings reported in the literature, and the applicability of factors suggested in the literature were investigated in the Turkish case. The qualitative data analysis methods included summarization and content analysis.

The interviews were transcribed and summarized based upon the key topics (Appendix V). The summarized interviews (Appendix VI) were scanned for specific factors that were said to have influenced the collaboration mode selected. A thematic evaluation of the data consisted of an iterative process of identifying factors, then grouping them into fairly specific factors, then again into broad categories (i.e., external, and internal factors, corporate culture, historical development). This allowed generalizations to be made about the relevant factors for each case. The literature reviewed in Section 3.5 listed recommended factors to be considered in the collaboration mode selection for a successful technology acquisition. These factors were added to the analysis creating a fifth general category: Literature-recommended factors. At this point the data was segmented by factors. Each factor's impact on selection was described using the related sample case as evidence. The importance of factors were derived based on the frequency that they were mentioned in the case analyses. In addition, the findings affirmed or denied the literature's recommendations.

The second phase of data analysis consisted of developing models of the factors influencing the selection of collaboration mode. The data was segmented by collaboration mode. By grouping the data this way, certain common factors were found to motivate (and constrain) the technology recipient's collaboration preference. The models were derived from this data segmentation.

Chapter 6: RESULTS

In the first part of the results section, the general characteristics of the companies that were investigated are explained. In the second part, the factors which affected and were considered by the recipient firm during the collaboration mode selection are reported.

6.1 Sample Description:

The sample was comprised of large Turkish companies in the private sector. The size of the companies was determined in relation to other Turkish companies. However by international standards, these companies would be classified differently —possibly as small or medium sized. Only the firms in Cases 2 and 11 were large by world standards in their industries.

Table 1 provides a general profile of the companies which participated in the study. The information contained in Table 1 is discussed in this section.

Table 1: Characteristics of the Sample Firms

Mode of Collabor.		CHARACTERISTICS						
		Year Est.	Industry	Previous Operations	Satisf. 5 to 1	ex/sl x 100	Annual Sales	1991 Rank
Equally-owned	1	1987	Steel Cord Manufacturing	Newly Established	3	70%	25 Million	N/A
Equally-owned	2	1988	Tire Manufacturing	Same Operation Under License	4	37%	180 Million	34
Equally-owned	3	1988	Auto Spares & Components	Same Operation Under License	1	0	5 Million	N/A
Equally-owned	4	1989	Industrial Steam Boilers	Same Operation Under License	5	0	15 Million	N/A
Joint Ventures	5	1990	Pharmaceuticals	Same Operation Under License	5	0	10 Million	N/A
Equally-owned	6	1987	Tissue paper & products	Same Operation Independently	5	20%	50 Million	216
Equally-owned	7	1989	Auto Manufacturing	Same Operation Under License	4	0	90 Million	87
Minority-owned	8	1989-1990	Auto Spares & Components	Same Operation Under License	3	0	35 Million	338
Current&Future	9	1990	Gas-Meter Manufacturing	Newly Established	4	0	22.5 Million	N/A
Current&Future	10	1987	Construction Equipments	Distribution of the products	4	0	2 Million	N/A
Licensing Agreements	11	1973	Cord & Industrial Fabric Manufact.	Newly Established	4	40%	152 Million	48
Current&Future	12	1986-1987	Household Appliances	Same Operation by imitating	4	2.50%	934.7 Million	4

Satisf: satisfaction; ex/sl x 100: Exports/Sales x 100

The firms in the sample cover a cross section of **industries**. Joint venture cases are presented in the first eight rows of the Table 1. The first 6 cases are the joint ventures in which recipient and supplier parties hold equal shares. In the joint venture firm in Case 7, the recipient partner owns the majority share. In contrast, the joint venture firm in Case 8 is minority owned by the recipient. Cases 9 through 12 are the license agreement cases. Case 12 has a current technology licensing agreement. The remaining three licensing cases include current and future technology.

The **year of establishment** of the collaboration for each case is listed. For cases in which the firms had previous collaboration agreements the foundation date of the last collaboration was used.

Previous operations of the recipient firms: In Case 6, the recipient joint venture partner firm was independently established and operating in the same industry prior to the establishment of the joint venture. In Cases 2, 3, 4, 5, 7, 8 the joint venture partner recipient firms were previously established and had been operating in the same industry with technology licensing agreements. Therefore the data that were gathered about previous technology transfer mode selections are also examined in this chapter.

The interview schedule requested that recipients state their **degree of satisfaction** with the collaboration agreement. The results are reported in Table 1 on a 5 point Likert scale (5: Completely satisfied, 1: Not satisfied at all).

The recipients' **exports to total sales ratio** was determined in order to understand the implementation of outward-oriented policies by the recipient, and to determine whether the firms were local- or global-business oriented.

The annual sales of the recipients in the last fiscal year (in US\$) and their **rank** in the largest 500 Turkish firms list¹ are included in Table 1.

6.2 Findings:

In this section the factors which influenced recipients' collaboration agreement mode selection are reported. First, the external factors that affected the recipients' collaboration motivation and rationale, which consequently influenced the selection and formation of the

¹ "SABAH" Turkish daily newspaper, Ekonomi, August 26, 1992.

mode of technology transfer are analyzed in section 6.2.1. Second, the internal factors that were considered by the recipient in the selection of the collaboration mode stemming from the collaboration rationale are examined in section 6.2.2. Third, the other factors that were found to be influential in the formation of the collaboration mode are listed in sections 6.2.3 and 6.2.4. Finally, the applicability of three factors that the literature recommended recipients consider in selecting a collaboration mode in order to accomplish the effective and economical transfer of technology are examined for each case. The findings concerning the utilization of those success factors are presented in section 6.2.5.

Table 2 shows external, internal, recommended and other factors which influenced collaboration mode selection in each case.

Table 2: Factors which Influenced the Recipients' Collaboration Mode Selection

		CASE													
Existing Collaboration Mode		Joint Venture								f	License Agreement				f
FACTOR		1	2	3	4	5	6	7	8	n=8	9	10	11	12	n=4
1. External Factors	1.1			✓			✓			2				✓	1
	1.2	✓	✓				✓			3					0
	1.3		✓	✓						2		✓	✓	✓	3
	1.4	✓	✓	✓	✓	✓	✓	✓	✓	8					0
2. Internal Factors	2.1									0	✓	✓	✓	✓	4
	2.2									0	✓	✓	✓		3
	2.3	✓	✓	✓			✓	✓	✓	6					0
	2.4	✓	✓	✓	✓	✓	✓	✓		7					0
	2.5		✓	✓	✓	✓	✓			5					0
	2.6				✓		✓			2					0
3. Corporate Culture	3	✓	✓				✓			3	✓		✓		2
4. Historic Dev't.	4				✓			✓	✓	3		✓			1
5. Literature-Recommended Factors	5.1	N	N	N	N	N	N	N	N		✓	N	✓	N	
	5.2	N	N	N	N	N	N	N	N		N	N	N	N	
	5.3	N	N	N	N	N	N	N	N		✓	✓	N	N	

f: frequency; N: No (i.e., was not considered); Y: Yes (i.e., was considered)

1. External (Exogenous) Factors: (Found in Section 6.2.1)

1.1 Non-protectionist, outward-oriented free-market economy in Turkey. (6.2.1.1)

1.2 World economic trend towards globalization and mergers and acquisitions in industries. (6.2.1.2)

1.3 Market conditions. (6.2.1.3)

1.4 Favored preference (resolution-influence) of the supplier. (6.2.1.4)

2. Internal (Endogenous) Factors: (6.2.2)

2.1 Acquisition of the required product design and/or production technology. (6.2.2.1)

2.2 Sovereignty and rights on the managerial control and the profit of the company. (6.2.2.2)

2.3 Allying with an MNE. (6.2.2.3)

2.4 Assistance for expanding sales. (6.2.2.4)

2.5 Growth missions. (6.2.2.5)

2.6 Economical procurement of the inputs, and minimizing the costs. (6.2.2.6)

3. Corporate Culture: (6.2.3)

4. Historical Development of the Collaboration: (6.2.4)

5. Literature-Recommended Factors: (6.2.5)

5.1 Complexity of the technology. (6.2.5.1)

5.2 Degree of Diversification. (6.2.5.2)

5.3 Scale of the project. (6.2.5.3)

6.2.1 External (Exogenous) factors:

External factors are environmental factors which are beyond the control of the recipient firms and which influenced their decisions, corporate outlook and strategies. External factors are the stimulus for the internal factors (i.e., the response of the recipient firm). These factors affected the collaboration rationale of the recipient firms and consequently collaboration mode preferences.

6.2.1.1 Non-protectionist, outward-oriented free-market economy in Turkey. (Cases 3, 6 & 12)

In 25% of both joint venture and licensing cases, recipient firms were reported to be influenced by this factor in their collaboration agreement selection. The implementation of non-protectionist, outward-oriented economic policies and economic liberalization in Turkey exposed the lack of competitiveness and international business experience of Turkish companies. To rectify these weaknesses and to survive in a market driven economy, technology recipient firms sought to strengthen relationships or were encouraged to enter closer relationships with multinational technology supplier firms. The closer relationships with MNEs would bring other fringe (commercial) benefits of collaboration, apart from technology transfer. In order to operate in a free-market economy and to align themselves in competitive world markets, the recipients had to merge resources with MNEs. This inspired recipients to enter joint ventures with supplier firms in Cases 3 and 6 (Cases 3 & 6).

The recipient firms realized that if they were to produce at internationally competitive standards and prices they needed new technologies, technical know-how and managerial experience, which only foreign partner firms could give them via joint ventures (Case 6). The firm in Case 12 only required up-to-date product design and production technology to compete in the local market. Therefore, it preferred entering a licensing agreement, in order

to survive in the competitive conditions of the new era. The firm in Case 11 was exceptional in that it ensured international competitiveness by itself without entering a joint venture with a foreign firm (i.e., MNE). The firm in Case 11 was established by transferring the technology via a license agreement before the economic reforms, in a protectionist economic environment; hence the recipient did not face any marketing problems and progressed. After economic reforms and outward-oriented economic policies were instituted in Turkey, the firm in Case 11 independently expanded into foreign markets and developed its own technological capability. Therefore, it was not required to enter a joint venture.

Ancillary effects:

The outward-oriented economic policies increased Turkish customers' contact with world markets and products. This changed the characteristics of the demand for up-to-date product designs (Cases 10 & 12). The firms in Cases 10 and 12 were affected by the changing market environment, however they had the managerial expertise and the marketing capabilities required to achieve competitiveness within Turkey. These firms were lacking up-to-date competitive product designs, and therefore licensing agreements were seen as a means to fulfill this requirement.

Economic liberalization in Turkey also motivated foreign supplier firms to enter the market in more direct ways than licensing arrangements, such as joint ventures (OECD, 1983). Due to changing preferences of the suppliers, transferring technology via licensing agreements became more difficult for the recipients (Cases 8 & 12).

6.2.1.2 World economic trend towards globalization and mergers and acquisitions in industries. (Cases 1, 2 & 6)

3 of the 8 recipient firms which entered joint ventures were affected by this factor. The world economic trend towards mergers and acquisitions reduced the number of firms in the industry. Therefore, competition became more intense and increasingly difficult to transfer technology without allying with multinational technology suppliers. The survival of technology deficient smaller firms became more dependent on allying with MNEs. Non-protectionist economic policies and economic liberalization in Turkey spread the effects of globalization, and mergers and acquisitions in the country. This factor encouraged recipient firms to enter closer relations (i.e., joint ventures) with multinational technology suppliers in order to ensure their survival by being shielded by the MNEs.

6.2.1.3 Market conditions. (Cases 2, 3, 10, 11, 12 and in its prior collaboration agreements, Case 8)

In 2 of the 8 joint venture and 3 of the 4 licensing cases recipients firms were affected by this factor. However, market conditions had different effects on various cases:

Tough market conditions in Turkey inspired the recipients to expand into international markets. However, they did not have international marketing skills and capabilities. The higher set-up costs and break-even points made the lean local market more a dilemma for recipient firms. In order to procure international sales capabilities they preferred entering joint ventures, which would induce stronger relations and hence marketing assistance from the supplier (Cases 2 & 3).

The characteristics of demand in the market influenced technology transfer decisions of the recipients. When imitated product designs were not sufficient to retain competitiveness they had to acquire up-to-date and proper designs. This led the recipients to enter licensing agreements (Cases 10, 11, 12 and Case 8 in its prior collaboration agreements).

Ancillary effects:

The market conditions in Turkey and in the region also influenced the preference and investment decisions of the suppliers. In the industries where the Turkish and/or regional market was growing, suppliers were encouraged to prefer more direct entry modes (i.e., joint ventures) in order to increase returns (Cases 1, 2, 5, 6, 7 & 8).

6.2.1.4 Favoured preference (resolution-influence) of the supplier. (Cases 1, 2, 3, 4, 5, 6, 7 & 8).

Preferences of suppliers were found to influence the formation of the collaboration modes in all the joint venture cases. As a result, it was deemed to be the most important external factor influencing the establishment of joint ventures. As an integral component of all agreements, both sides were supposed to have an influence on it. Especially in establishing a joint venture, both parties should be in favour of the partnership and investment, (i.e., either actively offering or passively waiting to enter a joint venture). However, the suppliers had stronger bargaining power in the establishment of joint ventures.

In the case of joint ventures, supplier firms were also willing to invest in Turkey. Following economic liberalization and market growth in Turkey, the market became more attractive for the technology suppliers, particularly those which had operations in Turkey as licensors. As a result, they were now willing to enter joint ventures with their licensees (Cases 3, 4, 7 & 8).

In Case 8, the influence of the supplier was more than a preference: it dictated the type of collaboration and even the ownership structure (type) of joint venture. The recipient firm was compelled to accept the ownership structure (agreement type) proposed by the supplier simply to avoid termination of the licensing agreement which for 15 years had been supplying the required technology for ongoing manufacturing operations.

6.2.2 Internal (Endogenous) factors:

Internal factors are the factors which technology recipient firms have control over and are able to manipulate. These factors are responses to environmental conditions, and the rationales and strategies of the recipient firms.

6.2.2.1 Acquisition of the required product design and/or production technology. (Cases 9, 10, 11, 12, and in their prior collaboration agreements, Cases 2, 3, 4, 7 & 8)

This factor was found to influence the formation of collaboration modes in all the licensing cases. The sole existence of the motive for transferring the proper product design and production technology encouraged technology deficient firms to enter licensing agreements. These firms, irrespective of their familiarity with technology, perceived licensing agreements as the principal and appropriate way of transferring technology.

The firms in Cases 2, 3, 9 and 11 entered new industries and transferred production technology and product designs via licensing agreements which were seen as the primary way of acquiring the proper production technology and product design. Therefore, they diversified into unrelated (Cases 2, 3 & 11) or loosely related (Case 9) products with licensing agreements. The firms in Cases 4, 7, 8 and 10 established manufacturing operations for the products which they had been importing and distributing. Therefore, they entered licensing agreements in order to acquire the technology they needed for vertical integration in fields where they previously had the required marketing skills, but not the technical skills. The firm in Case 12 was operating in the same industry and producing similar products, but without a license, by imitating. Market conditions forced the firm in Case 12 to update its product designs and improve quality by adopting newer technology.

Thus, the firm decided to transfer technology and entered a licensing agreement in its existing business.

Even with joint ventures, recipient firms perceived the technology license section of the agreement as the part associated with the transfer of proper product design and production technology. Since the recipients were able to transfer the required technology with licensing, there was no need to enter a joint venture. Otherwise, the recipients would try to establish stronger linkages to ensure the continuous flow of the required technology through a joint venture (Case 8). Due to globalization and mergers and acquisitions in the world economy, competition became more intense and increasingly difficult to transfer technology without equity participation of suppliers (Cases 8 & 12).

When the recipients were not motivated by factors 2.3, 2.4, 2.5 and/or 2.6 (i.e., allying with an MNE, assistance for expanding sales, growth missions, and economical procurement of the inputs and minimizing the costs), and did not need the assistance of suppliers on these issues, entering a joint venture was seen as superfluous, and licensing agreements were preferred (Cases 9, 10, 11 & 12). This implies that when recipients only need the technology and not the commercial benefits of allying with an MNE, licensing agreements were preferred. When recipients need some fringe benefits other than the technology, they tend to strengthen the relationship with the supplier through joint ventures.

In order to acquire future technological developments, firms preferred to enter current and future technology licensing agreements (Cases 9, 10 & 11).

6.2.2.2 Sovereignty and rights on the managerial control and the profit of the company. (Cases 9, 10 & 11)

75% of the recipient firms which selected licensing agreements were found to consider this factor in their collaborative agreement selection. Maintaining managerial control was important in influencing firms' decisions to enter licensing agreements. Since the recipients were able to acquire the technology via licensing and did not require marketing assistance and dispersal of the business risks, licensing agreements rendering acquisition of technology by royalty payments were preferred by the recipients. This allowed the recipients to maintain managerial control of their companies. These firms did not want to become dependent on the supplier firms and limit their connection with the supplier solely to technological issues.

On the other hand loose relations with the suppliers decreased the concern of the suppliers about the recipient firms and increased the recipients' operational risks. Since financing was not a factor that influenced the collaboration mode selection of the recipients investigated, these firms did not want to share the ownership and profits of the firm. Joint ventures were thought to limit the flexibility of the recipient company. The firms in Cases 9, 10 and 11 did not want to share ownership of the company and preferred entering licensing agreements without considering the effectiveness of technology transfer.

Sovereignty and power of management were also issues during the establishment of joint ventures. Recipient firms desired to hold majority shares in the joint ventures, often in conflict with the preference of the suppliers. However, since the recipients had lower bargaining power, they consented to equal shares with the suppliers (Cases 3 & 6).

6.2.2.3 Allying with an MNE:

This is the second most influential factor for joint venture selection. In 6 of the 8 joint venture cases, the recipient firms wanted alliances with world leaders in the industry. Aspirations for closer relationships and alliances with powerful MNEs inspired the recipient firms to enter joint ventures. The recipients would not enter a joint venture if the suppliers were not leading MNEs in the industry (Cases 2 & 6). The main motives for strengthening the relations in existing collaborations or entering collaboration agreements which would induce tighter relations in order to provide alliances with MNEs are listed and explained below.

I- Co-management, merging power and spreading business risks. (Cases 1, 2, 3, 6 & 7)

The world economic trend towards globalization and mergers and acquisitions has reduced the number of large, technologically sophisticated firms and increased the power of the firms which remain in the industry. Recipient firms perceived the necessity of reducing risk in the business environment when risk factors and competition were increasing. Therefore, to survive in an industry, recipient firms, which were relatively weak, desired alliances with MNEs. Entering a joint venture and giving a notable share to the supplier increased supplier's concern for the technology acquiring company. Business risks would be shared between the recipient and supplier parties (Cases 1, 2, 3 & 6). The suppliers were concerned about the success, profitability and the technological problems of the recipient firm (Case 7).

This factor motivated recipients to enter equally-owned joint ventures. It was presumed that if the supplier owns an equal share with the recipient, it would be taking adequate amounts of risk and would be as concerned about the success of the company as the recipient (Cases 1 & 2). Also, a shared-management type of joint venture provided the

utilization of the managerial expertise of the supplier company (Case 7), especially when the recipient companies required new skills to compete in a market driven economy.

II- Accomplishing competitiveness. (Cases 3 & 6)

Stemming from globalization in the world economy and the liberalized free-market economy in Turkey, indigenous firms lost the security of protection from the intense competition of the world market forces. Recipient firms lacked the competitive power required to survive in a market-driven economy. Therefore, recipient companies wanted to ally with MNEs in order to ensure their position in the market, even after the entry of MNE competitors in the market (Cases 3 & 6).

III- Acquisition of state-of-the-art technology and up-to-date product design. (Cases 1, 2 & 6)

The acquisition of state-of-the-art technology was possible by entering an alliance with an MNE. The supplier firms were more likely to share their competitive, state-of-the-art technology and newer product designs when they had higher profits rather than royalties at stake. When suppliers had significant capital participation in technology acquiring companies, they were more concerned with the success of them (Cases 1, 2 & 6). The recipient firms would be able to acquire such technologies by entering joint ventures which they could not acquire via licensing.

IV- Secure, continuous and comprehensive transfer of the rapidly changing technology. (Cases 2, 6, 7 & 8)

In industries where the technology was rapidly changing, the firms needed up-to-date, competitive technology in order to ensure survival. Recipient firms preferred entering

alliances with MNEs in order to maintain a continuous and secure flow of technology. Licensing agreements, however, were not perceived as providing a continuous flow of technology to the recipient firms, even though they were current and future technology licensing agreements. Thus, licensing agreements were not seen as a secure way of transferring technology because of the uncertainty of extending technology transfer agreements into the future. In licensing agreements, technology supplier companies have loose attachments to the recipients and low operational responsibility. Hence, it is easier for suppliers to abandon the collaboration or license their technology to other firms in the same host country (Cases 6 & 7).

More comprehensive technology would presumably be obtained by allying with technology suppliers. Otherwise, with licensing agreements, the recipient firms could only license the required technologies for a product range one at a time on a product basis, in a limited manner. On the other hand, with joint ventures recipients were able to acquire the complete technology and designs of a wider range of products (Cases 2, 6, 7 & 8). Also, licensing agreements were not perceived as a complete (fundamental) solution for the technological needs of deficient firms, but as a transient or limited way of acquiring technology for a limited time period. The recipients in most cases did not develop their own R&D facilities while operating with transferred technology. However, when entering joint ventures, recipients were perhaps liberal in their presumption that entire technology pools of suppliers would be freely available to them.

6.2.2.4 Assistance for expanding sales.

7 of the 8 recipient firms which entered joint ventures reported to be influenced by this factor in their collaboration mode selection. Increasing sales was the most prominent factor which encouraged the recipient firms to enter joint ventures —which was the key for obtaining suppliers' assistance and participation in sales issues. It was perceived that

unless recipients required the domestic and/or foreign marketing assistance of suppliers, there was no need to enter joint ventures (Cases 11 & 12).

There were various factors which required suppliers' assistance and participation in the sales issues. Various mechanisms were applied to expand sales.

I- Goods purchase agreement. (Cases 1, 2 & 6)

Goods purchase agreements induced the purchase guarantee of suppliers for a certain amount of the product on a regular basis. The catalyst of this agreement was to achieve economies of scale and optimization of capacity in industries with high break-even points and set-up costs, given the size of recipients' markets. This motivated recipients to enter joint ventures (Cases 1 & 2).

Another inducement to enter joint ventures was utilizing surplus capacity by integrating the multinational supplier's finished and semi-finished product supply-demand balancing system within the suppliers' subsidiaries (Case 6).

II- Integration with the supplier's marketing system and utilization of international recognition. (Cases 3 & 4)

Utilization of the suppliers' distribution channels were required by recipient firms, particularly those which could not market their products in the international arena due to lack of international recognition (Cases 3 & 4). The smaller size of recipients' operations, their narrow product ranges, and lack of international recognition did not allow them to serve customers in advanced, industrialized country markets independently. Therefore, by pooling their inventory with the suppliers' they aimed at expansion in international markets via suppliers' distribution channels (Case 3). This assistance from suppliers could only be obtained through joint ventures. Therefore, recipients preferred entering joint ventures

with technology suppliers in order to integrate with the suppliers' international marketing system.

III- Expanding the market. (Cases 1, 2, 3, 4, 5, 6 & 7)

Growth through expansion of sales in international markets was a factor affecting recipients' decision to enter joint ventures. The motive for entering a joint venture was to expand sales in markets where recipients were not able to sell, but not in markets where they had already established operations and market share. Therefore, not only sharing their potential market with suppliers, but expanding into international markets and accomplishing growth encouraged technology recipient firms to enter joint ventures (Cases 2, 3, 4, 5, 6 & 7).

Recipient firms did not generally have the opportunity to sell their products to foreign markets with licensing agreements (Case 8). Under the licensing agreement, exports of the products were also restricted, or allowed only in defined territories. Often, the territories recipients were allowed to export were small and less attractive markets, which did not satisfy the recipient firms (Cases 3 & 4). These export restrictions drastically decreased capacity utilization and profitability of recipient firms. Due to the suppliers' concern about the profitability of recipients, joint ventures between the two allowed recipients to export to larger and more attractive markets (Cases 1 & 3). In order to provide an alliance with the supplier with regard to sales issues and exporting rights to larger markets, recipient firms had to enter joint venture agreements.

IV- Transfer of marketing know-how. (Cases 5 & 6)

Acquisition of marketing know-how was a factor that influenced the recipients' decision to enter a joint venture agreement. Via licensing agreements it was not possible. Recipient

Turkish firms were not only deficient in technology, but also in advanced marketing techniques. Following the establishment of joint ventures, not only technology, but also advanced marketing and the market development know-how and experience of the suppliers, were utilized (Cases 5 & 6).

6.2.2.5 Growth missions. (Cases 2, 3, 4, 5 & 6)

The growth mission was the third most influential factor which encouraged recipients to establish joint ventures. 5 of the 8 recipients which entered joint ventures considered this factor in their collaboration mode selection. Growth appeared in two different ways: growth in capacity, with the initiation of investment for additional capacity stemming from the entrance of suppliers into the company (Cases 2 & 6); and growth in sales, brought on by the merging of the distribution channels and markets of the parties (Cases 3, 4, 5).

Growth prospects encouraged recipient firms entering joint ventures because it countered the discouragement resulting from shared ownership. Recipients gave up part of their share in the company in return for the growth in capacity and sales that was induced by allying with suppliers. Recipients did not want to share ownership but wanted to induce growth and merge power associated with joint ventures. In the cases where the growth factor was taken into consideration, the supplier would invest in capacity expansion following the establishment of the joint venture. The expansion of capacity was the factor which eliminated the perceived negative effects of losing the dominant position by the recipient. Joint ventures were perceived as short-cuts to accomplishing growth and general intensifiers for recipient firms (Cases 2 & 6).

6.2.2.6 Economical procurement of inputs and minimizing costs. (Cases 4 & 6)

Economical procurement of inputs and minimizing costs was considered in the collaborative agreement selection of the recipients in 2 of the 8 joint venture cases.

In licensing agreements, licensor companies tended to obtain more benefits than simply royalties from the operation. For example, licensors charged extravagant prices for the inputs that they supplied to licensees. It increased the operating costs of the licensee firms, reducing their competitiveness. As a result, joint ventures were sometimes preferred because suppliers would share in the profits of the company in addition to royalties, and thus be more concerned with the success of the company. In joint ventures, the recipient firms had opportunities to purchase inputs at lower costs (Case 4). If the recipients' operations relied extensively on imports of raw-materials from suppliers, recipients were more willing to enter joint ventures to ensure the continuity of input procurement (Case 6).

6.2.3 Corporate culture. (Cases 1, 2, 6, 9 & 11)

In 3 of the 8 joint cases and 2 of the 4 licensing cases, corporate culture played an influential role in the formation of collaboration modes. The recipient firms' corporate cultures, which were affected by economic policies and commonly used collaboration modes in the host country, were found to influence their collaboration mode selection rationale.

Outward-oriented economic policies and commonly used modes of collaboration influenced the corporate cultures of recipient firms, and compelled them to adapt to the changing economic environment in the country. Due to the integration of the Turkish economy with the world economy at the beginning of the 1980s, recipient firms started having global business objectives. They recognized that they had large and long-lasting opportunities in

many sectors if they would accept the law of competition and align themselves with world markets. Thus emerged the requirement for, followed by the perception of a need for, international business experience and competitiveness of the recipient firms in operations outside Turkey and even in the domestic market after the adoption of non-protectionist economic policies. This factor motivated recipients to acquire those ingredients from world leading MNEs (Case 6).

These new attitudes in the Turkish private sector gave rise to a growing interest in entering joint ventures with foreign partners (OECD, 1983). Joint ventures had been a popular mode of collaboration since the economic reforms of the 1980s. Turkish firms started to change their "family business" characteristics of conservatism and close-ownership structures by entering equity partnerships with foreign firms (Cases 1, 2 & 6). Before economic reform in Turkey, joint ventures were not as well-known as more commonly used collaborations, such as licensing. Firms were mostly local-market oriented, and because of protectionism did not face marketing problems. Therefore, they did not consider entering joint ventures with foreign firms but preferred licensing agreements (Case 11).

Ongoing manufacturing operations under licensing agreements which had been signed before the economic reforms were converted to joint venture agreements. Firms which maintained inward-oriented (domestic market oriented) policies (Cases 10 & 12) and firms which maintained a conservative corporate culture (Case 9) continued to prefer operating with licensing agreements.

6.2.4 Historical development of the collaboration. (Cases 4, 7, 8 & 10)

In 3 of the 8 joint ventures and 1 of the 4 licensing cases, historical accounts of collaborations influenced the formation of the collaboration mode. As the parties in the

collaboration functioned together, the relationship between the firms was observed to gradually grow closer. Hence, the strength of the relationship in a collaborative agreement was not only an outcome of a decision made about the requested extent of the relationship at the beginning of the collaboration, (depending on the degree of learning required and the scale of the projects), but also the result of the historical development of co-functioning.

The collaboration between parties often started with simple trading agreements or simple assembly operations, and grew gradually closer (Cases 4, 7, 8 & 10). The content of the operation gradually became more complex and extensive as the recipient firms operated in and became more familiar with, their respective industry. Subsequently, as recipients became more familiar with the business and the technology, the relationships with technology suppliers became stronger, and the mode of collaboration reflected the extent of the relationship between the parties. The collaborations which had started as distribution operations were modified to include manufacturing operations under license and finally transformed into joint ventures with the advancement of the manufacturing operations and elaboration of the business. Therefore, as the collaboration proceeded the parties to the collaboration became closer and the mode of collaboration shifted towards joint ventures.

The recipients' three stage strategies for introducing manufacturing operations were as follows: first, to establish the operation as a low investment, low risk and low complexity operation (i.e., trading and distribution operations); then, due to familiarity with the product and local market, operations started to include assembly and simple manufacturing operations under the technology license of the supplier; and finally, since the manufacturing operation was becoming intricate and the recipients had growth and international business missions, moving towards a joint venture was preferred (Cases 4 & 7).

The historical development of collaboration agreements could also cause recipients to be highly dependent on one supplier firm. In Case 8, after operating together for many years the recipient was completely dependent on the supplier and had little bargaining power

when the supplier suggested acquiring a majority share in the company. The recipient eventually lost control of the company by entering into a minority owned joint venture.

6.2.5 Literature-Recommended factors:

The factors that the literature recommends as relevant for technology recipient firms to consider when selecting a collaboration mode are examined with respect to the sample cases. Recipient firms were recommended to select a collaboration mode by considering two main factors: one is the cost of transferring the technology using a license agreement or a joint venture; the other is the effectiveness of the technology transfer process under each mode. The effectiveness of the technology transfer is the outcome of "required learning" assumptions: the more a recipient firm needs to learn about the business in which the transferred technology relates, the stronger the relationship it needs to form with the supplier. Its need for learning will depend on the complexity of the transferred technology and the degree to which the firm is moving away (degree of diversification) from its established base of knowledge and skills. The mode of collaboration determines the strength of the relationship between the parties in the agreement. The collaboration mode that provides stronger relations and increases the opportunity of effective technology transfer also increases the cost of the technology transfer for the recipient. Therefore, the complexity of the technology and the degree of diversification should be considered by recipients when selecting the mode which will accomplish an effective and rational technology transfer. The findings on the relevance of these required factors are reported below.

6.2.5.1 Complexity of the technology.

The complexity of the technology is one of the normative factors determining the degree of learning required for the recipient. Complexity is the factor which dictates the required closeness of the relationship between the recipient and supplier, and hence the mode of technology transfer.

However, the complexity of the technology was not an issue considered by the recipients in determining the strength of the relationship with the supplier and the mode of collaboration (Cases 1, 2, 3, 4, 5, 6, 7, 8, 10 & 12). With the exception of Cases 9 and 11, the complexity of the technology was not an issue in the selection of collaboration mode. During the interviews recipient firms were observed to be overconfident about their capability of adopting and operating even the most complex technologies. For example, an interviewee mentioned that they did not foresee any problems transferring a very complex technology despite the fact that Turkey is a technology deficient, developing country.

6.2.5.2 Degree of diversification.

The further the technology recipient firm moves away from its established businesses, the more it needs to learn about the business in which the technology transferred relates and hence, the stronger the relationship it needs to form with the technology supplier. Relatedness of the transferred technology to the recipient firms' existing business operations is the other normative factor suggested by the literature for determining the strength of the linkage required between the parties and thus the selection of a collaboration mode. The more the recipient moves away from its established business(es), the more it will be dependent on the supplier.

Not one of the technology recipient companies took this factor into consideration in the selection of technology transfer modes. Contradicting the literature, they started to operate

with licensing agreements, which gave looser linkage, in industries in which they were completely unfamiliar. Afterwards, they converted the collaborations to joint ventures, which rendered stronger linkage with the supplier. This was done after they had operated and became more familiar with the technology and the industry.

For example, the firm in Case 2 had established business operations in a sector completely unrelated to its parent's (a Turkish holding company) existing business operations with a current and future licensing agreement. After operating under license for ten years —until the licensor was no longer capable of providing competitive product technology— the recipient searched for another technology supplier and entered an equally-owned joint venture agreement. Also, the firms in Cases 3, 4, 5, 7 and 8 were newly established manufacturing operations with licensing agreements that subsequently moved to joint ventures. The firm in Case 11 was established with a licensing agreement in an industry unrelated to its parent's (a Turkish holding company) main businesses. The firm in Case 6 entered a joint venture in its existing business which it had been operating independently for 22 years. Thus, the formation of collaboration modes stem from the historical development of the collaboration. It was found that, as far as the collaboration proceeds and as the recipient becomes more familiar with the technology and the operation, the relationship between the parties of the collaboration becomes stronger.

6.2.5.3 Scale of the project (local scale versus international business scale).

As recommended by the literature, the scale of the project should be taken into consideration when selecting a collaboration mode. By allowing suppliers to participate more in the operations of larger projects, risk can be spread to suppliers. The literature recommends that the firms should be more conservative as the financial investment which they are making in their diversification rises. If diversification involves a small capital

outlay, the recipient might risk a weaker link with the technology supplier. It is recommended that as the scale of the planned project by the recipient increases, the relationship with the supplier should be stronger. Therefore, the collaboration mode should move from current technology licensing towards an equally-owned joint venture. This factor was only considered by the firms in Cases 9 and 10 in their selection of collaboration mode and regarded as a influential factor by the firm in Case 8.

Recipients defined the scale of the project based on whether its business orientation was local or international. Differentiation was made between local business oriented projects and international business oriented projects. International business oriented operations were presumed to be large projects which were expanding beyond the local business scale. This factor was found to be relevant in the cases that were investigated. Larger scale projects appeared as the projects which had international business objectives. Therefore, large scale was identified with international business projects, and small scale with local-market oriented business projects. The recipient firms tended to prefer joint ventures for projects which were exceeding the proportions of local business scales, and which had international business objectives. Hence, they shared the expanding business risks and obtained the assistance and experience of suppliers in international business issues. However, they did not necessarily require this assistance for local market oriented business projects.

Chapter 7: DISCUSSION

As a limitation of this study, generalizations may not be made to other countries, because this research is a single country study. However, the results of the study may be applicable to other developing countries that have followed a similar pattern to that of Turkey's economic reforms. Due to the small sample size of the study, it was not possible to use statistical tests for relationships between the characteristics of the recipient firms and the selected collaboration agreement mode. Similarly, inferences about relationships between characteristics of the recipient firms and the influential factors were not possible due to insufficient data (missing values for the close-ended questions). However, descriptive statistics (frequency distributions) were used to derive the importance of factors uncovered in the case analyses. Two models were developed for the collaboration mode selection of the recipients depending on the influential factors. The two models developed are outlined in the next section.

In spite of government policies, which were supportive of foreign investment as additional sources of capital and an alternative to acquiring further external debts (Erdilek, 1988), not one of the investigated joint venture cases were directly motivated by financial factors. Hence, when the government changed financial policies towards the promotion of foreign investment in the 1980s, no peculiar effects on the collaboration mode selection by firms were observed.

7.1 Collaboration Mode Selection Model:

Two models were developed (Figures 4 & 5) to explain the selection rationales of the recipients for each of the two investigated collaboration modes. External and internal factors affected the collaboration mode selection of recipients. In addition, "historical

development of the collaboration” and “corporate cultures” of the recipients also affected the constitution of the collaboration mode.

External factors indirectly affected the collaboration mode selection of recipients by stimulating internal factors. The internal factors were those which had a direct effect on the collaboration mode selection of recipient firms.

The factors that were found to affect the recipient firms' selection of a licensing agreement or a joint venture were used to develop the models for each of the collaboration modes.

7.1.1 Joint ventures:

Recipients which entered joint ventures were influenced by various factors (Figure 4). “World economic trend towards globalization, and mergers and acquisition in the industry” and “non-protectionist, outward-oriented free-market economy in the host country” stimulated the recipients to “ally with MNEs.” This alliance with MNEs was a factor influencing the recipients' mode selection to enter a joint venture. “Market conditions” required “assistance for expanding sales” for recipients, which induced the firms to enter joint ventures. As an exception to the usually indirect effect of external factors, “supplier's preference” towards entering a joint venture directly influenced the establishment of joint ventures. Although it affected the recipients' collaboration mode selection, it was out of the recipients' control. “Economical procurement of the inputs, and minimizing the costs” and “growth missions” also directly affected the recipients' decision to enter a joint venture.

Figure 4: Joint Venture Selection Model

"Corporate cultures" were affected by the economic policies and commonly used collaboration modes in the host country. Corporate culture influenced the recipients' selection of a collaboration mode by affecting their perceptions of collaboration modes and raising the need for a particular mode of collaboration. Historical development of the collaboration influenced the creation of the collaboration agreements and the mode of collaboration as it proceeded. The extent of the relationship, which was an outcome of the

mode of collaboration, was found to be affected by the historical proceeding of the collaboration.

7.1.2 Licensing agreements:

The “non-protectionist, outward-oriented, free-market economy in the host country” and “market conditions” inspired the recipient firms towards “acquisition of the required product design and production technology”. The motive of “acquisition of the required product design and production technology” brought about the selection of a licensing agreement. The motive of “sovereignty and rights on the managerial control and the profit of the company” also inspired the recipient firms to enter licensing agreements (Figure 5).

Figure 5: Licensing Agreement Selection Model

"Corporate cultures" and "historical development" also influenced the formation of licensing agreements as explained in the previous section on the joint venture selection model

7.2 Comparison Between Actual and Literature-Recommended Selection of Technology Transfer Mode:

Table 3 outlines the information required to determine which cases complied with the literature-recommended factors for selection of collaboration modes. Table 3 also compares the literature-recommended collaboration mode with the actual selected collaboration mode for each case. The degree of diversification made by the recipients entering collaboration agreements was defined according to Killing's norms. The scale of the investment made following the establishment of the collaboration agreement in each case was determined in order to define the "literature-recommended collaboration modes" according to Killing's prescriptive model. The projects were defined as "major" (i.e., US\$ 500,000 and more), "moderate" (i.e., US\$ 50,000 to 500,000) and "minor" (i.e., less than US\$ 50,000) by using the same scale that Killing used in his study involving Canadian, American and Western European firms. The figures from Killing's scale seem appropriate for the Turkish case since all of the foreign technology suppliers came from industrialized countries. The collaboration modes that were prescribed by Killing's model (according to the degree of diversification that was made by the firms and the scale of the investment) were listed in the "literature-recommended collaboration mode" column of the table. The actual mode of collaboration selected by the recipients was listed in the fifth column of Table 3

Table 3: Review of the Recipients Collaboration Decisions

CASE	Degr. of Diversif.	Scale of the Investment	Literat-Recom. Collb. Mode	Selected Collb. Mode	Mtv.for Coll.	Decision Stimuli
1	Unrelated	Major (New Capacity)	Equally-owned Joint venture	Equally-owned Joint venture	2.3	Opportunity
2	Existing Business	Major (Capacity Extension)	Current or Cur.& Fut. Tech. Lic.	Equally-owned Joint venture	2.3	Problem Crisis
3	Existing Business	No Additional Investment	Current Tech. Licensing	Equally-owned Joint venture	2.4	Crisis
4	Existing Business	No Additional Investment	Current Tech. Licensing	Equally-owned Joint venture	2.4	Opportunity Problem
5	Existing Business	No Additional Investment	Current Tech. Licensing	Equally-owned Joint venture	2.4	Opportunity Problem
6	Existing Business	Major (Capacity Extension)	Current or Cur.& Fut. Tech. Lic.	Equally-owned Joint venture	2.3	Opportunity Problem
7	Existing Business	No Additional Investment	Current Tech. Licensing	Majority-owned Joint venture	2.3	Opportunity
8	Existing Business	No Additional Investment	Current Tech. Licensing	Minority-owned Joint venture	2.3	Crisis
9	Loosely Related	Moderate	Majority-owned Joint venture	Current&Future Tech. Licensing	2.1	Opportunity
10	Loosely Related	Moderate	Majority-owned Joint venture	Current&Future Tech. Licensing	2.1	Opportunity
11	Unrelated	Major	Equally-owned Joint venture	Current&Future Tech. Licensing	2.1	Opportunity
12	Existing Business	Moderate = Major	Current Tech. Licensing	Current Tech. Licensing	2.1	Problem

Literat-Recom. Collb. Mode: Literature-Recommended Collaboration Mode

Mtv.for Coll.: The main motive cause recipients to enter the collaboration

In order to understand the rationale behind the selection of collaboration modes of the recipients, apart from the factors that were influential in the mode selection, "the main motives provoking recipients to enter collaborations" are reported above. The motive for entering collaboration agreements was "allying with an MNE" in Cases 1, 2, 6, 7 and 8. The motive to obtain "assistance for expanding sales" was reported in Cases 3, 4 and 5. Among the licensing cases, the motive of the all licensees entering these collaboration agreements was "acquisition of the required product design and production technology."

“The type of stimulus” (i.e., opportunity, which was evoked by an idea; problem, which has multiple stimuli; or crisis, which was precipitated by fewer stimuli) (Mintzberg et al., 1976) that evoked the decisions for collaboration were reported above. The firms in Cases 1, 7, 9, 10 and 11 were motivated to enter collaborations by “opportunity” decisions. The firms in Cases 1, 9, and 11 entered new industries with the collaboration aiming for new opportunities. The firm in Case 10 established manufacturing operations for the products it was distributing in order to have the opportunity to increase its profit range. The firm in Case 7 entered a collaboration to provide an alliance with MNEs to improve its current situation (i.e., benefits of an alliance with an MNE, expanding into international markets). The firms in Cases 4, 5 and 6 entered collaborations due to “opportunity-problem” decisions. That is, in the process of solving certain problems opportunities became available. Before entering collaborations, problems were arising in the firm’s (Case 4) ongoing operation, and the firms in Cases 5 and 6 perceived the possibility of problems arising from the changes in current economic environmental conditions. A “problem” provoked the firm in Case 12 to enter a collaboration. The firm’s market position and market share were in jeopardy before entering the collaboration agreement. A “problem-crisis” decision stimulated the firm in Case 2 to enter the collaboration agreement, and by solving the problem the crisis was annulled. The firm lost its competitive power in the market with its existing product range that it had acquired through its prior collaboration agreement. Thus, in order to obtain competitive products it had to establish a new collaboration agreement with another technology supplier. “Crisis” decisions caused the firms in Cases 3 and 8 to enter collaborations. Both firms had to enter new collaborations in order to maintain their operations in their industries.

When the literature-recommended and respondent-selected collaboration modes were compared, it was seen that in only 2 of the 12 cases were the recommended and actually selected collaboration modes the same (Cases 1 & 12). In Cases 2 and 6, the recipient firms entered equally-owned joint ventures in their existing business operations, instead of

a current or current and future licensing agreement by considering the scale of the investments made. Instead of selecting a current technology agreement, the firms in Cases 3, 4 and 5 entered equally-owned joint ventures and diversified in their existing businesses without any additional capacity investment. The firm in Case 7 entered a majority-owned, and the firm in Case 8 entered a minority-owned joint venture for diversification in their existing business without additional capacity investment, instead of entering current technology licensing agreements. With a current and future technology licensing agreement, the firm in Case 9 diversified into a loosely related area where it already had the required technical skills, but not the marketing skills. The firm in Case 10 also diversified into a loosely related area where it already had the required marketing skills, but not the technical skills. For both of these cases majority-owned joint ventures were recommended by Killing's model. The firm in Case 11 diversified into an unrelated business for a major scale project with a current and future agreement rather than an equally-owned joint venture as prescribed by the literature.

The findings of the study did not evince any relationship between the recipients' degree of satisfaction from the collaboration (which was used as a subjective measure of success) and whether the recipients complied with the literature-recommended factors in their collaboration mode selection. The variation between the literature-recommended strength of the linkage between the parties and the actual strength of the linkage established did not seem to decrease the likelihood of the success of the collaboration. Furthermore, no relationship was found between the success of the collaboration and the type of decision stimulus, nor the factors considered by recipients.

The differences between the literature-recommended collaboration mode and selected collaboration mode can be explained with the motives of the recipients upon entering collaboration agreements and special utilization of each collaboration mode. The inability of the literature-recommended collaboration mode to accomplish the goals of recipients'

entering a collaboration might have caused the recipient firms to select another collaboration mode which would have fulfilled their requirements and expectations. These special utilizations of each collaboration mode by the Turkish recipients are explained in the next section.

7.3 Special Utilization of Collaboration Modes:

Models for joint venture and licensing agreements were related to the specific utilization of collaboration modes. The factors affecting the selection of the specific collaboration mode and the use of that mode was a cause-effect type of situation. In this study, both of these two particular subjects were clarified and explained. The factors affecting the collaboration mode selection of the recipient and the issues considered by the recipients on the selection of the mode are explained above in the results section. Discoveries of the study on the specific utilization of each collaboration mode agreement may give an explanation for the different results of the study. Therefore the rationales of the recipient in utilizing licensing agreements or joint ventures were explained. The particular utilization of each of these collaboration agreement modes in the Turkish case was explained.

7.3.1 Licensing practices:

If the factors "allying with an MNE" (factor number 2.3), "assistance for expanding sales" (2.4), "growth missions" (2.5) and/or "economical procurement of the inputs and minimizing the costs" (2.6) do not influence the collaboration rationale of the recipients, and if there is no pressure from suppliers towards the establishment of a joint venture for the utilization of the technology, a licensing agreement will be preferred as a response to the force of acquisition of the required product design and/or production technology factor (2.1). It was found that the utilization of licensing agreements in Turkey was quite

different from Killing's findings in industrialized countries. Technology transfer was the only means recipient firms had of acquiring technology. In-house product development or R&D activities were unlikely due to a shortage of funds and the size of the accessible market that was not large enough to cover high R&D costs. Therefore, licensing agreements were seen as the way to acquire the required technology and to establish and operate manufacturing facilities (Cases 2, 7 & 8). This finding is also supported by Uras's research (1979), which reported the lack of required funds, economies of scale and environmental conditions required for the development of R&D operations in Turkey.

Acquiring product designs by imitation was an option for recipients. However, market demand stipulated required product designs for higher quality products and wider variety. For components and semi-finished products, industrial customers preferred a recognized brand name and approved technology and design. Therefore, recipients had to license the proper production technology and product design from recognized technology suppliers (Cases 8 & 11). In Cases 10 and 12 the characteristics of market demand forced the firms to license technology in order to achieve competitiveness through the production of properly designed, up-to-date products.

7.3.2 Joint ventures:

It was found that if the technology recipient firm had further expectations and demands than acquisition of technology, its preference was towards establishing a stronger linkage than that which was offered by a licensing agreement.

As the main motive for the firms to collaborate is the need to share technical, marketing and/or managerial skills (Frame, 1983), the establishment of joint ventures was found to be the result of recipients' needs for technology supplier MNEs' marketing and/or managerial skills. Licensing agreements were seen as a primary way of acquiring technical skills. In

order to utilize suppliers marketing and managerial skills, however, joint ventures were seen as the viable alternative.

In the cases which changed from licensing to joint ventures, even if the establishment of joint ventures did not induce a marked product diversification for recipient firms, it accomplished an up-grade of product design and production technology. Similarly, it resulted in well-planned, structured technology and general management. It offered the opportunity for acquiring state-of-the-art technology, and continuous, comprehensive and secure transfer of the technology. Allying with an MNE and obtaining assistance for expanding sales were found to be the main motives for entering joint ventures. The benefits, returns, or aims of the recipients from these motives were explained in the findings section under related titles.

The Turkish literature on foreign investment provides support for the results of this study. Uras (1979) who is the author of one of the primary studies on foreign investment in Turkey, mentioned that foreign investment had four benefits for the host country economies. These were: capital, technology, managerial skills, and export experiences and opportunities. He stated that stemming from the structural changes in the industry the importance of the technology transfer has been rising. The diversification of manufacturing investments into new areas, the growth in the scale of investments, the shift towards production of semi-finished and industrial products from the production of consumer goods, export opportunities and/or requirements, and rising concerns about the quality and the costs of the products due to increasing competition in local and international markets raise the importance of the technology transfer. This relevance will continue to grow parallel to industrial development (Soysal, 1974). When Erdilek (1988) listed the expected benefits of foreign investment in Turkey he stated that additional transfers of technology increase the economy's productivity and international competitiveness. Uras (1979) remarked that exclusive technologies could only be acquired by entering joint ventures with

oligopolist owner firms. It was stated that only conventional technologies could have been acquired through licensing agreements.

With regard to technology transfer issues relating to transferring state-of-the-art technology and continuous technology transfer, Uras stated that if licensing agreements were presented as an alternative technology transfer channel (which provides the acquisition of technology through purchase) the advantages foreign investment has over licensing in Turkey will be disregarded.

MNEs bring their worldwide purchasing and marketing organizations to the host countries in which they invest. Thus, they provide an opportunity for firms in developing countries to use these systems to enter markets which would otherwise be almost impossible for them to enter by themselves. Foreign investment also has positive effects on the development of local markets and marketing channels (Uras, 1979).

7.4 Development of Technological Competence and In-house R&D Facilities:

While operating with the transferred technology, gradual development of in-house R&D facilities and technological capabilities were stated to be critical for the long-term success of the technology transfer (Uras, 1979; Killing 1980, 1983; Erdilek, 1985). Progression from being a purchaser of technology to a creator of technology was recommended for the recipient firms for long-run viability and continued growth in international competition (Erdilek, 1985). Otherwise, the technology recipient firm will remain in a state of permanent dependence on the technology supplier firm. However, the business volume of firms in Turkey was not large enough to support R&D costs. In joint ventures and licensing agreements, the recipients presumed that technology licensing fees were a reasonable substitute for R&D expenditures. The recipients tended to develop the capacity

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to adapt the transferred products to Turkey's conditions (Cases 3 & 7). In joint venture agreements, the recipients were not concerned with developing their own in-house R&D activities since the firms were partly-owned by technology suppliers. The R&D operations and know-how pool of suppliers were presumed to be their own, and thus, were utilized. The recipients were not concerned about long term detrimental effects of being technologically dependent on an external source (Case 1). Only the firm in Case 11 progressed from being a purchaser of technology to a supplier of technology. This finding was supported by Erdilek (1985) who stated that in the Middle East "...local R&D efforts in industry are either non-existent or primarily experimental on a limited scale. Consequently, the Middle Eastern countries are all dependent technologically on the industrialized Western capitalist countries...." Uras (1979) also had concerns about the disregard for R&D operations by Turkish firms and stated that technological dependence on foreign investment and expectations for the state-of-the-art technologies from this channel will result in the disregard for the national R&D programmes and cause continual dependence on external sources.

Chapter 8: DIRECTIONS FOR FUTURE RESEARCH

As a direction for future research in the field, researchers could conduct the same or similar research in other developing countries. This would increase the generalizability of the studies and allow conclusions to be drawn regarding the technology transfer mode selection of recipient firms.

Also, future research could focus on how the characteristics of suppliers influence the mode of collaboration chosen by technology recipients. That is, do the tendencies of technology recipients entering either a joint venture or licensing agreement vary depending on the characteristics (international recognition, leadership in the industry, MNE or not) of the technology supplying companies?

The relationship between the technology transfer mode selection rationale of recipients and the selected mode, and the development of in-house R&D operations could be investigated by the researchers. By cooperating with researchers in the development field, the macro-economic effects of collaboration mode selection of recipients on developing countries could be investigated.

Chapter 9: CONCLUDING REMARK

In their collaboration mode selection, Turkish firms were found not to comply with the literature-recommended factors. Their selection of collaboration modes was found to be related to the collaboration rationales and the specific utilization of each collaboration mode, such as licensing agreements as a conventional way of technology transfer, and joint ventures as a way of establishing stronger linkages with MNEs. As a result, licensing agreements were preferred and utilized for technological motives, and joint ventures were preferred and utilized for commercial motives. This study exposed the sharing of managerial and marketing skills as motives of Turkish recipient firms to enter joint ventures.

REFERENCES

- Agmon, T., and M.A. Von Glinow (eds.), *Technology Transfer in International Business*. Oxford: Oxford University Press, 1991.
- Anderson, E., and H. Gatignon, "Modes of Foreign Entry: A Transaction Cost Analysis and Propositions," *Journal of International Business Studies*, Fall 1986, pp. 1-26.
- Arıcanlı, T. and, D. Rodrik, "Introduction and Overview," pp. 1-7, in Arıcanlı and Rodrik (eds.), *The Political Economy of Turkey*, New York: St. Martin's Press, 1990.
- Aydin, N., and V. Terpstra, "Marketing Know-how Transfers by Multinationals: A Case Study in Turkey," *Journal of International Business Studies*, Winter 1981, pp. 35-48.
- Baban, A.S., "Türkiye'de Yabancı Sermaye," pp 23-38, *1987 Sanayi Kongresi Bildirileri*, Makina Mühendisleri Odası Yayın No: 127, Ankara: 1987
- Balasubramanyam, V.N., *International Transfer of Technology to India*, New York: Praeger, 1973.
- Baranson, J., "Technology Transfer Through the International Firm," *The American Economic Review*, Vol. LX, No.2, May 1970, pp. 435-440.
- Baranson, J., *Technology and the Multinationals*, Lexington: Lexington, 1978.
- Baysan, T., and C. Blitzer, "Turkey's Trade Liberalization in the 1980s and Prospects for its Sustainability," pp. 9-36, in Arıcanlı and Rodrik (eds.), *The Political Economy of Turkey*, New York: St. Martin's Press, 1990.
- Beamish, P.W., "The Characteristics of Joint Ventures in Developed and Developing Countries," *Columbia Journal of World Business*, Fall 1985, pp. 13-19.
- Beamish, P.W., *Multinational Joint Ventures in Developing Countries*, New York: Routledge, 1988.

- Berg, R.A., "Cooperative Linkages: Selection Determinants and Performance in the Small Business Sector," *Journal of Global Marketing*, Vol. 5(1/2), 1991, pp. 71-90.
- Blodgett, L.L., "Partner Contribution as Predictors of Equity Share in International Joint Ventures," *Journal of International Business Studies*, First Quarter 1991, pp. 63-78.
- Brewster, K. Jr., *Antitrust and American Business Abroad*, New York: McGraw-Hill, 1958.
- Buckley, P.J. and M. Casson, *The Future of the Multinational Enterprise*, London: Macmillan, 1976.
- Calantone, R.J., M. Lee, and A.C. Gross, "Evaluating International Technology Transfer in Comparative Framework," *Journal of Global marketing*, Vol. 3(3), 1990, pp. 23-46.
- Chaudhuri, A., "Multinational Corporations in Less-Developed Countries: What Is in Store," *Columbia Journal of World Business*, Spring 1988, pp. 57-63.
- Contractor, F.J., *International Technology Licensing*, Lexington: Lexington, 1981.
- Contractor, F.J., *Licensing in International Strategy*, Westport: Quorum, 1985.
- Contractor, F.J., "Ownership Patters of U.S. Joint Ventures Abroad and the Liberalization of Foreign Government Regulations in the 1980s: Evidence From the Benchmark Surveys," *Journal of International Business Studies*, First Quarter 1990, pp. 55-73.
- Contractor, F.J., and T. Sagafi-nejad, "International Technology Transfer: Major Issues and Policy Responses," *Journal of International Business Studies*, Fall 1981, pp. 113-133.
- Dal Cin, P., "Decision-Making by Canadian Informal Investors: Empirical Findings Regarding the Impact of Experience," *ENDEC World Conference on Entrepreneurship*, Singapore, 1992.

- Davidson, W. H., and D. G. McFetridge, "Key Characteristics in the Choice of International Technology Transfer Mode," *Journal of International Business Studies*, Summer 1985, pp. 5-21.
- Davies, H., "Technology Transfer Through Commercial Transactions," *The Journal of Industrial Economics*, December 1977, pp. 161-175.
- Dopkin, J. A., J.B. Burt, K.J. Krupsky, and M.J. Spooner, *International Joint Ventures*, Washington D.C.: Federal Publications Inc., 1988.
- Erdilek, A., "International Technology Transfer in the Middle East," pp. 85-99, in Kaynak (eds.), *International Business in the Middle East*, New York: de Gruyter, 1985.
- Erdilek, A., "The role of Foreign Investment in the Liberalization of the Turkish Economy," pp. 141-159, in Nas and Odekon (eds.), *Liberalization and the Turkish Economy*, Westport, Connecticut: Greenwood Press, 1988.
- Frame, J.D., *International Business and Global Technology*, Lexington: Lexington, 1983.
- Germidis, D., *Transfer of Technology by Multinational Corporations*, Paris: OECD, 1977.
- Geringer, J.M., *Joint Venture Partner Selection: Strategies for Developed Countries*, New York: Quorum, 1988.
- Geringer, J.M., and L. Hebert, "Measuring Performance of International Joint Ventures," *Journal of International Business Studies*, Second Quarter 1991, pp. 249-263.
- Gomes-Casseres, B., "Firm Ownership Preferences and Host Government Restrictions: An Integrated Approach," *Journal of International Business Studies*, First Quarter 1990, pp. 1-22.
- Goulet, D., *The Uncertain Promise: Value Conflicts in Technology Transfer*, New York: IDOC, 1977.
- Harrigan, K.R., "Joint Ventures and Global Strategies," *Columbia Journal of World Business*, Summer 1984, pp. 7-16.

- Harrigan, K.R., *Strategies for Joint Ventures*, Lexington: Lexington, 1985.
- Harrigan, K.R., *Managing for Joint Venture Success*, Lexington: Lexington, 1986.
- Harrigan, K.R., and W.H. Newman, "Bases of Interorganizational Co-operation: Propensity, Power, Persistence," *Journal of Management Studies*, July 1990, pp. 417-434.
- Hennart, J., "Can the 'New Forms of Investment' Substitute for the 'Old Forms'? A Transaction Costs Perspective," *Journal of International Business Studies*, Summer 1989, pp. 211-234.
- Janaro, R.E., and M.R.W. Bommer, "Strategic Issues Affecting an International Technology Transfer," in Khalil and Bayraktar (eds.), *Management of Technology III*, Norcross, Georgia: Industrial Engineers and Management Press, 1992.
- Jeannet, J., and B. Liander, "Some patterns in the Transfer of Technology within Multinational Corporations," *Journal of International Business Studies*, Vol. 9, No. 3, Winter 1978, pp. 108-118.
- Jones, S., "The Analysis of Depth Interviews," pp. 56-70, in Walker (ed.), *Applied Qualitative Research*, Vermont: Gower, 1985.
- Kiggundu, M.N., *Managing Organizations in Developing Countries*, West Hartford: Kumarian Press, 1989.
- Killing, J.P., "Manufacturing Under License," *The Business Quarterly*, Winter 1977, pp. 22-29.
- Killing, J.P., "Technology Acquisition: License Agreement or Joint Venture," *Columbia Journal of World Business*, Fall 1980, pp. 38-46.
- Killing, J.P., "How to Make a Global Joint Venture Work," *Harvard Business Review*, May-June 1982, pp. 120-127.
- Killing, J.P., *Strategies for Joint Venture Success*, New York: Praeger, 1983.

- Leontiades, J., "International Transfer of Company Strength and Weaknesses: A Case Study of the Electrolux Corporation," *European Institute for Advanced Studies in Management, Working Paper 78-30*, Brussels, July 1978.
- Mintzberg, H., D. Raisinghani, and A. Théorêt, "The Structure of 'Unstructured' Decision Process," *Administrative Science Quarterly*, June 1976, pp. 246-275.
- OECD, Foreign Investment in Turkey: 'Changing Conditions Under the New Economic Programme,' Paris, 1983.
- Perlmutter, H.V., and T. Sagafi-nejad, *International Technology Transfer: Guidelines, Codes and A Muffled Quadrilogue*, New York: Pergamon, 1981.
- Reynolds, J.I., "The 'Pinched Shoe' Effect of International Joint Ventures," *Columbia Journal of World Business*, Summer 1984, pp. 23-29.
- Root, F.R., *Entry Strategies for International Markets*, Lexington, Mass.: Lexington Books, 1987.
- Sabah Daily Turkish Newspaper, Ekonomi, August 26, 1992.
- Sagafi-nejad, T., R.W. Moxon, and H.V. Perlmutter, eds. *Controlling International Technology Transfer*, New York: Pergamon Press, 1981.
- Santikarn, M., *Technology Transfer*, Singapore: Singapore University Press, 1981.
- Shahrokhi, M., *Reverse Licensing*, New York: Praeger, 1987.
- Simon, H.A., *Administrative Behavior*, New York: The Macmillan Company, 1964.
- Soysal, E., "Niçin Teknoloji Transferi," *Sevk ve Idare Dergisi*, Haziran 1974.
- Stewart, F., *International Technology Transfer: Issues and Policy Options*, World Bank Staff Working Paper No. 344, 1979.
- Stewart, S.T. Jr., and Y. Nihei, *Technology Transfer and Human Factors*, Lexington: Lexington, 1987.
- Stobaugh, R., "Channels for Technology Transfer: The Petrochemical Industry," pp.157-176. in Stobaugh and Wells (eds.), *Technology Crossing Borders*, Boston, Mass.: Harvard Business School Press, 1984.

- Senses, F., "An Assessment of the Pattern of Turkish Manufactured Export Growth in the 1980s and its Prospects," pp. 61-77, in Aricanli and Rodrik (eds.), *The Political Economy of Turkey*, New York: St. Martin's Press, 1990.
- Telesio, P., *Technology Licensing and Multinational Enterprises*, New York: Praeger, 1979.
- Telesio, P., "Foreign Licensing in Multinational Enterprises," pp. 177-201, in Stobaugh and Wells (eds.), *Technology Crossing Borders*, Boston, Mass.: Harvard Business School Press, 1984.
- Uras, T.G., *Türkiye'de Yabancı Sermaye Yatırımları*, Istanbul: Formül Matbaası, 1979.
- Wallender, H.W., *Technology Transfer and Management in the Developing Countries*, Cambridge, Mass.: Ballinger, 1979.
- Watkins, W.M., *Business Aspects of Technology Transfer*, New Jersey: Noyes, 1990.
- The World Bank, *World Development Report*, Washington D.C., 1990.
- Wright, R.W., and C.S. Russel, "Joint Ventures in Developing Countries: Realities and Responses," *Columbia Journal of World Business*, Summer 1975, pp. 74-80.
- Yabancı Sermaye Raporu (1983-1986), Yabancı Sermaye Başkanlığı, Türkiye Cumhuriyeti Başbakanlık Devlet Planlama Teskilatı, Ankara, 1987.
- Yabancı Sermaye Raporu (1987-1989), Yabancı Sermaye Başkanlığı, Türkiye Cumhuriyeti Başbakanlık Devlet Planlama Teskilatı, Ankara, 1990.
- Young, S., J. Hamill, C. Wheeler, and R. Davies, *International Market Entry and Development*, Hemel Hempstead: Harvester Wheatsheaf, 1989.

Appendix I:

Interview Schedule

Firm:.....
Name of interviewee:.....
Position of interviewee:.....
Address of organization:.....
Phone and fax number to contact:.....
Date of interview:.....
Interviewer: *Sadrettin C. Dai*.....
Collaborative agreement:.....
Collaboration partner:.....
Scale of the project investment (\$US):.....
Beginning date of collaboration:.....
Industry:.....
Sales:.....
Number of employees:.....
International branches, sales and manufacturing operations:.....
Type of collaboration:
____ Majority owned joint venture, ____ Shared management joint venture,
Percentages..... Percentages.....
____ Current and future technology licensing, ____ Current technology licensing.

I am a graduate student from the School of Business at Carleton University, Canada. For my masters thesis I am conducting a research on international collaboration mode (partnership type) decisions of Turkish technology recipient manufacturing companies. I am particularly interested in the factors affecting the technology transfer mode selection of technology recipient company executives. In order to determine the factors and understand their influence on the technology transfer mode selection I would like to ask questions about the strategic decisions that have been made prior to the beginning of the collaboration agreement. If you wish both corporate and your individual identity will remain anonymous.

PART I

- 1- Could you please tell me how and when this international collaboration began?
- 2- What was the original impetus for the collaboration; what started the decision process of collaboration?
- 3- This kind of strategic decision is usually made with some goal or objective in mind, what were the (was the overall) objectives of your collaboration decision?
- 4- a)What industry was your company (or parent company in joint venture) in prior to the collaboration?

b)What level of technology was used by your company prior to the collaboration?
- 5- To what extent was your company familiar with the technology acquired through the collaboration (technology transfer) agreement?

Extremely				Not at all
5	4	3	2	1
_____	_____	_____	_____	_____
- 6- Had you made any collaboration agreements with foreign companies before?

If yes,

a)How many agreements were you involved in the five years prior to and after this collaboration agreement?

b)What type of collaboration agreement did you use in your previous (other) international collaboration?

_____ Majority owned joint venture,	_____ Shared management joint venture,
_____ Current and future technology licensing,	_____ Current technology licensing.
_____ Other (.....)	

c) Overall how satisfied has your firm been with the other collaboration(s)?

Completely
satisfied

Not satisfied
at all

5

4

3

2

1

- 7- I am interested in the chronological order in which you made the following choices.
Please put a "1" in front of the choice you made first (rank first to last).

_____ Selected partner

_____ Selected nationality of the collaboration partner

_____ Selected technology

_____ Selected collaboration mode (structure of partnership with the foreign
firm)

_____ Other (.....)

- 8- How important was each of the following at the beginning of the technology
transfer process?

Extremely
important

Not important
at all

5

4

3

2

1

a) Partner selection

b) Nationality of the collaboration partner

c) Technology selection

d) Cost of the technology

e) Evaluation of the existing technological skills

of your company

f) Evaluation of the existing managerial skills

of your company

g) Appraisal of your company's capability

to absorb technology

h) Collaboration mode selection (structure of

partnership with the foreign firm)

i) Other (.....)

- 9- Had you already decided the type of collaboration when you agreed on your partner firm?
- 10- Did you approach your collaboration partner first or were you approached?
- 11- Could you describe the selection process of the mode (type or partnership structure) of your collaboration agreement?
- 12- What were the major issues that your firm considered during the selection of the collaboration (technology transfer) mode?
- 13- Did you consider any alternative collaboration (technology transfer) modes during your selection process?

If yes,

a)What were they?

b)Why did you not choose them?

- 14- What was the original impetus for the selection of this type of collaboration agreement?
- 15- a)What were your company's needs (i.e., technological and managerial) when you began to consider this collaboration?

b)How did these needs affect the collaboration agreement mode selection of your company?
- 16- What other factors affected your collaboration mode selection? Could you please list them?

- 17- Did some of those factors conflict with your company's preferred type of collaborative agreement?
- 18- During the decision process did you (the company) change your mode of collaborative agreement (technology transfer)?

If yes,

a) Why?

b) Which factor forced to change your company's selection (preference)?

- 19- Other than you, who in the company participated in the collaborative agreement mode (technology transfer) selection decision?
- 20- From which units (departments) of the company did these participants come?
- 21- To what extent did each of the following affect the collaboration agreement (technology transfer) mode selection process?

	Extremely influential 5	4	3	2	Not influential at all 1
a) Manufacturing Department/Function	_____	_____	_____	_____	_____
b) Engineering Department/Function	_____	_____	_____	_____	_____
c) Marketing Department/Function	_____	_____	_____	_____	_____
d) Foreign Trade Department/Function	_____	_____	_____	_____	_____
e) Finance Department/Function	_____	_____	_____	_____	_____
f) Other(.....)	_____	_____	_____	_____	_____

PART II

External Factors:

- 22- Who were the external interest groups in the collaborative agreement (e.g., government, competition, environmental conditions, local technological infrastructure)?
- 23- To what extent did they affect (participate in) the collaborative agreement mode selection?
- 24- a) Which external group had most influence on the collaborative agreement mode selection?
- b) Would you say that this group was generally
 _____ Constructive _____ Restrictive
- 25- Can you describe the negotiation process between your company and external interest groups in respect to the collaborative agreement (technology transfer) mode.

Government

- 26- To what extent did government legislation and pressure influence the selection of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

Market environment conditions in the country

- 27- To what extent did the market environment conditions in the country influence the selection of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 28- To what extent did the level of competition in the market influence the selection of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

Industrial environment conditions in the country

- 29- To what extent did the industrial environment conditions in the country influence the selection of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

Preferences of the foreign partner of the collaboration

- 30- To what extent did the preferences of the foreign partner influence the selection of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

Effect of the size of the project on the collaborative agreement mode selection

- 31- To what extent did the size of the project influence the selection of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

Internal Factors:**Management**

- 32- To what extent were the existing managerial skills of your company taken into consideration in the selection process of the technology transfer mode?

Extremely					Not at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

Marketing

- 33- To what extent did the foreign partner's international recognition (brand name) influence the selection process of collaboration mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 34- Did the utilization conditions of the foreign partner's brand name vary with the type of collaboration agreement?

_____Yes _____No

If yes,

a)In what way?

- 35- Did the exporting rights of the product vary with the type of collaboration agreement?

_____Yes _____No

If yes,

a)In what way?

- 36- Did the utilization conditions of the foreign partner's international distribution channels vary with the type of collaboration agreement?

____Yes ____No

If yes,

a)In what way?

- 37- To what extent were the existing marketing skills of your company taken into consideration in the selection process of the technology transfer mode?

Extremely 4 3 2 Not at all
5 4 3 2 1

Finance

- 38- To what extent was the financing of the project influential in the selection process of technology transfer mode?

Extremely 4 3 2 Not influential
influential 4 3 2 at all
5 4 3 2 1

Past collaboration experiences of the recipient company

- 39- Did your previous experiences with other collaboration agreements help you decide the mode of this collaboration?

____Yes ____No

If yes,

a)To what extent?

Extremely 4 3 2 Not influential
influential 4 3 2 at all
5 4 3 2 1

Technology

- 40- To what extent was the complexity of the technology transferred influential in the selection process of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 41- To what extent was the age of the technology transferred influential in the selection process of technology transfer mode?

Extremely influential					Not influential at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 42- To what extent were the existing technological skills of your company taken into consideration in the selection process of the technology transfer mode?

Extremely					Not at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 43- Where do you get maintenance services - domestic or foreign?

Previous sectors that company operate before this collaboration

- 44- To what extent did the technology transferred diversify your company's products and/or processes?

Closely related					Loosely related
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 45- To what extent were the existing lines of business of your company taken into consideration in the selection process of the technology transfer mode?

Extremely					Not at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

PART III

- 46- What is your company's position (in terms of market share and leadership) in the market?

a) Domestic market:

b) International market:

- 47- Have you (or the child company in joint ventures) modified and/or adapted the product and/or process that you acquired with the collaboration?

_____ Yes _____ No

If yes,

a) In what way?

- 48- a) What percent of the revenues does your in-house R&D budget comprise?

b) What importance do you place on R&D facilities at your company?

Extremely					Not important
important					at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 49- What overall impact has this international collaboration had on your company?

50- To what extent and direction did each of the following change with collaboration agreement?

	Improved		No Change		Declined
	5	4	3	2	1
a)Updated technology	_____	_____	_____	_____	_____
b)R&D facilities	_____	_____	_____	_____	_____
c)Capacity utilization	_____	_____	_____	_____	_____
d)Sales	_____	_____	_____	_____	_____
e)Profitability	_____	_____	_____	_____	_____
f)International competitiveness	_____	_____	_____	_____	_____
g)Domestic market share	_____	_____	_____	_____	_____
h)Exports	_____	_____	_____	_____	_____
i)Other(.....)	_____	_____	_____	_____	_____

51- To what extent has the joint venture (or licensing agreement) met the expectations of your firm on the following dimensions?

	Completely				Not at all
	5	4	3	2	1
a)Sales	_____	_____	_____	_____	_____
b)Market share	_____	_____	_____	_____	_____
c)International competitiveness	_____	_____	_____	_____	_____
d)Profitability	_____	_____	_____	_____	_____
e)Cost control	_____	_____	_____	_____	_____
f)Management of venture (collaboration)	_____	_____	_____	_____	_____
g)Technology development	_____	_____	_____	_____	_____
h)Product design	_____	_____	_____	_____	_____
i)Manufacturing/Quality control	_____	_____	_____	_____	_____
j)Productivity	_____	_____	_____	_____	_____
k)Reputation	_____	_____	_____	_____	_____

52- a) In general how satisfied has your firm been with the joint venture (or licensing agreement's) performance?

b) To what extent?

Completely satisfied					Not satisfied at all
5	4	3	2	1	
_____	_____	_____	_____	_____	

53- How could it be better?

54- If you were able, would you choose another mode of collaboration now?

If yes,

a) Which one?

_____ Majority owned joint venture,

_____ Shared management joint venture,

_____ Current and future technology licensing,

_____ Current technology licensing.

_____ Other (.....)

Thank you for your cooperation.

Appendix II:

Mülâkat Formu

Şirket adı:.....

Cevaplayıcının adı:.....

Cevaplayıcının şirketteki pozisyonu:.....

Adres:.....

Telefon ve fax numarası:.....

Mülâkat tarihi:.....

Mülâkatçı: *Sadrettin C. Dai*.....

Uluslararası işbirliği anlaşması:.....

Yabancı ortak:.....

Proje yatırımının ölçeği (ABD \$):.....

İşbirliği başlangıç tarihi:.....

Sektör:.....

Yıllık satışlar:.....

Personel sayısı:.....

Yurtdışındaki şubeler, satış ve üretim faaliyetleri:.....

İşbirliği türü:

____Çoğunluk hisseli joint venture,	____Eşit hisseli joint venture,
Hisse oranı.....	Hisse oranı.....
____Devamlı teknoloji lisans anlaşması,	____Bir defalık teknoloji lisans anlaşması.

Kanada'da Carleton Üniversitesinde işletme yönetimi ihtisası yapmaktayım (Master of Management Studies). Master tezim için uluslararası işbirliği anlaşması ile yabancı teknoloji transfer etmiş Türk imalat şirketlerinin uluslararası işbirliği anlaşması (ortaklık) türü seçim işlemi hakkında araştırma yapıyorum. Özellikle şirket yöneticilerinin teknoloji transfer metodu seçimini etkileyen faktörler ile ilgileniyorum. Bu faktörleri belirlemek ve teknoloji transfer metodu seçimi üzerindeki etkilerini anlamak için size uluslararası işbirliği anlaşmasının kuruluşu sırasında verdiğiniz ilgili stratejik kararlar hakkında sorular sormak istiyorum. Arzu ettiğiniz takdirde sizin ve şirketinizin kimliği saklı tutulacaktır.

BÖLÜM I

- 1- Bu uluslararası işbirliği anlaşmasının ne zaman ve nasıl başladığını anlatırmısınız?
- 2- Uluslararası işbirliğine neden gerek duydunuz; işbirliği yapmaya karar vermenize sebep neydi?
- 3- Bu tür stratejik kararlar genellikle bazı özel amaçlarla verilir, sizin hedefiniz, amacınız neydi?
- 4- Anlaşmadan önce şirketiniz (joint venturlarda ana şirket):
 - a) Hangi sektörde faaliyet gösteriyordu?
 - b) Kullanılan teknoloji ne düzeyde idi?
- 5- Anlaşma ile ithal ettiğiniz teknoloji ile anlaşma öncesinde ne ölçüde aşına idiniz?

Tamamen

Pek değil

5

4

3

2

1

- 6- Daha önce yabancı şirketler ile işbirliği anlaşması yapmış mıydınız?

Evet ise,

a) Son beş yıl içerisinde kaç anlaşma yaptınız?

b) Bu işbirliklerinde kullanılan anlaşma türleri nelerdi?

_____Çoğunluk hisseli joint venture,

_____Eşit hisseli joint venture,

_____Devamlı teknoloji lisans anlaşması,

_____Bir defalık teknoloji lisans anlaşması.

_____Diğer(.....)

c) Genel olarak şirketiniz bu anlaşma(lar)dan ne kadar tatmin oldu?

Tamamen
tatminkar

5

4

3

2

Hiç tatminkar
değil

1

7- Lütfen aşağıdaki kararları hangi kronolojik sıra ile yaptığınızı ilk yaptığınız seçimden başlayarak 1 den 5'e kadar sıralayınız.

_____Ortak seçimi

_____Ortağın milliyetinin seçimi

_____Teknoloji seçimi

_____İşbirliği türü seçimi

_____Diğer(.....)

8- Teknoloji transferi (işbirliği) anlaşmasının başlangıcında aşağıdakilerin her biri ne kadar önemliydi?

Çok
önemli
5

4

3

2

Hiç önemli
değil
1

a)Ortak seçimi

b)Ortağın milliyetinin seçimi

c)Teknoloji seçimi

d)Teknolojinin şirkete maliyeti

e)Şirketin teknolojik kapasitesinin

değerlendirilmesi

f)Şirketin idâri kapasitesinin değerlendirilmesi

g)Şirketin teknolojiyi absorbe edebilme

yeteneğinin belirlenmesi

h)İşbirliği türü seçimi

i)Diğer (.....)

- 9- Yabancı ortağı seçmeden önce işbirliği anlaşması türü hakkında seçiminizi yapmış mıydınız?
- 10- İlk sizmi yoksa yabancı firmamı size işbirliği için yaklaştı?
- 11- Şirketinizin işbirliği (teknoloji transferi) anlaşması türü seçimi işlemini anlatabilirmisiniz?
- 12- Şirketizin teknoloji transferi (işbirliği) anlaşması türü seçimini yaparken değerlendirdiği başlıca konular nelerdi?
- 13- Karar aşamasında daha başka alternatif teknoloji transferi anlaşması türlerini göz önünde bulundurdunuzmu?

Evet ise,

a) Bunlar nelerdi?

b) Neden bunlardan birini seçmediniz?

- 14- Bu işbirliği anlaşması türünü seçmenizdeki ana hedef neydi?
- 15- a) İşbirliğine başlamayı düşünürken şirketinizin ihtiyaçları (i.e., teknolojik, idari) nelerdi?
- b) Bu ihtiyaçlar şirketinizin işbirliği anlaşması türü seçimini nasıl etkiledi?
- 16- Şirketinizin işbirliği anlaşması türü seçimini etkileyen diğer etkenler nelerdi? Lütfen sıralayabilirmisiniz?
- 17- Bu etkenlerden şirketinizin tercih ettiği işbirliği anlaşması türü ile uymayanları oldumu?

- 18- Karar aşamasında şirketiniz teknoloji transferi (işbirliği) anlaşması türü tercihinin değiştirdimi veya değiştirmek zorunda kaldımı?

Evet ise,

a)Neden?

b)Hangi etkenler şirketinizin işbirliği anlaşması türü tercihinin değiştirmesine neden oldu?

- 19- Sizden başka, şirketten kimler teknoloji transferi (işbirliği) anlaşması türü seçimi işlemine katıldı ?

- 20- Bu kişiler hangi departmalardan (bölümlerden) idi?

- 21- Aşağıdakilerden herbiri teknoloji transferi anlaşması türü seçimi işlemini ne ölçüde etkiledi?

	Çok etkili 5	4	3	2	Hiç etkili değil 1
a)Üretim Departmanı/bölümü	_____	_____	_____	_____	_____
b)Mühendislik Departmanı/bölümü	_____	_____	_____	_____	_____
c)Pazarlama Departmanı/bölümü	_____	_____	_____	_____	_____
d)Dış ticaret Departmanı/bölümü	_____	_____	_____	_____	_____
e)Finans Departmanı/bölümü	_____	_____	_____	_____	_____
f)Diğer(.....)	_____	_____	_____	_____	_____

BÖLÜM II

Harici etkenler:

- 22- İşbirliği anlaşması karar aşamasında etkili olan harici etki grupları kimlerdi (örneğin devlet yaptırımları, yabancı ortağın tercihleri, piyasadaki rekabet koşulları, ülkenin sanayi ve ticari ortam koşulları vs.)?
- 23- Bu etkenler ne dereceye kadar şirketinizin teknoloji transferi anlaşması türü seçimini etkiledi?
- 24- a) Hangi harici etki grubu teknoloji transferi anlaşması türü seçimini en fazla etkiledi?
- b) Bu etki genel olarak:
- _____Yapıcı _____Kısıtlayıcı
- 25- Şirketiniz ile harici etki grupları arasında teknoloji transferi anlaşması türü ile ilgili pazarlık işlemini anlatırmısınız?

Kanûni yaptırım ve teşvikler

- 26- Devletin ilgili kanunları, tercih ve yaptırımları teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili				Hiç etkili değil
5	4	3	2	1
_____	_____	_____	_____	_____

Ülkedeki pazar koşulları

- 27- Ülkedeki pazar koşulları teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili				Hiç etkili değil
5	4	3	2	1
_____	_____	_____	_____	_____

- 28- Pazardaki rekabet koşulları teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili					Hiç etkili değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

Ülkedeki endüstriyel ortam

- 29- Ülkedeki sanayi koşulları (gelişmişlik) teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili					Hiç etkili değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

Yabancı ortağın tercihi

- 30- Yabancı ortağın işbirliği anlaşması türü tercihi teknoloji transferi anlaşması türü belirlenmesini ne ölçüde etkiledi?

Çok etkili					Hiç etkili değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

Projenin ölçeği

- 31- Projenin büyüklüğü (ölçeği) teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili					Hiç etkili değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

Dahili etkenler:**Yönetim**

- 32- Şirketin mevcut idari kapasitesi teknoloji transferi anlaşması türü seçimi işlemi sırasında ne ölçüde göz önüne bulunduruldu?

Tamamen					Pek değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

Pazarlama

- 33- Yabancı ortağın uluslararası tanınırlığı (ve markası) teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili				Hiç etkili değil
5	4	3	2	1
_____	_____	_____	_____	_____

- 34- Yabancı ortağın markasını kullandırma şartları ve isim hakkının belirlenmesi teknoloji transferi (işbirliği) anlaşması türüne göre değişiklik gösteriyormuydu?

_____Evet _____Hayır

Evet ise,

a)Nasıl?

- 35- İmâl edilen mamülün ihraç hakkı teknoloji transferi (işbirliği) anlaşması türüne göre değişiklik gösteriyormuydu?

_____Evet _____Hayır

Evet ise

a)Nasıl?

- 36- Yabancı ortağın uluslararası dağıtım kanallarını kullandırma şartları teknoloji transferi (işbirliği) anlaşması türüne göre değişiklik gösteriyormuydu?

____Evet ____Hayır

Evet ise,

a)Nasıl?

- 37- Şirketin mevcut pazarlama kapasitesi, teknoloji transferi anlaşması türü seçimi işleminde ne ölçüde göz önüne bulunduruldu?

Tamamen 4 3 2 Pek değil
5 1

Finans

- 38- Projenin finansal yönü teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok 4 3 2 Hiç etkili
etkili 1
değil

Şirketin geçmiş tecrübeleri

- 39- Şirketinizin geçmiş işbirliği anlaşması tecrübeleri bu teknoloji transferi anlaşmasının türü seçiminize yardımcı oldumu?

____Evet ____Hayır

Evet ise,

a)Ne ölçüde?

Çok 4 3 2 Hiç etkili
etkili 1
değil

Teknoloji

- 40- Teknolojinin kompleksitesi teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili					Hiç etkili değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 41- Transfer edilen teknolojinin yaşı teknoloji transferi anlaşması türü seçimini ne ölçüde etkiledi?

Çok etkili					Hiç etkili değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 42- Şirketinizin mevcut teknolojik kapasitesi teknoloji transferi anlaşması türü seçimi işleminde ne ölçüde göz önünde bulunduruldu?

Tamamen					Pek değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 43- Bakım, tamirat ve servis işlerini şirketinize kim sağlıyor (i.e., yerli veya yabancı kaynaklar)?

Şirketin ana faaliyet konusu

- 44- Teknoloji transferi şirketinizin mamül ve imalât hattunda ne ölçüde değişiklik, çeşitlilik yarattı?

Yakından ilgili					Tamamen ilgisiz
5	4	3	2	1	
_____	_____	_____	_____	_____	

- 45- Şirketinizin işbirliği sırasında ve öncesindeki ana faaliyet konusu teknoloji transferi anlaşması türü seçimi işleminde ne ölçüde göz önünde bulunduruldu?

Tamamen					Pek değil
5	4	3	2	1	
_____	_____	_____	_____	_____	

BÖLÜM III

- 46- Şirketinizin pazardaki konumu nedir (pazar payı ve liderlik olarak)?

a)İç pazarda:

b)Dünya pazarlarında:

- 47- Şirketiniz (veya joint venture şirket) anlaşma ile transfer edilen teknolojide (mamülde ve/veya imalat hatunda) değişiklikler, geliştirmeler yaptımı?

_____Evet _____Hayır

Evet ise,

a)Ne ölçüde?

- 48- a)Yıllık toplam gelirinizin yüzde kaçını Araştırma & Geliştirme faaliyetlerine ayırırsınız?

b)Şirketinizde Araştırma & Geliştirme faaliyetlerinin önemi nedir?

Çok					Hiç önemli
önemli	4	3	2	1	değil
5					
_____	_____	_____	_____	_____	

- 49- Bu uluslararası işbirliği anlaşmasının genel olarak şirketiniz üzerinde ne gibi etkileri oldu?

50- Aşağıdakilerden her biri işbirliği anlaşması ile ne ölçüde ve ne yönde değişti?

	Gelişti		Değişiklik olmadı		Zayıfladı
	5	4	3	2	1
a)Kullanılan teknolojinin güncelliği	_____	_____	_____	_____	_____
b)A&G faaliyetleri	_____	_____	_____	_____	_____
c)Kapasite kullanımı	_____	_____	_____	_____	_____
d)Satışlar	_____	_____	_____	_____	_____
e)Kârlılık	_____	_____	_____	_____	_____
f)Uluslararası rekabet gücü	_____	_____	_____	_____	_____
g)İç pazar payı	_____	_____	_____	_____	_____
h)İhracat	_____	_____	_____	_____	_____
i)Diğer(.....)	_____	_____	_____	_____	_____

51- Yaptığınız joint venture (veya lisans anlaşması) aşağıdaki hususlarda ne ölçüde şirketinizin beklentilerine karşılık verdi?

	Tamamen				Pek değil
	5	4	3	2	1
a)Satışlar	_____	_____	_____	_____	_____
b)Pazar payı	_____	_____	_____	_____	_____
c)Uluslararası rekabet gücü	_____	_____	_____	_____	_____
d)Kârlılık	_____	_____	_____	_____	_____
e)Maliyet kontrol	_____	_____	_____	_____	_____
f)Ortaklığın (işbirliğinin) idaresi	_____	_____	_____	_____	_____
g)Teknoloji geliştirme	_____	_____	_____	_____	_____
h)Mamül dizaynı	_____	_____	_____	_____	_____
i)Üretim/Kalite kontrolü	_____	_____	_____	_____	_____
j)Üretkenlik	_____	_____	_____	_____	_____
k)Ticari itibar	_____	_____	_____	_____	_____

52- a)Şirketiniz genel olarak işbirliğinin (joint venture veya lisans anlaşması) performansından ne kadar tatmin oldu?

b)Ne ölçüde?

Tamamen
tatminkar

5

4

3

2

Hiç tatminkar
değil

1

53- Nasıl olsa daha iyi olurdu?

54- Eğer mümkün olsaydı, şimdi başka tür bir işbirliği (ortaklık) anlaşması seçermiydiniz?

Evet ise,

a)Hangi türü?

_____Çoğunluk hisseli joint venture,

_____Devamlı teknoloji lisans anlaşması,

_____Diğer(.....)

_____Eşit hisseli joint venture,

_____Bir defalık teknoloji lisans anlaşması.

Yardımlarınız için çok teşekkür ederim.

Appendix III:

School of Business
Faculty of Social Sciences
Dunton Tower
1125 Colonel By Drive
Ottawa, Canada K1S 5B6
Tel: (613) 788-2336
Fax: (613) 788-2332 or (613) 788-4427

June 25, 1992

Receiver and Title
COMPANY NAME
COMPANY ADDRESS

Dear _____

At the School of Business, Carleton University in Ottawa, Canada, one of the chief areas of research is international business management. As part of this research thrust one of our graduate students, Sadrettin C. Dai, is conducting research on technology transfer through international collaborative agreements. This project requires investigation of the process that managers of manufacturing firms use to set up international joint ventures or licensing agreements. The basic research question concerns the way such decisions are made and the factors that influence managerial decisions. All information obtained will be treated as confidential. Neither the names of those interviewed nor the companies they represent will appear in the final document. A copy of the research report will be made available, if desired.

If you would have the time to share your experience in the field with Mr. Dai it would greatly help the project. The interview takes approximately one hour. We at the School encourage our students to relate what they learn in their formal courses to immediate business situations. This, of course, relies on the cooperation of those in the corporate sector. Thank you in advance for your help. Sadrettin will be contacting you by phone soon in order to speak with you about the possibility of making an appointment to meet with you in person.

If you have any questions about this research project or about the School's program, please do not hesitate to get in touch with us (Dr. David Cray at 1-(613) 788-2395 or Dr. Vinod Kumar at 1-(613) 788-2379).

Sincerely,

Vinod Kumar, Ph.D., P.Eng.

David Cray, Ph.D.

Appendix IV:

After two phone calls, following the initial contact with the firm targeted for interview, the name of the director (who was the second highest level executive of the firm) knowledgeable about the required information was determined. Phone contact with the director's personal secretary was then established. Next, the letter explaining the research was faxed to his office. The director had limited time and a very unstructured schedule. Specifically, he was often travelling out of the city for days at a time. After tracking him for two weeks via his personal secretary, I concluded that it would be difficult to set up an appointment with him since he did not appear to have enough time for a meeting. I changed my direction towards the other directors at the suggestion of this director and his personal secretary. I was told that they wanted to see the interviewing schedule, and subsequently I provided it. However, to meet with the other executives was also very difficult. At the same time, from the other firms that I contacted, I received appointments and proceeded to interview the managers. I found another firm which was in the same industry as the aforementioned firm, and therefore ceased my attempts to reach them after 3 weeks of trials.

Appendix V:

The Structure of Summaries:

- Introduction
- 1) The recipient's overall objective for collaboration.
- 2) The major issues considered by the recipient in the selection of the collaboration mode.
 - The importance of a specific mode.
 - The effect of "required skills for technology transfer" on the recipient's selection and on the collaboration mode formation.
 - The relationship between the nature of the manufacturing operation and the mode of collaboration agreement.
- 3) Process of arriving at this collaborative agreement mode.
- 4) The external factors of the collaborative agreement mode.
- 5) The overall impact of the collaboration on the recipient firm and the stage of the improvement of its technology development skills following the technology transfer agreement.
- 6) Satisfaction of the recipient firm with the collaboration.
- 7) The lessons learned by the recipient regarding the success of the collaboration.

Appendix VI:

CASE 1: Hale Group - Josée Corp. Equally-Owned Joint Venture, JOSHA STEEL CORD COMPANY

Introduction:

Hale Group of Turkey wanted to enter the steel cord industry in order to ensure vertical integration for their tire manufacturing operations. For this purpose, an equally-owned joint venture (JV) between Hale Group and Josée Corporation of Belgium was established in 1987, as JOSHA Steel Cord Co..

1. Objectives for collaboration:

Before its manufacturing operation in Turkey, Josée was supplying steel cord to Hale's tire manufacturing operations. In 1986, Hale wanted to vertically integrate but did not have the technology required to manufacture steel cord to enter the industry. Steel cord manufacturer Josée wished to have a manufacturing operation in this part of the globe. Therefore, as desired by both parties, an equity owned JV was forged.

2. The major issues considered in the collaboration mode selection:

Neither technological complexity, nor the relatedness of the technology, nor the absorption capacity was an issue in the selection of a technology transfer mode. Since 1985, Hale Group held the principle strategy for transferring technology via equally-owned JVs with world-leading companies in the industry for reasons listed below.

First, it held this strategy because of globalization in the world economy. The trend towards mergers and acquisitions, and the necessity of allying with a world-leading firm in order to obtain fringe benefits was instrumental in Hale's case.

Second, when the supplier has a significant share (that is, more than 30 or 40%) such as 50%, it would be more responsible and committed to the JV company. Export restrictions on collaborative agreements drastically decreased capacity utilization and profitability of recipient companies. With a 50-50 % JV agreement, both parents share the risk, authority, and profit equally. Therefore, in a 50-50 JV the supplier would not want to decrease the JV firm's profitability: both parents would be concerned about the issues of sales and success of the company. Subsequently, a 50-50 shared JV aligns the assistance of the supplier for sales and efficiency issues. And, the 50% shareholder technology supplier would transfer its competitive state-of-the-art technology. The result was that within the subsidiaries of Josée the most current technology was used by JOSH.

3. The process of arriving at this collaboration mode:

The recipient first selected the partner, then, with the partner, the technology was selected, and then the collaboration mode was selected. There were no external factors restricting the collaboration mode selection of the parties. The parties requested an equal share in the operation, and therefore they entered a 50-50 JV.

4. External factors of the collaboration mode selection:

The main external factors influencing the recipient's decision towards entering a JV was the world economic trend towards globalization, and mergers and acquisitions in the industry.

The recipient entered this JV in 1987, which was shortly after the economic liberalization programmes in Turkey. Hale Group preferred entering shared-management JV type collaborations instead of licensing agreements since the implementation of economic liberalization and new government policies encouraged foreign investment. These factors motivated the recipient to enter a JV with a foreign company. Hence, there was no factor restricting the mode of collaboration, and the recipient had to negotiate with the supplier only.

5. Impacts of the collaboration:

JOSHA did not develop R&D operations since they were an ally with a world leader. The JV firm obtained the innovations directly from the technology supplier stemming from the technology licensing part of the JV agreement. However, the recipient was not concerned about the long term detrimental effects of being technologically dependent, due to their equally-owned JV with the supplier. The technology supplier parent of the JV was presumed to be equally responsible for the JV firm and the recipient surmised obtaining ownership rights on the supplier's technology pool.

The JV firm exported 70% of total production: 40% of this 70% was exported by Josée, and 30% was exported independently by JOSHA within the defined territories.

6. Satisfaction of the recipient firm with the collaboration:

The recipient believed that the most proper mode of collaboration was used in this technology transfer agreement. The recipient was not fully satisfied with the profitability of the JV due to the distressful period following the establishment. However, the recipient was fully satisfied with the state-of-the-art technology acquired and used by the JV. Josée even transferred some of the technological improvements developed in JOSHA to its other plants.

CASE 2: Hale Group - Tomomi Corp. Equally-Owned Joint Venture,
TOMHA TIRE COMPANY.

Introduction:

Hale Group of Turkey entered the tire manufacturing industry in 1974 and established manufacturing facilities with a current and future technology license and the know-how of an American tire manufacturer. In 1988 Hale Group sold half of its shares in the tire company to Tomomi Corporation of Japan, and set up the equally-owned JV.

1. Objectives for collaboration:

In the mid 1970s, Hale needed transferred technology in order to manufacture tires. It had neither the capabilities to develop the technology by itself nor could it afford to wait for the outputs of the in-house R&D operations. A licensing agreement was seen as the appropriate way to acquire the required technology and to start the manufacturing operation. It had been operating with the license for more than 10 years, until it was not able to acquire the technology for a product which was necessary for the competitiveness and survival of the company. In order to possess this technology Hale tried to establish its own in-house R&D facilities with the assistance of the licensor firm. However, it was unsuccessful. The world trend in the industry was towards mergers and acquisitions. The number of leading firms in the industry was decreasing dramatically, and the firms which did not possess competitive technology did not have any chance of survival. The recipient reviewed the technology transfer agreement again, and requested a JV with a leading firm in the industry in order to secure the continuous flow of the competitive technology and to survive.

2. The major issues considered in the collaboration mode selection:

The recipient entered a licensing agreement when it needed the technology in order to manufacture a new product, but when it had other objectives (like growth, international recognition, up-to-date and competitive product technology) it changed the agreement to a JV. The recipient's perceptions of licensing and JVs that motivated it to modify the agreement are listed below.

I- The recipient preferred a JV for growth and marketing its products not only in Turkey but also in international markets. If the supplier wanted to establish a JV targeting the local market in which the recipient was already operating, then the recipient company would prefer licensing in order to acquire the required technology. However, when the technology supplier firm induced growth by marketing products in an international arena which the recipient was incapable of entering on its own, then the recipient preferred a JV. Suppliers should invest in Turkey not to share recipients' market share but to expand the business operation.

II- The JV gave the recipient an alliance with a world-leader firm in the industry. Consequently, international recognition, growth, merging power and shared business risks with an MNE were procured. If the recipient had had to collaborate with a firm which was not a world leader in the industry it would have preferred entering a licensing agreement rather than a JV.

III- It was presumed by the recipient that JVs grant a secure and continuous flow of state-of-the-art technology. It preferred a JV over a licensing agreement because it was perceived that it would always be technology-deficient under a licensing agreement. Technology was transferred continually with a JV, but in parts with a licensing agreement. The recipient perceived a JV as necessary in order to ensure continual access to technology. They perceived licensing as a temporary and partial way of transferring

technology. Technology transfer via licensing for the purpose of operating a manufacturing facility was perceived as “carrying water in cups in order to turn a millstone.”

The recipient preferred an equally-owned JV in order to transfer more risk onto the supplier, and therefore make it more responsible for the technology acquiring company. When the JV was 50% owned by the supplier, presumably the supplier would be more concerned with the success of the company and would introduce its competitive technology. If the supplier had a share less than 40%, it might not carry enough risk to be very concerned or serious about the success of the technology acquiring company, and would not bother transferring its competitive technologies. It would be able to realize the return of its transferred technology through royalties and other fringe benefits. Also, if the supplier had a share less than 50%, it would not have allowed the use of its name, and subsequently its international recognition, in the JV company name.

Neither technological complexity, nor the relatedness of the technology, nor absorption capacity was influential on the recipient's selection of the technology transfer mode. The recipient was completely unfamiliar with the technology when it was transferred via licensing, but when the JV was established in 1988, it was already operating the technology. A licensing agreement was seen as the appropriate way for acquiring technology in related or unrelated fields to the existing businesses, and at different levels of complexity. The recipient was insistent about its capability of absorbing any kind of technology.

3. The process of arriving at this collaboration mode:

Hale operated under the license of an American tire manufacturer until 1984, when it could not get the technology it required for its survival. Hale tried to develop the

technology in-house with the assistance of the licensor, but was unsuccessful. Consequently, the recipient realized that it needed the capability of developing technology in order to survive. Therefore, the recipient decided that a JV with a world leader with up-to-date technology would allow it the rights to technology and a short cut to developing technology. Hale approached world-leading companies with the proposal of an equally-owned JV. Their conditions for the JV were:

- acquisition of state-of-the-art technology,
- co-management,
- a goods purchase agreement guaranteeing a certain amount of purchases for sale in foreign markets via the supplier's distribution channels.

Tomomi of Japan fulfilled these conditions and entered a JV with Hale in 1988. Tomomi was also a JV partner of Hale's other JV partner, Josée of Belgium.

4. External factors of the collaboration mode selection:

The main external factors influencing the recipient's decision towards entering a JV was the world economic trend towards globalization and mergers and acquisitions in the industry. In the Turkish market, there were established competitors who were subsidiaries of multinational tire manufacturers. The market was not large enough to support all the companies. Because of its late arrival in the market, Hale also need to sell in foreign markets to survive. They could neither compete with these MNEs nor export to foreign markets with the licensing agreement. They needed an alliance with a world leader company in order acquire competitive technology.

The recipient entered this JV in 1988, which was shortly after economic liberalization programme in Turkey. Hale Group preferred JV type collaboration over licensing since the economic liberalization and the establishment of government policies that encouraged

foreign investment. Hale could not have entered this JV agreement under the previous conditions of foreign investment legislations. Therefore, economic liberalization encouraged the recipient's choice of JV.

5. Impacts of the collaboration:

The JV resulted in significant improvements to the technology acquiring company, as compared to the period when it was operating under the licensing agreement. A new plant was constructed adjacent to the old one to house the new technology and expanded the capacity by 140%; new and better quality products were introduced; the amount of discarded products was reduced; the operation became more energy efficient; cost control measures were achieved; product diversification was accomplished; and new competitive products were introduced.

The technology supplier JV partner guaranteed the purchase of US\$100 million of TOMHA products for sale outside of Turkey within its own distribution channel, under the Tomomi brand name. This tripled the total exports of the recipient firm.

Through the JV, the recipient learned philosophies of Kaizen and started applying Japanese management techniques like quality circles, JIT (Just In Time) and TQC (Total Quality Control).

The recipient did not possess the capability to develop nor to adopt new product technology. R&D facilities were considered very important but were not allotted any funds in the budget because the technology would be acquired from the supplier and it was presumed that it would be impossible to compete with the technological innovations of MNEs. The supplier's R&D operations were considered their own.

6. Satisfaction of the recipient firm with the collaboration:

The recipient considered a JV with an internationally recognized, world-leading company like Tomomi prestigious. The main expectation the recipient had of the JV was efficiency, productivity and/or product diversification. The Hale-Tomomi JV fulfilled all the recipient's expectations. They ranked as the 19th largest tire manufacturer in the world and expected to rise to 14th in the near future.

Overall, the recipient was satisfied with the JV's performance, despite its lack of profitability as a result of the slowdown in the world market. Consequently, the supplier could not fulfill the purchase guarantee with foreign sales.

7. The lessons learned by the recipient:

The recipient believed that the best collaboration agreement was made and that it was to the company's benefit.

CASE 3: Başak Group - Michelle Corp. Equally-Owned Joint Venture,
BAŞAK SHOCK ABSORBERS COMPANY

Introduction:

The equally-owned JV between Başak of Turkey and Michelle Corporation of Belgium was established in 1988. The automobile parts supplier was originally founded in 1976 with Michelle's current and future technology licensing agreement and its production line was set up with Michelle's technological assistance. In other words, before the JV agreement, the technology recipient firm had been producing the same products under the license of Michelle.

1. Objectives for collaboration:

In 1976, the recipient firm entered a current and future technology licensing agreement in order to acquire the technology required for producing shock absorbers. However, the local market in Turkey was not sufficient to ensure the firm's survival, and there was intense competition in the industry. Characteristic of the automobile industry, the recipient firm was not able to compete in international markets on its own for two reasons: first, its product range did not consist of a sufficient number of product types to provide full range in an international arena; second, international recognition was very important in order to compete in international markets. With the licensing agreement, the recipient was allowed to export to various small markets like Iran and Iraq. However, in those markets the product demands were not continuous nor large enough in aggregate to cover the set-up costs of the manufacturing operation. The firm needed larger, continuous supply (sales) contracts. With the licensing agreement, the recipient was not able to use the technology supplier's international recognition for its products by

including them in the supplier's distribution channels. Hence the only way for the recipient to ensure that the supplier recognized the technology recipient's products as its own and integrate them into its product range was to give the supplier ownership participation in the technology acquiring firm. This resulted in the recipient entering in a JV with the technology supplier.

Step 1. Technology Acquisition → Licensing agreement (1976)

Step 2. Market Expansion → Joint venture agreement (1988)

2. The major issues considered in the collaboration mode selection:

The recipient firm had two objectives in altering its on-going manufacturing operations from licensing to an equally-owned JV. The first objective was to expand the market by integrating the JV's product range with the technology supplier's, thereby being complementary to the technology supplier firm in its product range on an international basis. Increasing aggregate sales by exporting to international markets via the supplier's international distribution channels would reduce production costs thus increasing profitability. The second objective was to induce growth through a partnership type collaboration.

The recipient firm has a number of other manufacturing operations in the auto parts industry which were also newly established with licensing agreements. These operations were also being considered for change to JVs because of growth and higher sales objectives. The recipient group commonly used licensing agreements to enter new industries in which they were not familiar. Hence, when setting up a collaboration agreement they consider neither their familiarity with the technology, nor the required skills to operate the technology, nor the complexity of the technology in the selection of

the collaboration mode. Licensing was considered to be the principal way of technology acquisition.

Set-up costs of the manufacturing operations of the recipient were high. It required high investment to produce different models of the product. The break-even point to cover the fixed costs of a new model were high, and consequently, it forced the recipient to export to larger markets, thus calling for a JV. The manufacturing operation, which was primarily the assembly of various parts, was not very complex.

3. The process of arriving at this collaboration mode:

In 1985, the recipient firm approached the licensor in order to set up a JV, but their partnership proposal was rejected by the supplier firm. In 1988, when the supplier firm decided to expand markets, subsequent to the changes in their international investment strategies, they requested a JV with the recipient to gain a foothold in the Turkish market. The recipient insisted on possessing the majority share in the JV because of the national and corporate integrity of controlling the firm which was to be located in Turkey. However, the supplier did not accept this partnership structure because their corporate philosophy was to hold the majority share in all of their plants. Finally, an 50-50 equity-owned JV was agreed upon.

4. External factors of the collaboration mode selection:

There were two external factors influencing the choice of collaboration mode: the first was the resolution of the technology-supplier firm. The supplier had stronger bargaining power during the formation of the collaboration. The second external factor which influenced the recipient's collaboration preference was market conditions (home country

and world) in the industry. The decreasing protectionist economic movement in the country inspired the recipient firm to enter JVs in their auto parts operations. Import restrictions were no longer comprehensively enforced and as a result, the recipient had to compete with MNEs in the local market. They wanted to have the benefits of allying with a strong MNE.

There were no legal restrictions on foreign investment in Turkey. Hence government legislation was not a restrictive factor in the collaboration mode selection.

5. Impacts of the collaboration:

There was no additional investment in manufacturing operations ensuing from the implementation of the JV agreement. The firm maintained its production facilities with modest hardware additions from the time of its establishment. There was no modification to the recipient firm's product range.

Overall, there were two impacts of this JV on the recipient firm. The first impact was the initiation of common managerial concepts such as long term planning and long term target definition in the recipient firm. Second, the price of the parts that the recipient firm normally purchased from the technology supplier decreased thereby becoming easier to procure those parts from the technology supplier. Capacity utilization and cost control improved moderately with the establishment of the JV. However, sales and productivity did not increase as a result of the JV agreement.

In terms of closeness between partners, the technology supplier party of the JV sent a financial comptroller once a month to audit accounts and financial data. The technology supplier did not devote any personnel for technological issues in the JV firm.

The JV agreement improved neither the recipient firm's production nor product technology. Nor were technology development skills improved compared to their previous production facilities (under licensing). The recipient was completely dependent on the technology supplier firm for technology development. The recipient imported technology from the supplier and then operated it. All technological changes were acquired from the supplier and the recipient applied them to its production facilities. Acquiring the technology and applying it as it was, was conceded to be the strong competitive advantage in marketing. The recipient did not possess the capability to develop new products for its product range without a technology licensing agreement.

The recipient adapted products to the Turkish environment and to the characteristics of its own suppliers. The recipient did not perform R&D activities, with the exception of approximate 15% modification of the product to adapt the Turkish conditions. The recipient had some quality improvement programs but they could not be considered as R&D activities. The recipient spent approximately 1% of its total revenue on these quality improvement and product adaptation facilities. It considered R&D to be very important, but licensing was substituted for R&D facilities. The recipient presumed that once royalty fees were paid for licensing, spending more funds on R&D facilities was unnecessary.

6. Satisfaction of the recipient firm with the collaboration:

The technology recipient was satisfied with the performance of the JV on issues of cost control and reputation. However, the recipient was not satisfied with the overall performance of the JV because of unrealized international sales issues in the JV firm. The recipient's expectation of exports to foreign markets within the supplier's marketing system was not realized.

The parents of the JV had some management problems because of the 50-50% ownership structure. There were some major dead-locks on a number of issues which were critical to the survival of the JV firm: the recipient wished to capitalize retained earnings, whereas the supplier did not wish to take on additional risk by doing so. Overall, the recipient was not satisfied with the performance of the JV, since it did not meet their primary expectation of market expansion.

7. The lessons learned by the recipient:

The recipient presumed that if it gave the majority (51%) share to the technology supplier firm, the supplier would have been more faithful to the JV. On the other hand, it also perceived that either one of the parents holding the majority share would have helped in resolving the dead-locks in strategic decisions. This was admitted as a strategic mistake made during the establishment of the JV agreement.

If the recipient did not have sales problems and was able to sell internationally, it would have rather operated with a current and future technology licensing agreement.

CASE 4: Gamze Industries-Carolyn & Wendi Corp. Equally-Owned Joint Venture,
CAROLYN & WENDI-GAMZE INDUSTRIAL STEAM BOILERS COMPANY.

Introduction:

The collaboration between Gamze Industries of Turkey and Carolyn & Wendi Corporation (C&W) started in 1955. The earliest form of the collaboration was a trade agreement. In the beginning, Gamze was importing C&W boilers and installing them. Following that Gamze started importing components from C&W and assembling them in Turkey in their industrial machinery fabrication plant under the license of C&W. Gradually local contribution to the products increased to 90%, from 10-15%, with the pressure of the recipient. In 1989, a 50-50% owned JV marketing company was established between Gamze and C&W of Canada. The boilers merchandised by C&W-Gamze were still manufactured in the fabrication plant of Gamze, using the manufacturing and quality assurance procedures of C&W.

1. Objectives for collaboration:

Garnze started collaborating with C&W in 1955 by importing and distributing the C&W products in Turkey under a trade agreement. In order to import components and assemble the products in Turkey, a licensing agreement was established between the companies. In order to obtain the international recognition and marketing assistance of C&W, Gamze established a JV marketing company with the supplier in 1989.

2. The major issues considered in the collaboration mode selection:

Gamze's reason for entering a JV was to improve marketing missions. International recognition and "references and the prior-experiences" were the critical factors required for the sale of its products in international markets, and even in Turkey for large sized projects. Gamze wished to enter a JV with C&W in order to obtain these competitive advantages. Gamze was familiar with the product and was already producing under the licensing agreement, but the competitiveness of the operation had diminished. Licensing fees, plus the purchase of certain components from the supplier at higher prices increased the cost of the products, thereby reducing the competitive power of the C&W-Gamze steam boilers. The recipient targeted an increase in local contribution in the manufacturing operation to cut costs, and with the marketing assistance of the supplier to increase the competitiveness of the operation. The recipient lacked the international recognition and marketing channels to enter foreign markets but it obtained them through the JV. In order to bid on large size boilers "references and the prior-experiences" of the firms were required which the recipient also obtained with the JV.

A 50-50% owned JV was preferred to fulfill the objective of sharing the business equally and to avoid a dominant-parent JV. The recipient presumed that since there was no government restriction on the ownership structure, an equally-owned JV was the best way to ensure the equilibrium and harmony in the collaboration.

3. The process of arriving at this collaboration mode:

Historical development of the cooperation between the two companies brought the mode of collaboration to its current situation. C&W initially earned a licensing fee and the profit from the components that it had sold to the recipient. Due to the decreasing contribution of C&W to the manufacturing operation, and increasing proportion of

locally made components for the products, the fringe benefits that C&W obtained from the sale of components gradually reduced. The royalty that C&W obtained in return for the technology license it provided for the operations was not seen as sufficient by the supplier. Therefore, a JV, and hence direct sharing of the profits, was acceptable to the supplier. With the acceptance of Gamze, a marketing JV was established.

4. External factors of the collaboration mode selection:

The preferences of the supplier company towards entering a JV also encouraged the JV establishment. Legal legislation was not a restrictive or dictating power on the formation of the collaboration agreement mode.

5. Impacts of the collaboration:

The steam boilers of C&W-Gamze were produced at the Gamze's industrial machinery fabrication facility under the technology license of C&W, with maximum local contribution and minimal costs. The recipient was still paying the same licensing fees even after the establishment of the JV. The recipient's fabrication facility improved its manufacturing technology after the establishment of the JV in marketing. Computer aided manufacturing and DIN, ASME (Boiler and Pressure Vessel Code), BS and AFNOR Certificates of Authorization to Code Stamp were implemented in the production operations of Gamze's fabrication unit.

The recipient started operating in the larger steam boiler category with the establishment of the JV, subsequent to obtaining the opportunity to bid for boilers of those sizes by the utilization of C&W's prior experience and authorization. The recipient obtained the opportunity to enter foreign markets that it would not have been otherwise be able to

operate in with a licensing agreement. The recipient procured orders from C&W, in which the supplier was not interested. In international sales, C&W-Gamze placed bids via C&W and sold its products through C&W's channels. The recipient was completely dependent upon the supplier's marketing backing to sell its products.

Closer relations with the technology supplier were accomplished and the understanding of the recipient's problems by the supplier was ensured. The establishment of the JV improved managerial techniques as well as technological skills that were being used at Gamze. The recipient started to work more systematically.

The JV company received US\$500,000 by way of an R&D grant from CIDA in order to adapt the boilers to the lignite fuel which was used in Turkey. However, in terms of product technology development the JV company was completely dependent the supplier.

6. Satisfaction of the recipient firm with the collaboration:

The recipient was satisfied with the collaboration and the collaboration mode. Yet, the political situation in Middle East affected the sales of the firm. It was facing some problems because of the political instability and tension in the region.

7. The lessons learned by the recipient:

The recipient firm was fully satisfied with the equally-owned JV.

CASE 5: Şehraz Group - Marie-Antoinette Corp. Equally-Owned Joint Venture,
ŞEHRAZ MARIE-ANTOINETTE PHARMACEUTICALS MARKETING COMPANY.

Introduction:

Pharmaceuticals was the core business of the Şehraz Group of Turkey. In 1990 the company accounted for 14% of domestic pharmaceutical production and more than half of pharmaceutical exports. Şehraz Pharmaceuticals Company had licensing agreements with 23 technology supplier, international pharmaceutical companies. One of them was Marie-Antoinette Corporation of France, with whom they entered a 50-50% owned JV in 1990.

1. Objectives for collaboration:

A licensing agreement between the parents of the JV was also in operation prior the establishment of the JV. The products were manufactured in Şehraz's pharmaceuticals plant. Prior to the JV, Şehraz had also been marketing Marie-Antoinette products in Turkey among its own product line. The JV was established in order to market the products both inside and outside of Turkey.

2. The major issues considered in the collaboration mode selection:

The recipient's main objective for entering a JV was the opportunity it was afforded to obtain marketing know-how and assistance, and the international recognition of the supplier, both in the local market and in other countries in the region (especially the former Soviet Union Republics). The JV did not result in Şehraz having to share its

existing market share with the supplier, but was ensured growth through foreign sales with the assistance of the supplier.

3. The process of arriving at this collaboration mode:

With the licensing agreement the recipient was not able to acquire the benefits listed in the above section. Also, changes in the international operations strategies of Marie-Antoinette jeopardized the possibility of continuing to operate with a license. As a result, the recipient approached the supplier with a partnership proposal and the JV was established.

4. External factors of the collaboration mode selection:

The strategical changes in technology transfer policies of the technology supplier company influenced the establishment of the JV.

5. Impacts of the collaboration:

The recipient obtained the marketing know-how of the supplier and growth through international sales.

6. Satisfaction of the recipient firm with the collaboration:

The recipient was satisfied with the JV.

CASE 6: Şehraz Group - Janneke Group Equally-Owned Joint Venture,
SATEN KAĞIT TISSUE PAPER AND PRODUCTS COMPANY.

Introduction:

Saten Kağıt (a subsidiary of Şehraz Group) was founded in 1969 and was the first company in Turkey to manufacture tissue paper and tissue paper products locally on a large scale. It was operating in the industry for 22 years and was the leader in the Turkish market, with 60% market share, when the 50-50% owned JV between the Şehraz Group of Turkey and Janneke Group of Netherlands, a leading MNE in the industry in Europe, was established in 1987. Şehraz Group had 5 other JVs with world leading MNEs, as well as several other licensing agreements which were mostly in its core pharmaceuticals business, for the acquisition of product technology (i.e., medicine formulas).

1. Objectives for collaboration:

Following the liberalization of the Turkish economy in the early 1980s, Şehraz decided to re-structure the group's sectorial differentiation. In order to survive and secure steady growth in the free-market economy, Şehraz perceived the necessity of making its commercial operations competitive. In certain fields, it was not able to stay competitive against the MNEs in the non-protectionist Turkish economy. Therefore, as a long term strategy, Şehraz decided to enter alliances with world leader firms in the fields that it did not have competitive power, in order to maintain their leading position in the market also after the expected market entry of other MNEs. The paper tissue industry had high growth potential, and in order to maintain its market share and position in this growing industry, Saten Kağıt perceived it necessary to enter this collaboration.

2. The major issues considered in the collaboration mode selection:

The tissue paper industry was capital intensive and dependent on raw-material imports. The recipient could hardly stay competitive ensuing the entrance of MNEs. Therefore, it entered a JV. The objectives of entering a JV were:

I- It was presumed by the recipient that JVs provide a secure and continuous flow of up-to-date technology in an environment of rapid technological change. Licensing was perceived as a temporary and insecure way of transferring technology. It was doubtful that the recipient would be able to license the technology again upon the expiration of the licensing agreement. With the JV, however, the technology supplier did not give the rights nor the technology to produce its products to any company in Turkey other than Saten Kağıt.

II- JV induced acquisition of operation and marketing know-how as well as product and production technologies. The recipient acquired marketing know-how to develop market potential and stimulate consumption of paper tissue and related products.

III- JV gave the recipient an alliance with an MNE that was one of the world leaders in its field. Consequently, utilization of surplus capacity was induced by integration with the MNE, and hence cooperation in developing exporting opportunities and growth. Furthermore, sources were merged and business risks shared with the MNE. Otherwise, in the case of a licensing agreement, the recipient would be confined to the local market and a small operation size.

Capital requirements and financial missions were secondary motives in establishing the JV. Şehraz was able to acquire state-of-the-art technology with the JV which it was not able to do with a licensing agreement. As a corporate policy Şehraz did not give the majority share to its JV partner. Therefore, the 50-50 owned JV induced the transfer of state-of-the-art technology.

Neither technological complexity, nor the relatedness of the technology, nor absorption capacity influenced the recipient's selection of the technology transfer mode. At the time the business was initially established, the recipient was completely unfamiliar with the technology. It acquired technology with a licensing agreement and began operating it independently. When the JV was established in 1987, it had already been operating for 22 years.

3. The process of arriving at this collaboration mode:

The liberalized and growing market in Turkey was becoming more attractive to MNEs' Şehraz's adopted a re-structuring programme and decided to enter a JV, even though it was the market leader in the industry. The firm was then approached by some MNEs with partnership proposals. It decided on Janneke, which met its requirements for growth with state-of-the-art technology. The recipient proposed a share-holding structure which gave the majority ownership to the recipient, but the supplier did not accept a share of less than 50%. An equally-owned JV was therefore established.

4. External factors of the collaboration mode selection:

The technology supplier's collaboration mode preference influenced the formation of the agreement mode. Other main external factors influencing the recipient's decision to enter a JV were the world economic trend towards globalization and liberalization of the Turkish economy. The recipient could neither compete with these MNEs for the Turkish market, nor export to foreign markets with the licensing agreement. It needed to ally with a world-leading company.

The recipient entered this JV in 1987, after moves towards economic liberalization in Turkey. Şehraz Group preferred JV-type collaborations since economic liberalization and government policies encouraged foreign investment. Şehraz could not have entered this JV agreement under previous environmental conditions governing foreign investment. Therefore, economic liberalization encouraged the recipient's choice of a JV.

5. Impacts of the collaboration:

After the establishment of the JV, Sateri Kağıt maintained its managerial personnel and structure.

The JV resulted in significant improvements in the technology acquiring company. The manufacturing facilities were modernized and strengthened with the state-of-the-art technology, and capacity was expanded threefold. Costs were put under control and products were diversified with the introduction of new, better quality and competitive products. The recipient ensured capacity optimization by selling to foreign markets (which it had not been happened during the last 4 years), and integrating semi-finished product supply-demand balances between Janneke subsidiaries and JVs. The recipient was exporting 20-25% of its total sales in 1992.

The recipient obtained open access to the common R&D pool of the Janneke Group. The pool was established with contributions from the Janneke Group's subsidiaries and JVs and was available to each affiliate as required, for a fee. The recipient was therefore able to acquire the required technology from the pool. It did not develop its own R&D facilities.

6. Satisfaction of the recipient firm with the collaboration:

The recipient was fully satisfied with the 50-50% owned JV. Its sales and exports improved, technology was updated, capacity was optimized and its growth objective was realized. The recipient did not face a management problem due to the equally-owned partnership.

CASE 7: Selva Group (majority owner) - Patrizia Corp. Joint Venture,
YOLOTO MOTOR VEHICLES COMPANY.

Introduction:

The Yoloto JV, between the Selva Group of Turkey and Patrizia Corporation of Italy, was established in 1989. Prior to the JV agreement the auto manufacturer was operating under the license of Patrizia. In 1989 Patrizia acquired 27% of the shares and the JV was founded. Selva Group was the largest private group in Turkey and had wide manufacturing operations in the auto industry. Selva also had two other JVs in the auto industry with Patrizia's parent company.

1. Objectives for collaboration:

Earlier, in order to acquire the technology for manufacturing vehicles, Selva licensed technology. Selva did not have the potential to develop technology with in-house R&D due to its lack of technological capabilities and funds to finance the high costs of R&D operations. At the time Yoloto started manufacturing operations, the conventional way of transferring technology was licensing. Therefore, Yoloto entered a licensing agreement with Patrizia. In 1989 Patrizia wished to enter an equity partnership because of the growing market and economic liberalization in Turkey. The recipient accepted because a JV ensured a more secure and continuous flow of technology. Therefore, Selva authorized Patrizia to acquire Yoloto's stock.

2. The major issues considered in the collaboration mode selection:

The recipient considered entering a JV, in order to provide closer relations with the technology supplier firm to ensure continual technology transfer and a smoother flow of technology.

The recipient perceived technology licensing as a limited and temporary way of transferring technology. A JV, however, was perceived to provide continuous and comprehensive technology transfer. With licensing, the recipient acquired technologies one at a time on a product basis, and therefore, it was doubtful that the recipient would be able to license other product technologies. The JV, however provided access to Patrizia's whole product range. Patrizia did not give the rights or technology to produce its products to any company in Turkey other than Yoloto. The recipient and supplier jointly decided which products would be in Yoloto's product range.

Another incentive for the recipient to enter a JV was increasing exporting opportunities through the JV. The financial aspect of the project, however, did not influence Selva to enter a JV. Holding the majority share or having equal shares was not a very important issue for the recipient. The parents were in favour of a shared-management JV even if the recipient were to hold the majority share.

3. The process of arriving at this collaboration mode:

A history of thirty-five years of cooperation among the parties affected the current collaboration structure of Yoloto. The historical proceeding started with a simple assembly line under license (importing CKD (Completely Knock Down) parts), with very scanty local contributions to manufacturing. Local participation and the number of products gradually increased, parallel to development of the Turkish industry. Local

contribution to manufacturing eventually reached 60-70%, and the product range expanded from a limited number of products, to a full range of products with the establishment of the JV. Thus the historical development of the company brought it into a JV with the technology supplier company. The recipient, however, still did not have the capability of developing technology.

4. External factors of the collaboration mode selection:

The supplier's desire to enter an equity partnership inspired the establishment of the JV. The growing market in Turkey encouraged the supplier firm to invest.

5. Impacts of the collaboration:

The JV had positive impacts on Yoloto. It induced closer relations with the technology supplier company, as compared to manufacturing under license. With the establishment of the JV, the supplier became more concerned about the technological problems of the recipient firm, and closer inter-relations forced the supplier to be more cognizant of the recipient's technological intricacies.

Yoloto started producing new and more up-to-date products because of the JV agreement. Compared to licensing, the JV expanded its product range by allowing it to operate with Patrizia's full product range, rather than with a limited number of licensed products.

Yoloto was completely dependent on the technology supplier parent in terms of technology development. The recipient did not have sufficient volume to warrant R&D. It considered technology licensing to be a reasonable substitute for the high-cost R&D facilities of smaller size companies (on an international scale) like Yoloto. Therefore,

R&D was presumed to be redundant since royalty fees were paid for the technology license under the JV agreement. Yoloto did not have R&D operations, but the technological accumulation of the recipient gradually expanded, as it did under the JV. The recipient adapted products to conditions in Turkey. The JV agreement also improved the technological adaptive capacity of the recipient.

Yoloto was oriented to the local market and the JV with Patrizia did not affect domestic sales or market share. The recipient had been allowed to use the brand name of the licensor before the JV. There was an increase in exports with the establishment of the JV. Export opportunities grew under the JV, which improved the international recognition and competitiveness of the technology recipient firm.

6. Satisfaction of the recipient firm with the collaboration:

The recipient was satisfied with the technological issues of the JV. Some unexpected dilemmas, however, stemmed from conflicts and cultural differences in the managerial styles of individuals in charge of managing the JV. But Selva, which was a group that had been operating businesses with their own style, became accustomed to operating and sharing management with foreign partners.

7. The lessons learned by the recipient:

If the recipient had the chance to re-establish the JV, it would have made the agreement more specific and comprehensive. If it had the chance to re-establish the business it would have better planned the issues of foreign partner selection, product technology and benefits that could have been provided by the collaboration. It did not have these

opportunities, however, due to the historical development of the manufacturing operation and collaboration, which brought the collaboration to its current form.

CASE 8: Türker Group's Collaborations in the Auto Supply Industry with Sylvie Corp. and Valerie Corp..

Introduction:

The manufacturing operations of the Türker Group of Turkey in the auto-supply industry were newly established in 1974-75 with current and future technology licensing agreements — with Sylvie Corporation of France, in order to manufacture brakes; and with Valerie Corporation of France, in order to manufacture clutches. Türker started its operations in this field by importing components and doing some simple assembly operations in Turkey. Then the local manufacturing contribution increased gradually and the manufacturing operation was integrated. As the collaborations proceeded, the mode of these collaborations changed from licensing to capital participation of the supplier firms. Eventually, marketing and manufacturing companies were established with both collaborations. These were:

Türker Brake Equipment Industries Co., which was wholly-owned by Türker Group, manufactured brakes under the license of Sylvie;

Sylvie Automotive Industry and Trade Co., was a JV (51% Sylvie owned, 49% Türker owned) that marketed Sylvie brake equipment;

Valerie-Türker Clutches Industry Co., was a JV (51% Valerie owned, 49% Türker owned) that manufactured Valerie Clutches; and

Valerie Türker Automotive Industry and Trade Co., was a JV (majority owned by Valerie, minority by Türker) that marketed Valerie's spare auto parts.

1. Objectives for collaboration:

Auto manufacturing started in Turkey in the 1970s with simple assembly lines. Government policies encouraged both vertical integration and the increase of local contribution in production. Türker Group had importing and distribution operations in the auto spare-parts industry and wished to invest in manufacturing operations in this industry. The recipient could not develop the technology itself for two reasons: one, the operation was not large enough to cover the required R&D costs; and two, it did not have the product development capability. In addition, technology suppliers to Turkish auto manufacturers restricted firms to purchase products from specific suppliers. Therefore, a firm wanting to sell to these auto manufacturers had to acquire technology from a supplier that was a recognized supplier of multinational auto manufacturers. Through Türker's relations with France, it found Valerie and Sylvie in this industry and entered technology transfer agreements with them in order to produce the components locally.

2. The major issues considered in the collaboration mode selection:

With regard to the collaborations, the recipient first selected the technology, then the collaboration partner and lastly the mode of collaboration. At the time the collaboration agreement was established, technology selection was the most important factor for the recipient. The recipient approached the technology suppliers first.

A licensing agreement was considered to be the principal way of transferring technology. The recipient never considered establishing a JV. Licensing was preferred in order to maintain control of the company. The technology supplier's agreement was seen essential for the establishment of a JV. The business was oriented towards the local market, and thus the recipient did not consider accessing the technology suppliers' distribution

channels or sourcing system. It wanted only to acquire the technology. A licensing agreement was therefore seen as sufficient.

The recipient would have preferred licensing to a JV since they could have acquired the full technology with it. However, with the world trend it was getting harder to obtain technology because suppliers were not inclined to allow utilization of their technology without capital partnership. The scale of the project also influenced the selection of the collaboration mode. If the projects had exceeded the proportions of local Turkish business scales and had global sales objectives, then a collaboration mode where the suppliers would also have had capital participation (instead of only a share of profit) would have been preferred by the recipient. In other words, unlike licensing agreements in JVs the risk is shared and maintains a supplier's affiliation in the international arena.

The recipient had exporting rights to neighbouring countries, however, these countries were not large markets. In very few cases the suppliers purchased (sourced) certain products from the recipient to market internationally. This was possible only through a JV where the technology suppliers had the majority share. Only then could the recipient go beyond small-scaled local operations.

When the recipient entered its licensing agreements in this industry, it was not familiar with the technology, but as an importer was familiar with the product. Thus, when selecting a collaboration mode, it considered neither its familiarity with the technology, nor the required skills to operate the technology, nor the complexity of the technology. The recipient did not see any problem with transferring the technology with licensing agreements from an industry which was unrelated to its existing production operations.

3. The process of arriving at this collaboration mode:

The ongoing (15 years) licensing agreements were changed to JVs in the late 1980s and early 1990s. The collaboration modes with Valerie, and with Sylvie (in marketing operations) were altered to JVs. The recipient had no control over the decisions: they were based on the suppliers' pressure. The suppliers threatened not to supply technology or renew the licensing agreement if it did not hold shares. The recipient was already manufacturing the products with the suppliers' know-how and it was less flexible than it would have been had the Türker Group been initially establishing the operations in those industries. Finding another recognized (by the industrial customers) technology supplier firm would not have been profitable for them. Therefore, they sold the majority share of the companies to the technology suppliers.

There were no improvements in the production ranges and manufacturing operations after the move to the JVs. This exposes the commercial use of JVs, as opposed to technology transfer issues. The establishment of the JV marketing company with Sylvie (but not manufacturing) also confirms the marketing missions and the commercial use of JVs.

- Licensing → Technology transfer, technological aspect
- Joint venture → Commercial aspect

4. External factors of the collaboration mode selection:

The preference of suppliers was the external factor which influenced the transformation of the collaboration mode from licensing to JVs between Valerie and Türker, and between Sylvie and Türker in marketing. The environmental factor which influenced the

suppliers' capital participation decision was improving market conditions in Turkey. The liberal economic movement in the country inspired the suppliers to enter JVs in Turkey.

5. Impacts of the collaboration:

The collaboration initiated common managerial concepts to the recipient company. The recipient surmised that they had learned a lot from the technology suppliers. There was no improvement in domestic sales as a result of these collaborations, but only in the growth that would have occurred in the product range (but not in the production range) of the company by integration of the imported products.

The recipient spent 4% of its sales on R&D facilities. Philosophically, R&D was very important, but economically it was not because the manufacturing operations were not large enough to warrant R&D for its own products. It made some small adaptations to the product and the production line. It adapted one product for a locally built car. It could maintain service facilities for the plant so long as the problem was not very complex, otherwise, the supplier would be brought in.

6. Satisfaction of the recipient firm with the collaboration:

The recipient firm had a monopoly in the Turkish market, although it exported only a small amount of total production. The recipient received up-to-date product technology from the suppliers, due to the requirement of its industrial customers. However, it did not transfer the state-of-the-art manufacturing technology because it was neither suitable to Turkey's industrial conditions, nor the size of manufacturing operations in Turkey. The supplier firms were very helpful in implementing the technology in the recipient firm. They often solved product line problems.

The recipient was satisfied with its licensing agreement with Sylvie. As a manufacturer, it was satisfied with the JVs, but not as an investor because it had only a 49% share and therefore the supplier controlled management. The recipient was not satisfied with holding a minority share in the companies. Even so, it was considering entering a JV with Sylvie (in manufacturing) and conceding to a minority share rather than paying royalty fees.

Overall, other than the fact that it lost control, the recipient was moderately satisfied with the collaborations. From a manufacturer's perspective, the collaborations met expectations, but as an investor the recipient had expected more benefits. There were no technological problems: the technology licensing agreements were satisfactory.

7. The lesson learned by the recipient:

The recipient would have preferred a JV over which it had control. Currently, the recipient was appraising Sylvie's JV proposal in the manufacturing company (Türker Brake Equipment Industries Co.) in exchange for licensing fees. The recipient would have preferred a JV in order to expand the market, to penetrate the large markets in industrialized countries and to have continuous, direct access to the supplier's technological pool. This was not possible under a licensing agreement.

CASE 9: Kevser Casting Company, Natural Gas Meter Current and Future Technology Licensing agreement with Ingrid Corp..

Introduction:

Kevser Casting was the machinery components manufacturing subsidiary of Kevser Group of Turkey. The firm wanted to enter the Natural-Gas Meter manufacturing industry, and subsequently established a current and future technology licensing agreement with Ingrid Corporation of Netherlands in 1990.

1. Objectives for collaboration:

Kevser Casting was operating in the machinery components manufacturing industry with a considerably high level of technology. In the late 1980s the fuel system in Turkey started being converted to natural gas, and a large demand for natural gas devices developed. This untouched and growing market attracted Kevser Casting which decided to produce natural gas meters. However, it was completely unfamiliar with the product technology and lacked the required know-how to manufacture meters. It did not have the competence to develop the technology in-house, and therefore needed to enter a technology transfer agreement. A current and future technology licensing agreement was established so as to acquire the technology for this product diversification.

2. The major issues considered in the collaboration mode selection:

The recipient preferred entering a licensing agreement where it would purchase the required technology and maintain control of the company's management. The recipient

did not want to enter a partnership-type collaboration agreement where it would have to share management of the company.

The recipient presumed that neither the technology, nor the management or capital requirements needed to start and operate the business were required to enter a JV with the technology supplier. Sales of the product in the Turkish market was not a problem. JV was found to be useful: (i) if the capital requirements were greater than the recipient could afford by itself, (ii) if a high level of commercial risks were involved in the operation, (iii) if the technology was more complex than the recipient could handle, (iv) if the recipient was dependent on the supplier for the purchase of required input raw or semi-finished materials for the manufacturing operations. The recipient presumed that establishing a JV was a much more complicated process. A JV establishment could be considered a couple years after the foundation of the business with a licensing agreement.

3. The process of arriving at this collaboration mode:

Kevser Group has a traditional corporate culture and management structure. Kevser Group and Kevser Casting had both previously entered other technology licensing agreements with foreign firms. The recipient did not consider entering any other type of technology transfer agreement other than a licensing agreement. And there were no other propositions from the supplier for other modes of collaboration. Therefore, the licensing agreement was established.

4. External factors of the collaboration mode selection:

There were no external factors affecting the technology transfer agreement mode selection of the recipient.

5. Impacts of the collaboration:

In the markets that the supplier did not operate, the recipient obtained exporting rights for the product with the supplier's brand-name. Also, the licensing agreement induced possibility of integration of the recipient's products into the supplier's sourcing channels in the future. The recipient did not adapt or change the product so as not to lose the possibility of sourcing the supplier and using the brand-name. It did not develop its own R&D facilities. A licensing agreement was seen as to be a substitute for R&D facilities.

6. Satisfaction of the recipient firm with the collaboration:

The recipient was satisfied with the licensing agreement. It presumed that it made the agreement with the best conditions. The recipient was not pleased about the delays in the technology transfer application due to the newness of the product technology.

CASE 10: Güler Industrial Machinery Company Current and Future Technology Licensing Agreement with Helga Corp..

Introduction:

Güler of Turkey was an industrial equipment manufacturing company. It had manufacturing operations utilizing flexible metal processing tools. Güler has been operating in the construction industry and has been manufacturing hydro-electric units, heavy cranes, turn-key manufacturing plants, etc., with technological consortiums involving foreign firms. It had also been importing and distributing Helga transmixers and premix-concrete machines. In 1987, Güler established a licensing agreement with Helga Corporation of Germany, and started manufacturing various models of transmixers and premix-concrete machines in Turkey with its existing industrial machinery manufacturing unit.

1. Objectives for collaboration:

Güler the industrial machinery manufacturer, wanted to establish manufacturing operations of transmixers and premix-concrete machines. Some of the firms in the industry had been operating without a technology transfer agreement, and they did not have a competitive advantage. Güler had the option of imitating and deriving the product without a technology transfer agreement, but the market demand was towards higher quality products and widely recognized brand-names. Therefore, market conditions and customer preferences in Turkey motivated Güler to enter a technology transfer agreement in order to manufacture higher quality products and ensure competitiveness. Güler chose a current and future technology licensing agreement in order to acquire proper, up-to-date product designs.

2. The major issues considered in the collaboration mode selection:

Before entering the collaboration agreement Güler appraised market conditions and characteristics of customer demand in Turkey. It collaborated with a well-known technology supplier firm to be able to compete with other firms in the market.

Güler preferred a licensing agreement to a JV because it considered that it had the required managerial expertise and experience to run the business. The recipient was not familiar with the technology of the product. It presumed that since it had the managerial capability and sufficient capital to operate the business, there was no need to enter a JV. The recipient did not think to evaluate its technological capability to manufacture the product. Subsequently, the recipient approached the supplier with a licensing agreement proposal. The product technology that was to be transferred was not excessively valued, so the supplier was not afraid of losing technological secrets. Hence, there was no pressure from the supplier's side to establish a JV. Consequently, the licensing agreement was established.

3. The process of arriving at this collaboration mode:

The collaboration between Güler and Helga originally started with trade dealings (distribution agreement) and was transformed to a technology licensing agreement. Güler was the importer and distributor of Helga's products in Turkey prior to the licensing agreement. After it entered the licensing agreement, it started manufacturing a particular range of products, but still imported and marketed Helga's products, which they did not manufacture in Turkey.

4. External factors of the collaboration mode selection:

The technology supplier's preference for a JV could have affected the selection of a collaboration mode. However, due to the characteristics of the technology and non-attractive market conditions in Turkey, the supplier did not favour entering a JV. Government legislation did not influence the collaboration mode decision of the recipient.

5. Impacts of the collaboration:

The licensing agreement did not improve the recipient's production technology. However, the recipient acquired up-to-date product design and increased its marketability.

6. Satisfaction of the recipient firm with the collaboration:

The recipient was only partially satisfied with the licensing agreement as a result of a slowdown in the Turkish market. It had a 20-25% market share, and ranked 2nd in the industry. The licensing agreement imposed conditions for the recipient's international sales, but it had not exported as of 1992. The greatest competition came from imported products, following a decrease in import tariffs.

7. The lessons learned by the recipient:

The recipient was not satisfied with its profitability due to the narrow market of products and intense competition in Turkey. Its capacity was not large enough to ensure

economies-of-scale, and therefore its costs were too high to compete in international markets. It presumed that it was not possible to establish a JV in the heavy machinery industry due to a lack of interest on the part of technology suppliers to invest in an unattractive market such as that in Turkey.

CASE 11: KORHA Cord Fabric Company, Current and Future Technology Licensing Agreement with Kelly Corp..

Introduction:

KORHA Company was a subsidiary of Hale Group of Turkey. The company was established in 1972 with a current and future technology licensing agreement of Kelly Tire and Rubber Co. of the U.S.A.. KORHA did not renew the agreement at the end of the 10 year licensing agreement. Instead, it started operating independently with its own technological competence. KORHA became a technology supplier JV parent by itself in other developing countries. It still had other licensed technologies for by-products.

1. Objectives for collaboration:

The recipient had neither the required technology to manufacture the product, nor a familiarity with the product and its production technology. Licensing was seen as the appropriate way to acquire know-how for the production of cord fabric. The technology supplier firm had tire manufacturing operations in Turkey, to which KORHA would sell its semi-finished products. The supplier's production required the use of compatible cord fabric for the tire, which was a product of its own cord fabric technology. As a result, the recipient decided to establish a technology licensing agreement with this firm.

2. The major issues considered in the collaboration mode selection:

At the time the collaboration agreement was established, JVs were not as well known or popular as they later became in Turkey. The government did not encourage the establishment of JVs, as it had since the 1980s. Therefore, entering a JV in order to

transfer technology was not considered. Licensing was seen as the principal way to transfer technology needed to establish operations in an industry which it was unfamiliar.

The recipient preferred a current and future technology licensing agreement in order to take advantage of future developments in process and product technology of cord fabric. Concern for this issue, eliminated the possibility of acquiring the technology through a current technology agreement or a turn-key agreement.

The recipient presumed that entering a JV was unnecessary, since they did not have marketing concerns. When the company was established there was a high amount of protectionism and high import barriers for foreign products in Turkey. Therefore, the recipient enjoyed a comfortable time period in the local market without any competition. During this period it improved its technological skills. Cord fabric technology was not rapidly changing, and production was not as complex as, for example, tire manufacturing, though it was not a finished, but a semi-finished product. The recipient firm even started exporting technology to other firms.

The recipient was more independent and flexible with respect to technological and managerial issues with the licensing agreement, as compared to a JV. However, the licensing agreement did not bind the supplier to the technology recipient firm as would a JV. With licensing, the supplier might not continue to supply technology after the agreed time period, and had only limited concerns for the technological needs of the recipient.

The recipient perceived JVs to have certain advantages which it was not able to obtain with the licensing agreement. These were:

I- Purchase guarantees by the supplier to market a certain amounts of products in its distribution channels in international markets. For some products, recipients' market and marketing capabilities might not have been sufficient to reach the break-even point of production. Therefore, suppliers' regular purchase guarantees could have been crucial to

reach the required production level. In order to accomplish optimum capacity and capacity utilization, and in order to achieve the benefits of economies of scale, recipients may have needed this purchase guarantee for growth.

II- Enables acquisition of state-of-the-art technology in industries where there are rapid changes to the technology.

III- Induces competitive power and the fringe benefits of being an ally with an MNE.

A JV was presumed to be the short-cut for growth, as it enabled entrance to large markets via the supplier's distribution channels and purchase guarantees, and the transfer of technological developments. There was a trade-off, however between these advantages and dependency on the supplier.

3. The process of arriving at this collaboration mode:

KORHA was not pressured into entering a JV by the technology supplier, as it had been in some other subsidiaries of Hale. Licensing was seen as the primary way to acquire the technology to start up the business. Therefore, they licensed the technology.

4. External factors of the collaboration mode selection:

Protectionism in Turkey during the 1970s did not encourage KORHA to enter a JV, but these policies allowed KORHA to sell its products easily in the local market and survive with the licensing agreement.

5. Impacts of the collaboration:

The recipient developed its technological competence and improved production technology so that it was more productive and efficient. KORHA had an R&D department. It did not, however, develop product technology for this semi-finished product because it needed to be compatible with the finished products. Also, since there was no rapid change in tire technology, there was no change in cord fabric product technology either. While they developed some other product technologies for by-products, the main improvements were made in production technology.

6. Satisfaction of the recipient firm with the collaboration:

KORHA was satisfied with its licensing agreement. It began operating technology independently. It developed technology improvement capabilities, and exported technology to other countries. The recipient firm presumed that it would not be able to be a technology supplier and export to other firms if it entered a JV. The recipient used licensing agreements to acquire technology for some of the by-products it could not develop on its own.

KORHA was the biggest disintegrated manufacturer of cord fabric in the world. It produced 3% of the world's total production. It has been able to market its products both in domestic and international markets, and exports more than 50% of production. Hence, it was presumed unnecessary to enter a JV. It did not enter a JV, even after the economic liberalization in Turkey (unlike some other licensee companies of the Hale group), because it could maintain growth and international sales missions, initially through licensing, and later independently.

7. The lessons learned by the recipient:

KORHA was not familiar with the technology when it entered the licensing agreement. Therefore, it was not aware of the difficulties and problems that could arise during the technology transfer process. As a result, it learned that licensing agreements should be more specific and more comprehensive. Its unawareness of possible problems resulted in an incomplete licensing agreement with respect to technology transfer issues. Thereafter, before entering licensing agreements, the recipient would do a better preliminary study of the technological needs and conditions of the licensing agreement.

CASE 12: Şebnem Household Appliances Company, Current Technology Licensing Agreement with Sabine-Daniela Corp..

Introduction:

Şebnem, subsidiary of the Selva Group of Turkey, was a household appliance manufacturing company and was the largest private corporation in Turkey. In 1986-87, Şebnem established a current technology licensing agreement with Sabine-Daniela Corporation of Germany in order to acquire the technology of washing machines and refrigerators.

1. Objectives for collaboration:

Prior to the licensing agreement, Şebnem was already producing the same variety of products, but with outdated product and production technology, and without any technology transfer agreement. Şebnem was imitating or deriving products of other companies. It entered the current technology licensing agreement in order to update its product and production technology.

2. The major issues considered in the collaboration mode selection:

Şebnem's motive for entering a licensing agreement was to acquire up-to-date, competitive product designs and to up-grade the technological level of the company. A licensing agreement was determined as a sufficient way to fulfill these objectives .

Şebnem was a local market oriented company and their own brand-name and marketing capability was very strong in Turkey. Therefore, they did not need the technology

supplier's brand name, international marketing assistance or financial resources. Hence, Şebnem did not consider entering a JV and opted to enter a licensing agreement.

The recipient would have considered entering a JV if it had induced growth, international sales and/or other commercial benefits. On the other hand, if the supplier wanted to enter a JV which targeted the recipient's local market, the recipient would object to having to share its market.

3. The process of arriving at this collaboration mode:

A JV was not an option during the establishment of the collaboration agreement. The recipient did not consider entering a JV unless pressure came from the technology supplier firm, even though it had to continually license technology in order to keep up with the technological trend.

4. External factors of the collaboration mode selection:

Market conditions in the country inspired Şebnem to enter a technology licensing agreement in order to acquire the technology for competitive products. Earlier, in the protectionist Turkish economy, Şebnem was only competing with other indigenous companies. However, after economical liberalization in Turkey and with the lowering of import barriers, multinational technology supplier firms were allowed to enter the Turkish market. They started competing with indigenous firms in the domestic market with better, more advanced products. Therefore, the only way for the technology deficient indigenous firms to survive was to acquire technology of better and more competitive products.

Following the economic liberalization in Turkey, the Turkish market became more attractive for multinational firms to invest in and these firms preferred to enter the market by more direct and profitable routes than licensing agreements. Furthermore, Turkish products started entering foreign markets and foreign products started entering the Turkish market. Therefore, licensees and licensors of the identical products came to compete in Turkish as well as in foreign markets. Consequently, technology suppliers became wary of licensing their technology to Turkish firms and preferred to enter JVs where they would get both more control and more benefits from their operations in Turkey.

The technology transfer mode preference of Şebnem started to shift towards JV agreements from licensing agreements, which was the principal way to transfer technology. JV agreements started to be a condition for recipients to acquire up-to-date technology and/or growth in the international arena. For example, in the compressor manufacturing division of Şebnem the firm was forced to enter a JV with the supplier in order to obtain up-to-date product technology (i.e., rotary compressor technology). Şebnem was the largest firm in Turkey, but only 2.5% of their total sales were exported. Licensing agreements limited the exporting opportunities of licensees. Hence, so as not to be limited to the local market they may be required to enter a JV with the technology supplier firm. Therefore, market tendencies towards globalization, and mergers and acquisitions were gradually compelling the recipient to enter closer collaborations with technology suppliers.

5. Impacts of the collaboration:

The licensing agreement had positive effects on Şebnem, especially in up-grading the manufacturing technology. Şebnem developed the competence to improve its production

technology with the working experience of 37 years. Currently, Şebnem was only required to acquire product designs from external technology suppliers. The recipient had started to establish its R&D operations and spend 1.17% of its total yearly sales in 1992, and planned to increase it to 3% by 2000.

6. Satisfaction of the recipient firm with the collaboration:

The licensing agreement met the expectations of Şebnem. Both in technological and commercial issues, the firm was fully satisfied with the collaboration agreement. It had an 85% market share for washing machines and 53% for refrigerators in Turkey.

7. The lessons learned by the recipient:

The technology transferring capability of technology supplier firms was found to be important for the success of the technology transfer. The recipient determined that European firms were inferior technology suppliers compared to the American firms because they lacked blue-prints.

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