Buying Behavior of EPC Companies in Sealing Systems Industries

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B.Khodadadi               A.Nader               M.Safari
Abstract

This thesis deals with industrial buying behavior in the sealing systems in international oil and gas projects in Iran. International oil and gas projects and huge investments there are very important. Thus, in order to not lag behind, marketers need to understand the buying behavior of organizations since this is a key to success when formulating marketing strategies. The aim of this thesis is to provide a better understanding of the supplier selection criteria and the dimensions and roles in the buying center for different buyclasses.

In order to achieve the purpose of this research, a multiple case study of the involved EOC companies in Iranian international oil and gas projects, OIEC and TIJD was conducted. The main source of empirical evidence consists of one personal interview performed at each company.

This study’s findings indicate that price and delivery are the most important supplier selection criteria and that number of people in a straight rebuy is same as modified rebuy. Consequently, the roles in the buying center in both modified and straight rebuy is same.
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Chapter 1: Introduction

In this chapter an introduction of research topic will be presented. The research purpose will be introduced as well as research questions. Finally demarcations and an outline of this thesis will be provided.

1.1 Industrial Buying Behavior

All firms, whether making products or delivering services, sell something and are therefore dependent in one way or another on their customers. The satisfaction of customers’ needs and wants is, according to Brassington and Pettitt (2000), the essence of marketing philosophy. To investigate how the buying behavior of firms work is always needed, since it is an ever changing process influenced by many forces in its surroundings. Industrial firms tend to have a smaller number of customers, which means that they are easier to identify than customers in consumer markets. Buying behavior in this study will focus on the industrial buying behavior (hereafter IBB). IBB is a complex process over time that involves interaction between several persons, both within and outside an organization (Webster & Wind, 1996). Many have researched this issue and there is a general agreement that the major components of industrial buying behavior are: the buying process; the buying center; and factors affecting the buying process and the buying center (Bapista, 2001). Figure 1.1 shows an overview of the three major components of the IBB and how they affect each other. When looking at the buying organization it is clear that it is affected by a number of forces, and Webster and Wind (1996) have identified four different forces, namely individual, social, organizational and environmental. Furthermore there are several factors in the buying organization that influence the buying center in different ways such as structure, technology and people (ibid.). The buying center includes all members that are involved in the buying process and these members’ relationships towards each other (ibid.). Activities that are carried out by the buying center can be divided into different phases and should, according to Wind and Thomas (1980), not be seen as a single event.

IBB has been considerably changing since the 1970’s, mainly due to four reasons: global competitiveness, emergence of total quality management (TQM) philosophy; industry restructuring and finally use of Information Technology (hereafter IT)
(Sheth, 1996). Therefore, it is increasingly important for industrial marketers to recognize their customers and define their needs, to be able to achieve sales success (Goh, Lau & Phau, 1999). According to Robinson, Faris and Wind (1967) IBB can best looked upon by studying the problem-solving buying process. Tanner (1996) adds that this is something a marketer must understand in order to fully appreciate the relationship process. The buying process is hence what this study will concentrate on.

Figure 1.1: Major Components of IBB
Source: Authors’ construction based on Webster & Wind, 1996

Gopalkrisham (1996) explains that a purchase’s importance serve as a crucial link between the procurement decision and organizational strategy. The industrial buying process has been researched extensively and studies by Webster and Wind (1996) and Robinson et al. (1967) are two of the pioneers. One reason for the popularity to study this process is that the importance of a purchase and the uncertainty of its outcome are of great strategic concern for the buying firm. Many of those who have studied the buying process use or refer to the buygrid-framework that Robinson et al. developed in 1967.
This framework explains how firms make decisions by dividing the decision making process into two parts: the buy phases and the buy classes (Ibid.). The buy phases explains how a purchase passes through eight different phases, starting with recognition of a need, continuing through search for and selection of supplier, ending with performance feedback and evaluation (Ibid.). There are three different buy classes that can be used when discussing each of the eight phases: new task; modified rebuy; and straight rebuy (Ibid.). This framework has, according to Baptista (2001), proven to be a very useful analytical tool that is still useful today, almost 40 years later. However times are changing and since this framework was developed, in 1967, new technology has probably had an impact on the buying process.

1.2 Problem Discussion

International Oil/Gas Projects are widely spread all over the world and various companies from different fields and businesses are involved in them. Iran is one of the hot spots in the world with enormous resources of Oil & Gas. In the recent years with removing of some limitations in foreign investment in Iran, MNCs become more interested in these projects and they invested huge amounts of money in Iran. Financing, Engineering, Consulting, Construction, Logistic, Procurement and many other companies are involved in one hand and on the other hand even the governments are involved and Political, Economical, Social and Technological issues are also concerned in these projects.

Marketing in these projects are very complicated and needs to be considered very carefully and companies should have an excellent view and understanding of Decision Making Units and each party’s interests and requirements.

Various players in these projects have different interests and concerns. Financing companies and institutes need safety and less risk in their investment. They ask for guarantees from home and host country governments. It causes that, governments also deal with each other in order to organize various and different things. In some cases home country financing forces the host country and consequently all engaged parties in the project to supply some of necessary things from home country or special geographic zones.
On the other hand contractor companies are responsible for preparing a tender and processing all necessary things to choose an EPC (Engineering, Procurement and Construction) company for implementing the project. Contractors in Iran usually are very big governmental companies; they aren’t interested in service and in some way they don’t care about the End-User they want to control implementing of a project in a scheduled an specified time and budget with an EPC company.

End-users usually aren’t involved in the projects and they are not decision makers but the interesting thing is that they must operate something that they didn’t have any role on its implementation and if someone makes a mistake then the End-User will be in trouble all the time in future.

EPC companies also are very big and international companies that get the order for Basic and Detail Engineering, procurement of all necessary equipments and construction. They must implement the project in a specified time with a defined budget. EPC companies usually are concerned about time and money. They have to be on time and in case of delay they must pay plenty of penalties to the contractor. On the other hand they have a defined budget and they should also be profitable. They don’t care about the End-User and his interests. In some cases the projects are so big that even very big EPC companies couldn’t do the job alone and they have to make some Joint Ventures that it makes the work more and more complicated. In such cases we should consider various duties of each party and their interests also. But in all projects, EPC’s are responsible for procurement and all the suppliers and sub-suppliers should deal with them. So we have to understand their buying behavior.

1.3 Purpose and Research Questions

The purpose of this thesis is to gain an understanding of the buying behavior of EPC companies in sealing systems industries.

To fulfill this purpose two research questions (RQ) have been stated as follows:

**RQ 1:** How is the buying behavior of EPC companies in Sealing Systems Industries?

**RQ 2:** What factors affect the buying behavior of EPC companies?
1.4 Demarcations

We have chosen to look at one part of International projects, namely Oil, Gas and Petrochemicals since it is one of the most important industries in the world and because of its importance sealing systems also have outstanding role. More precisely, we focus on Iranian market.

1.5 Thesis Outline

This thesis consists of six different chapters. This first chapter introduces the reader to the subject and gives an understanding of what will be researched. Then the literature review will present findings on the subject from several different authors. In the third chapter the method used for this research will be outlined. This will be followed by the case presentation in chapter four and the analysis of this data in chapter five. Finally the conclusions drawn and implications from this research will be included in the last chapter of this thesis.
Chapter 2: Literature Review

In this chapter an overview of previous literature within the research area will be presented. The aim of this chapter is to provide the relevant literature in the field of research, as well as a frame of reference. First we introduce the buying process and the supplier selection criteria. Then we describe the buyclasses. In the subsequent section we review the dimensions and the roles in the buying center.

2.1 Introduction

Much of the literature only discusses one or a few of the buyphases and therefore parts of several different sources have been brought up in order to cover all the phases as good as possible. Due to the lack of literature on this subject, this thesis will include more general data on the issue.

2.2 The Buying Process

In the following sections we review studies that related to the buying process. The emphasis is set on the buygrid frame work elaborated by Robinson et al. (1967) due to the acceptance of the model; it is also commonly referred to in IBB literature (Moriarity, 1983; Ghingold, 1986).

Buying is not an event, buying can be seen as a process where separate steps, stages and/or phases can be identified. “From the time at which a need arises for a product or service, to the purchase decision and its subsequent evaluation, a complex myriad of activities can take place” (Wind and Thomas, 1980, p.242).

Cyert, Simon and Throw (1956) are seen as the pioneers who attempted to understand the sequential nature of the buying process. They performed a qualitative approach were they documented an originally unprogrammed decision process. Cyert et al. (1956) described the decision-making as three processes: 1) common processes, 2) communication processes and 3) problem-solving processes.

Webster (1965) developed a four-elements model to describe the buying process: “1) problem recognition, 2) organizational assignment of buyer responsibility, 3) search procedures for identifying product offerings and establishing selection criteria, 4) choice procedures for evaluating and selecting among alternatives” (quoted from Johnston, 1981, p.42).
Two years later, Robinson et al. (1967) introduced the buygrid framework. Haas (1995, p.174) states: “Of all the models of buying behavior that have been developed, the buygrid has been the most enduring”. The buygrid framework provides a frame of reference where the purchasing situations are designed to be general enough to apply to all purchases (Robinson et al. 1967).

When Robinson et al. presented their buygrid-framework in 1967 they laid a foundation for many future researchers. This framework has since then been commonly referred to in IBB literature, e.g. Moriarty, 1983 and Ghingold, 1986 referred to in Bayle, 2003, Webster & Wind, 1996; and Zinkhan, 2002. The purpose with the framework was to enable managers to analyze the major phases of the buying decision process (Robinson et al., 1967). Three different premises form the foundation on which the framework is based. First of all Robinson et al. (1967) stated that purchasing is a sequence of activities that varies in complexity and that buying can be described as a dynamic decision process; involving different functional areas and hierarchical levels within an organization. Secondly, they pointed out that the central unit of analysis is the buying situation (or buyclass); and this situation develops as an individual recognizes the existence of a need or a problem. Thirdly they define the procurement process as the chain of activities that must be performed in the resolution of a buying situation. From these three premises the buygrid-framework was developed; incorporating three buyclasses and eight buyphases, as shown in table 2.1. The eight buyphases can occur simultaneously, but the tendency is towards a sequence, starting at one proceeding towards eight (Ibid.). A closer presentation of each of eight stages will be provided in section 2.2.1.
Table 2.1: The Buygrid-Framework.

<table>
<thead>
<tr>
<th>Buyphases</th>
<th>Buyclasses</th>
<th>New Task</th>
<th>Modified Rebuy</th>
<th>Straight Rebuy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recognition of a need</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Determination of solution characteristics</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Description of solution characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Search for suppliers</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Acquisition and analysis of proposals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Evaluation of proposals and selection of supplier(s)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7. Selection of an order routine</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>8. Performance feedback and evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. The most complex buying situations occur in the upper left portion of the buygrid matrix, when the largest number of decision makers and buying influencers are involved. Thus, a new task in its initial phase of problem recognition generally represents the greatest difficulty for management.

2. Clearly, a new task may entail policy questions and special studies, whereas a modified rebuy may be more routine, and a straight rebuy essentially automatic.

3. As buyphases are completed, moving from phase 1 through phase 8, the process of “creeping commitment” occurs, and there is diminishing likelihood of new vendors gaining access to the buying situation.

SOURCE: Adapted from Robinson et al. (1967), p.14

2.2.1 Buyphases

Buyphase 1: Recognition of a need

This phase consists of two parts: the recognition of a problem and the awareness that the solution may take the form of filling certain needs through a purchase. The recognition of a problem can drive from numerous external or internal directions such as customer needs and requirements, unsatisfactory performance of existing equipment, sellers marketing efforts or low self-inventory (Robinson et al., 1967). Before the recognition of a need can have an impact on procurement it has to be made
explicit, and someone with authority must act in order to start the process (Ibid.). The second part of this phase is an awareness of the direction where the best solution to the problem is most likely to be (Ibid.).

**Buyphase 2: Determination of solution characteristics**
Decisions at this phase, concerning the general problem solution, are usually made within the using department or group (Robinson et al., 1967). Those involved need to agree on, in a specific and narrow way, how the problem can be solved in order to enable more specific analysis (Ibid.). Hence, they need to decide, what application requirements that must be met, and the desired type and quantity of the good or service. In some cases this phase proceeds simultaneously with later phases (Ibid.).

**Buyphase 3: Description of solution characteristics**
This phase includes a transformation of the need into a particular solution that is detailed and precise so that it can be communicated to others inside and outside the organization (Robinson et al., 1967). At this phase the buyer might work closely with a supplier, especially if the supplier was causing the recognition of the need at phase one (Ibid.).

**Buyphase 4: Search for suppliers**
Here the organization shifts from searching for alternative solutions into searching for potential sources of supply, leading to a qualification of suppliers (Robinson et al., 1967). Since the purchasing process often is complex, it may take several months before a firm finally selects a supplier (Patterson & Dawes, 1999). It is common for firms to use a two-phase search process (Robinson et al, 1967). First, a buyer narrows the total number of possible suppliers down to a list of suppliers that meet the organizations’ demand (Ibid.). Secondly, the buyer gathers more detailed information on these suppliers and based on this information they select a few of them that are the most appropriate for meeting the objectives (Ibid.). The criterion for qualification varies with the buying organizations, the specific situation and the buying influences involved (Ibid.). No matter how suppliers are qualified, the result of this phase is a decision of which suppliers will be considered as potential vendors (Ibid.).
Buyphase 5: Acquisition and analysis of proposals

After suppliers have been examined the buyer request offers (Patterson & Dawes, 1999). This may in cases of standardized procurements involve only checking a catalog or telephoning a supplier to attain information (Robinson et al., 1967). On the other hand, more complex situations may involve a series of counter proposals and new offers, extending over period of time (Ibid.). In the former situations, were little information is needed phases four and five often take place simultaneously. In the latter situations, where more information is needed, these phases are separate (Ibid.).

Buyphase 6: Evaluation of proposals and selection of supplier(s)

At this stage, offers and proposals from potential vendors are weighed and evaluated, and after approving one or several offers and rejecting the others, a supplier is selected (Robinson et al., 1967). In the latter part of this phase, there might be further negotiations with the supplier(s) concerning the prices, terms of deliveries etc. (Ibid.).

Buyphase 7: Selection of an order routine

This phase begins when an order is placed. However, the procurement process is not completed until the item is actually delivered and accepted for use. The order routine that guides and scrutinizes the remaining activities includes both internal and external aspects (Robinson et al., 1967). Furthermore, internal activities of two types are involved: status reporting and inventory management (Ibid.). External activities include preparation of the purchase order, follow-up activities such as trouble shooting and inspection, and acceptance of invoice (Ibid.). By monitoring the vendor’s performance the buyer can get relevant feedback for the qualification of suppliers in future procurements (Ibid.).

Buyphase 8: Performance feedback and evaluation

Continuing on the previous phase, this phase includes a more thorough evaluation, but does not occur until after the purchased items are actually in use (Robinson et al., 1967). This evaluation seeks to find out how well the product solved the problem and how well the suppliers performed (Ibid.). The information gained from evaluation is necessary for an efficient elucidation of future procurement problems (Ibid.). Each of the eight stages discussed above could be assessed in accordance with the type of purchase, or buyclass, that the situation provides. It may look very different if
the purchase is a new product from a new supplier or if it is a rebuy from an already existing supplier. Hence, Robinson et al., (1967) have divided these situations into three different buyclasses: new task, modified rebuy, and straight rebuy.

2.2.2. Evaluation of Proposals and Selection of Suppliers

The aim of buyphase number six in the buygrid framework is to determine the optimal supplier who offers the best all-around package of a product (Gregory, 1986). The vendor selection has long been recognized as important and has been a central focus for much of the industrial marketing research over the past three decades (Patton, 1996). “The selection of component suppliers has long been regarded as one of the most important functions to be performed by a purchasing department” (Weber et al., 1991, p.2).

Choice Criteria

In the following sections we review studies focused on the choice criteria when selecting suppliers.

When the decision of purchasing a product is taken, the members of the buying center establish a set of evaluation criteria that can be used when comparing potential suppliers (Gregory, 1986).

Dickson (1966) performed a study based on a questionnaire that was sent out to 273 purchasing agents and managers in the United States and Canada. In this study Dickson distinguished 23 selection criteria, the top ten criteria were ranked as presented in table 2.2 provided below.
Table 2.2: Extract of Dickson’s Vendor Selection Criteria

<table>
<thead>
<tr>
<th>Rank</th>
<th>Factor</th>
<th>Mean Rating</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality</td>
<td>3.508</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>2</td>
<td>Delivery</td>
<td>3.417</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Performance history</td>
<td>2.998</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Warranties and claim policies</td>
<td>2.849</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Production facilities and capacity</td>
<td>2.775</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>6</td>
<td>Price</td>
<td>2.758</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Technical capability</td>
<td>2.545</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Financial position</td>
<td>2.514</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Procedural compliance</td>
<td>2.488</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Communication systems</td>
<td>2.426</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Dickson, (1966, p.38)

Kiser et al. (1975) investigated the perceptual differences and similarities in vendor attributes, as perceived by the non-purchasing executives between standard and special buying situations. They used list of 65 vendor attributes grouped under six broad categories:

1. convenience-related attributes
2. economic-financial attributes
3. caliber-capability attributes
4. image-dependability attributes
5. intercorporate relations attributes
6. service-related attributes

The study found similar perceptions of vendor attributes in both standard and special product buying situations. For both product buying situations, the most important attributes where:

1. image-dependability attributes
2. caliber-capability attributes
3. convenience-related attributes

Dempsey (1978) conducted a study with respondents consisting of purchasing managers from the electronics manufacturing industry and the electric utilities industry. Two buying tasks were used in the study: new-task capital equipment purchase and modified-rebuy-component material purchase. The purchasing managers were asked to rate the importance of the twenty performance attributes and the fifteen information sources in connection with the assigned problem (Dempsey 1978, p.258). A scale was used which ranged in degree of importance from “of no importance” with value 1 to “of extreme importance” with a value of 7. The top five criteria were as illustrated in table 2.3.
Table 2.3: Vendor Attributes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Capital equipment / New task purchasing problem</th>
<th>Component material / Modified rebuy problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electric utilities</td>
<td>Electric utilities</td>
</tr>
<tr>
<td></td>
<td>Electronics manufacturers</td>
<td>Electronics manufacturers</td>
</tr>
<tr>
<td>Delivery capability</td>
<td>6.16</td>
<td>6.43</td>
</tr>
<tr>
<td></td>
<td>6.34</td>
<td>6.63</td>
</tr>
<tr>
<td>Quality</td>
<td>6.04</td>
<td>6.24</td>
</tr>
<tr>
<td></td>
<td>6.22</td>
<td>6.31</td>
</tr>
<tr>
<td>Price</td>
<td>5.52</td>
<td>5.76</td>
</tr>
<tr>
<td></td>
<td>5.75</td>
<td>5.92</td>
</tr>
<tr>
<td>Repair service</td>
<td>6.16</td>
<td>5.63</td>
</tr>
<tr>
<td></td>
<td>6.02</td>
<td>4.82</td>
</tr>
<tr>
<td>Technical capability</td>
<td>5.83</td>
<td>5.24</td>
</tr>
<tr>
<td></td>
<td>6.34</td>
<td>4.99</td>
</tr>
</tbody>
</table>

Source: Adapted from Demsey (1978, p.259)

The conclusion of the study was that the type of buying task affected the importance of some vendor attributes. The relative importance of some vendor attributes was also affected by the type of organization in which buyers were employed (ibid.).

Weber et al. (1991) reviewed, annotated and classified 74 purchasing articles published since 1966. They compared Dickson’s (1966) selection criteria with the criteria used in these articles. The study found that twenty-two of the 23 criteria ranked in the Dickson study were addressed in at least one of the articles; forty-seven of the articles discussed more than one criterion. The JIT philosophy has however changed the importance of the criteria. Thirteen of the articles reviewed were specifically related to JIT manufacturing. Thirteen of the articles addressed the criteria of quality and delivery, eight of them mentioned net price and six of them mentioned production facilities and capacity. These were ranked 1, 2, 5 and 6 in the Dickson study. It is worth noting that the geographical location was addressed in seven articles and ranked twentieth on the Dickson list.

Deng and Wortzel (1995) conducted a study of the supplier selection criteria used by US importers in three merchandise categories. In all categories, the most important criteria were price and product quality, followed by on time delivery. The geographical location of the seller and the brand name was of little importance in the supplier selection decision.

Patton (1996) concluded that vendor selection decisions tend to vary considerably according to the specific situation in which the decision must be made.
2.2.3. Buyclasses

The buying situation has long been recognized as vital in IBB (Robinson et al., 1967; Webster and Wind, 1972a). The eight buyphases described previously in the buygrid framework can be combined with three basic buyclasses: 1) new task, 2) modified rebuy and 3) straight rebuy.

A study of 636 NAMP (National Association of Purchasing Management, Inc.) members that looked at purchasers ranging from ball bearings to buses and from pipe hungers to pulp additives found that 18 percent were new task situations, 49 percent were modified rebuys and 33 percent were straight rebuys (Bunn, 1993). The buyclasses in Robinson et al. (1967) can be described as follows:

New task
The new task refers to requirements or problems that have not arisen before. An internal stimulus or an environmental factor may trigger the recognition of a requirement or a problem (ibid.). This type of buying situation requires extensive information and extensive evaluation of alternatives (Dholakia and Johnston, 1967). New tasks occur infrequently but are of high importance because the purchase sets a pattern for the more routine purchases that will follow (Robinson et al., 1967). Industrial buyers regard new tasks as important and associate them with high risk (Dholakia and Johnson, 1967). New task is the most complex buyclass because of the large number of decision makers and buying influences that are involved (Mawson and Fearne, 1999).

Straight Rebuy
The straight rebuy situation is the most common in industrial purchasing (Robinson et al., 1967). “The straight rebuy purchases describe the buying situation where the purchasing department recorder on a routine basis” (Zinser, 1997, p. 588). Most of the purchases are made on a routine basis no further information requirements and little effort in general (Dholakia and Johnson, 1967). In this buyclass a “list” of acceptable suppliers exists, suppliers not on the list are not considered (ibid.). In a straight rebuy there may occur some variations from time to time in the quantity,
physical or chemical properties, delivery time, method of shipment or the price, so long as these changes do not entail a re-evaluation of the purchasing alternatives nor cause any changes in the procurement process and patterns (Robinson et al., 1967, p.29).

Modified Rebuy

“The modified rebuy involves a somewhat familiar purchase with some new information requirements and some further evaluation of alternatives” (Dholakia and Johnson, 1967, p. 284). The purchase can be an “upgraded straight rebuy” or a previously new task that has become more regular (Anderson, Chu and Weitz, 1987). The modified rebuy does not necessarily infer that the buyer will change either the item purchased or its source (Robinson et al., 1967). The result may be that the buyer purchases the same item from the same source. The distinctive element is the re-evaluation of alternatives, often of new ones (ibid.). Every buying situation can be characterized according to three factors: 1) newness of the problem, 2) information requirements and 3) considerations of new alternatives (Robinson et al., 1967). Table 2.4 shows how these characterizing features influence each basic type of buying situation.

Table 2.4: Distinguishing Characteristics of Buying Situations

<table>
<thead>
<tr>
<th>Type of Buying Situation (Buyclass)</th>
<th>Newness of the problem</th>
<th>Information requirements</th>
<th>Consideration of New Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>New task</td>
<td>High</td>
<td>Maximum</td>
<td>Important</td>
</tr>
<tr>
<td>Modified rebuy</td>
<td>Medium</td>
<td>Moderate</td>
<td>Limited</td>
</tr>
<tr>
<td>Straight rebuy</td>
<td>Low</td>
<td>Minimal</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: Robinson et al., 1967, p. 25

Even though the buygrid framework is the most widely accepted model within the research area of the buying process, it is not without criticism. The criticism is primarily focused on the handling of the buyclasses. Choffray and Lilien (1978) and Johnston (1981) state that the buygrid oversimplifies a complex phenomenon, overstates the role of newness in the process and neglects important issues such as importance of the acquisition. Bellizzi and McVey (1983) concluded that the
buyclasses might be useful when explaining the general importance of a purchasing decision; They should not be used to infer other buying behavior concepts such as the influence on the purchases. Another study by Ghingold (1986) found that the buygrid better represents the purchases of some products than it does for others. As for example it was concluded that the process was quite representative for an information process system but less representative for the purchase of replacement office furniture. There exists some criticism towards the buygrid, but the framework is still useful for the understanding of the buying process (Haas, 1995).

2.3 The buying Center
There is an extensive agreement that industrial buying involves multiple participants (Wind and Thomas, 1980). Cyert et al. (1956) were the first to emphasize the multipersonal involvement in industrial buying. The term "buying center" was first used by Robinson et al. (1967, p. 101), they defined the buying center as "The individuals who are related directly to the purchasing process, whether users, buying influencers, decision makers, or actual purchasers [...]."

2.3.1 Dimensions of Buying Center
Even though the concept of buying center is widely accepted (Spekman and Stern, 1979), little is known about the dimensions of the buying center (Wind and Thomas, 1980). Wind and Thomas (1980) found that the dimensions of the buying center vary by organization, even within an organization and by buying situation. Gronhaug (1975) came to the conclusion that the size of the buying center was influenced by perceived product importance, degree of routine in the purchase and the resources available to carry out the purchase. Wind (1978) conducted an empirical study including 171 manufacturing companies regarding the purchase of a scientific and technical information system. The findings concerning the composition of the buying center are presented underneath:

- The multiperson nature of the purchasing decision was clearly evident.
• The responsibility for the buying decision is shared among two or more positions, which increases the complexity of the process.

• The findings showed a low involvement by the research librarian and a high involvement of the purchasing agent.

• Differences were found due to company size. As the size of the organization increases from small (0-99 employees) to medium sized or large (100-999 and over 1000 employees respectively), the responsibility shifts down in the organization.

Johnston and Bonoma (1981) hypothesized that five dimensions of the buying center could be specified and measured:

• **Vertical involvement** refers to the number of the organization's authority hierarchy exerting influence and communications within the buying center. They defined six levels of authority: Ownership (board of directors), Top management (CEO, President, Executive, Vice President), Policy level management (functional vice presidents, general managers), Upper level operating management (directors, managers), Lower level operating management (supervisors, product managers) and Production work/cleric employees.

• **Lateral involvement** represents the number of separate departments, divisions, or firm functional areas involved in the purchase decision.

• **Extensivity** is characterized by the total number of individuals involved in the buying communication network.

• **Connectedness** corresponds to the degree to which the members of the buying center are linked with each other by direct communications concerning the purchase.

• **Centrality** denotes the degree of centralization of the purchasing manager in the buying communication network.
2.3.2 Roles in the Buying Center

Webster and Wind (1972a) came to the conclusion that only a subset of the organizational actors are involved in a buying situation. Further, they proposed five roles performed by buying center members:

- **Users** are those in the organization who use the purchased product.
- **Buyers** are those with formal responsibility and authority for contracting with suppliers.
- **Influencers** symbolize those who influence the decision process by providing information and criteria for evaluating alternative buying actions.
- **Deciders** refer to those with authority who choose among alternative buying actions.
- **Gatekeepers** designate those who control the flow of information into buying center.

Several individuals may have the same role, e.g. there may be several influencers. Also, one individual may occupy more than one role, e.g. the purchasing agent can be both buyer and gatekeeper. (ibid.)

Wind (1978) found that the importance of different organizational roles varies by the buyphase and the size of the organization is an important factor.

Bonoma (1982) added one role (initiator) to the five roles described by Webster and Wind (1972a), which gave this set of six roles:

- Initiator
- Decider
- Influencer
- Purchaser
- Gatekeeper
- Users
The initiator of the purchasing process recognizes that a company problem can be solved by the purchase of a product (ibid.).

Moller (1993) performed a study of two product cases of different complexities and distinguished of three groups of decision-making unit (DMU) participants:

- **Executors**: those who carry through the processes and are the execution specialists.
- **Determinators**: potential users and existing users who also decide what to do.
- **Gatekeeper**: this role is found to be played by more or less all categories involved.

### 2.4 Other Factors Affecting the Buying Process and the Buying Center

An early attempt to classify the factors affecting the buying process and the buying center was made by Webster and Wind (1972b) who found four classes of variables influencing the buying process and the buying center, namely: individual, social, organizational and environmental factors.

A more recent tentative to bring clarity into the area was made by Wind and Thomas (1980) who identified two set of factors influencing the buying process and the composition of the buying center. These are 1) the different buyclasses and 2) idiosyncratic personal, interpersonal, organizational and environmental conditions.

As the first set of factors already have been revised in the section about the buying process, we will here concentrate on the second set of factors, as they are extremely important determinants of IBB (Wind and Thomas, 1980). More precisely and in accordance with our research questions, we will concentrate only on the environmental influences.

#### 2.4.1 Environmental Influences

According to Wind and Thomas (1980) the environmental influences are difficult to assess and problematic to measure. They influence the buying process by providing information but also constraints and opportunities. These influences include physical (geographical, climate, and/or ecological), technological, economic, political, legal,
and cultural factors. The units exerting this influence consists of various organizations such as business firms (e.g. suppliers, competitors, and customers) trade unions, trade associations, and professional groups. (ibid.)

Environmental factors determine values and norms in buyer-seller interaction as well as between competitors. They also influence the flow of information entering an organization. It is considered crucial to understand the impact of technological change in order to make appropriate strategic decisions. Therefore, due to the importance of studying environmental factors, overlooking them can become very dangerous. (ibid.) An example of technological change in the development of telecommunications that during the late 1950s brought electronic computers and transistors (Pawar and Driva, 2000). In the 1960s the first modems were launched and the first data network (telex and packet switching) came online in the 1970s (ibid.).

2.5 Frame of Reference

In this section we present selected theoretical variables, related to each research question. We consider the selected variables being crucial in answering these questions. We have also tried to provide a conceptualization of the theoretical variables. The first set of theories chosen for research question number one deals with the different buyclasses as well as dimensions and roles in buying center. The selected theory for the second research question treats supplier selection criteria. This reasoning is summarized in table 2.5 in order to provide an overview of this study’s conceptual framework.
Table 2.5: Selection of Models for this study’s Conceptual Framework.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Theoretical Area Described</th>
<th>Selection of Models/Concepts and References in the Second Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Buying Center</td>
<td></td>
<td><strong>Buyclasses</strong>: new task, modified rebuy and straight rebuy (Robinson et al., 1967)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Dimensions of the Buying Center</strong>: Vertical involvement, lateral involvement and extensivity (Johnston and Bonoma, 1981)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Roles in the Buying Center</strong>: initiator, decider, influencers, purchaser, gatekeeper and users (Bonoma, 1982)</td>
</tr>
<tr>
<td>#2 Supplier Selection</td>
<td></td>
<td><strong>Supplier Selection Criteria</strong>: quality, delivery, performance history, warranties and claim policies, production facilities and capacity, price, technical capability, financial position, procedural compliance, reputation and position in industry, desire for business, management and organization, operating controls, repair service, attitude, impression, geographical location, amount of the past business, training aids (Dickson, 1966)</td>
</tr>
</tbody>
</table>

**RQ1** The first research question stated was: “How is the buying behavior of EPC companies in Sealing Systems Industries?” In order to answer this question we use a combination of three different variables; the first comprises the buyclasses, the second includes the dimensions of the buying center and the third covers the roles in the buying center.

The buying situation has long been recognized as important in IBB (Robinson et al., 1967; Webster and Wind, 1972b). Evidence indicates that the buyclass influences both the composition and size of the buying center (Dholokia and Johnson, 1993). Therefore we think it is important to include the buyclasses cited below that were developed by Robinson et al. (1967) while answering this question:

- New task
- Modified rebuy
- Straight rebuy

Furthermore, Johnston and Bonoma (1981) hypothesized that five dimensions of the buying center could be specified and measured. With regard to time restraints we will only study three dimensions of the buying center provided below:
• Vertical involvement
• Lateral involvement
• Extensitivity

For the investigation of the roles in the buying center, we chose to use the roles described by Bonoma (1982) since his study is the most comprehensive. The roles are:
• Initiator
• Decider
• Influencer
• Purchaser
• Gatekeeper
• Users

RQ2 The second research question stated was: “What factors affect the buying behavior of EPC companies?” We have chosen to use Dickson’s (1966) study for the investigation of our first research question. However, we will only investigate the criteria stated below as they were ranked highest and of greatest importance in the relevant industry:

1. Environmental friendliness
2. Safety
3. Spare parts
4. quality
5. delivery
6. performance history
7. warranties and claim policies
8. production facilities and capacity
9. price
10. technical capability
11. financial position
12. procedural compliance
13. reputation and position in industry
14. desire for business
15. management and organization
2.5.1 Emerged Frame of Reference

In accordance with the considerations from the previous section where each research question is paired with theoretical variables, we present the emerged frame of reference in figure 2.1.

A brief explanation is provided:

- The first concern relates to the supplier selection criteria in EPC Company buying components in sealing systems industries.
- Secondly, we study the three dimensions and the roles in the buying center for different buyclasses in EPC Company buying components in sealing systems industries.
Figure 2.1: This Study’s Emerged Frame of Reference
3. Research Methodology

The aim of this chapter is to discuss and to provide justifications for the selected research instruments. This research methodology gave us guidelines for how we should gather needed information for our research and how to process it. This increased the possibility to receive appropriate answers to our research questions and also to make valuable conclusions. A schematic overview of this chapter is presented in figure 3.1 below. The research philosophy is the first topic discussed followed by the research purpose, approach and strategy. Then we review the data collection, sample selection, analysis method and finally the quality criteria for research.

![Fig 3.1: An Outline of Chapter Three](image-url)
3.1 Research Philosophy
According to Anderson (1979) there are two dramatically opposed research philosophies, positivism and hermeneutics. In the tradition of positivism, researchers move from collecting and analyzing empirical data in order to create new general theory (Wigblad, 1997). In the tradition of hermeneutics, true theories explaining reality is impossible to formulate (Hellenius, 1990). On the other hand interpreting and understanding become more important (ibid.). The research philosophy of this thesis is mainly positivistic but also somewhat influenced by the hermeneutics. This is since 1) we have collected and analyzed data in order to contribute to theory, 2) but also because of that our research purpose is to gain understanding.

3.2 Research Purpose
The purpose of research may be exploratory, descriptive or explanatory (Yin, 1994). These purposes do not need to be treated separately; it is possible to use more than one research strategy for a research project, depending on the purpose (Saunders, Lewis & Thornhill, 2000).

**Exploratory research**
An exploratory research aims to define questions and hypotheses of a study (Yin, 1993). This kind of research is carried out when there is not much knowledge about the situation (Sekaran, 1992). Therefore it is a quite suitable research form when investigating a problem or look at a problem from a new angle since it is a very flexible method (Gummesson, 1991). In such cases widespread preliminary work is required to get initiated in the subject (Sekaran, 1992). According to Saunders et al. (2000) there are three ways of conducting exploratory research: (1) search for literature; (2) talking to experts; and (3) conducting focus group interviews.

**Descriptive research**
Descriptive research can work as a forerunner to exploratory research, in order to get a good picture of a phenomenon (Saunders et al., 2000); since description is a matter of collecting information through observation and reporting, or reading others work and summarizing it (Gummesson, 1991). Description does not aim to
find causes to a problem but rather to describe a phenomenon within its context, and can be used for describing characteristics (Yin, 1993). Gummesson (1991) points out that description is sometimes thought as a less prestigious research method in scientific circles, since it is a matter of observing and summarizing other people’s works. However this is something that Gummesson do not fully agree on; he believes that it is a matter of using it in a correct way and that analysis is always included. According to Saunders et al. (2000) “descriptive should be thought of as a means to an end, rather than an end in itself”.

**Explanatory research**

Explanatory research presents data that explains which causes that are produced with what effects, e.g. the cause-effect relationship, and is hence suitable for designing and doing more complex case studies since it is easier to do pattern matching of several sequences (Yin, 1993). Yin believes that this kind of research can facilitate theory testing with a rich and extensive data collection effort. Furthermore Saunders et al. (2000) recommend using this method for testing correlations; to be able to get better picture of relationships. However, Yin (1994) points out that it might be hard to be precise when measuring and describing these relationships.

With regard to the preceding discussion about the research purpose, we conclude that since we want to acquire knowledge of the research area, our study is to some extent of exploratory nature. Nevertheless, since the overall purpose of the study is to gain understanding by describing the area of study in theory as well as in reality, we consider the study to be mainly descriptive. Furthermore, as conclusions are drawn in the attempt to answer the research questions, one (even if marginally) part of the study is explanatory.

### 3.3 Research Approach

The choice of research approach is mainly based on the problem definition, and on the type of data that is collected during the research process. There are two different research approaches, qualitative and quantitative. The main distinction between two procedures is that qualitative research tend to apprehend words and use them as the main factor for analysis, while quantitative research tend to use figures (Denscombe, 1998). However, sometimes it can be problematic to
distinguish between quantitative and qualitative research (Silverman, 2000); and Denscombe (1998) claims that good scientific research tends to use features from both procedures. Silverman (2000) furthermore explains that many people seem to think that quantitative research is somewhat better than qualitative research. However, Gummesson (1991), Silverman (2000), and Yin (1994) all point out that this is not the case. The importance is not to choose the one most accepted; it is a matter of choosing the right one depending on the purpose of the research (Gummesson, 1991).

**Qualitative**

Denzin and Lincoln (2003) define research as: “a situated activity that locates the observer in the world”. Qualitative research is exceptionally helpful for identifying the scope of the research and should be used to fully understand the views, opinions and attitudes that the researcher might come across. It is quite common that a hypothesis is produced in the early stage of a qualitative research, not at the very beginning of it (Silverman, 2000). The strength of qualitative research is, according to Silverman (2000) that it focuses on actual practice and looks at how social interactions are routinely performed. There are, according to Travers (2001) five main methods to be used for qualitative research: observation, interviewing; ethnographic fieldwork; discourse analysis; and textual analysis.

**Quantitative**

Quantitative research reports reality in an objective way (Silverman, 2000). The most common quantitative research techniques include: observation, experimentation and surveys. When collecting quantitative data, structured research instruments, such as surveys, are often used in order to investigate a large sample that is representative for the whole population. According to Wiedersheim Paul and Eriksson (1999) all quantitative research models need to include only quantitative data e.g. figures and numbers.

A qualitative approach was chosen for this study due to the nature of the research purpose. We wanted to discover and describe our research questions in the form of words. Therefore we did not conduct a numerical research that would have been the case for a quantitative study. Travers (2001) claims that qualitative research is
simple to perform and may very well be used for research on a business organization. This led us to use the qualitative approach since it will give us the opportunity of gaining a deeper understanding of the phenomenon. Furthermore, it is impossible to use quantitative data when looking further into everyday situations (Silverman, 2000), and therefore the qualitative approach is necessary for our research approach. When using this approach we also got the opportunity to come close to our source of information, and we regard this as crucial for gaining information on attitudes and getting reliable information.

3.4 Research Strategy

A research strategy is a plan that will clarify to the reader how we have gone about to answer our research questions. According to Yin (1994) there are several ways of doing research in the social sciences:

- Experiments
- Surveys
- Archival analysis
- Histories
- Case studies

Yin (1994) states that each of these strategies has advantages and disadvantages depending on three conditions: (1) the type of research question; (2) the control an investigator has over actual behavior events; and (3) the focus on contemporary versus historical phenomena. Furthermore each of them could be used for all different research purposes: exploratory as well as descriptive and explanatory (Yin 1994). To get the most out of a chosen strategy, the researcher first needs to know the differences between them (Ibid.). To easier see the connections and differences between the five research strategies and the conditions, they are summarized in table 3.1.
Table 3.1: Relevant Situations for Different Research strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of Research Questions</th>
<th>Requires Control Over Behavioral Events?</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis (e.g. economic study)</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, Why</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SOURCE: Yin, 1994

Regarding the first condition, *form of question*, our research questions indicate that probably the most suitable research strategy is to conduct an experiment, history or a case study. This first condition therefore eliminates to some extent the research strategies survey, and archival analysis.

Concerning the second condition, *control requirement* the research strategy experiment, can be eradicated since we have no possibility to control the behavioral events related to our research purpose. Consequently only the research strategies history, and case study persist.

When it comes to the third condition, *focus on a contemporary even or history* we can eliminate history since we are not focusing on studying a historical phenomena but instead a contemporary event.

Yin explains that using case studies is a preferred strategy when: how or why questions will be answered; the researcher do not have much control over events; and the focus is on contemporary phenomenon within some real life context. In case studies, a few objects are studied but in greater detail and many dimensions, as opposed to studies with statistical methods (Eriksson & Wiedersheim-Paul, 1999).

Since this study aims to gain a deeper understanding on the buying process, a case study approach was sought as the most appropriate strategy and therefore chosen. We did not seek to have control over events, only to investigate how reality works today. Furthermore is case study as a research strategy often associated with a qualitative research (Yin, 1994).
3.4.1 Design of Case Study

Robinson (in Saunders et al., 2000) defines case study as the “Development of detailed, intensive knowledge about a single ‘case’ or a small number of related ‘cases’. When a case study strategy is chosen the data collection may include several different methods such as interviews, questionnaires and documentary analysis (Saunders et al., 2000). Saunders et al. (2000) argues that, even though some may claim that case studies have an “unscientific” feel, case studies can be a very valuable means of exploring existing theory, as well as challenge it. Moreover, case studies can be used as a base for new hypothesis (Ibid.). Case studies are, as mentioned, good for gaining a deep understanding of one or a few subjects, not for generalizing (Eriksson & Wiedersheim-Paul, 1999). The logic behind using a case study is the possibility of finding information that could not have been discovered if surveys had been used (Denscombe, 1998). Denscombe provided a summary of characteristics of case studies:

Table 3.2: Summary of Characteristics of Case Studies

<table>
<thead>
<tr>
<th>Case studies are characterized by emphasizing</th>
<th></th>
<th>Width of study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth of the study</td>
<td>Rather than</td>
<td>Width of study</td>
</tr>
<tr>
<td>The special</td>
<td>Rather than</td>
<td>The general</td>
</tr>
<tr>
<td>Relationships/processes</td>
<td>Rather than</td>
<td>Results and final products</td>
</tr>
<tr>
<td>Holistic point of view</td>
<td>Rather than</td>
<td>Separate factors</td>
</tr>
<tr>
<td>Natural environments</td>
<td>Rather than</td>
<td>Artificial situations</td>
</tr>
<tr>
<td>Several sources</td>
<td>Rather than</td>
<td>A single research method</td>
</tr>
</tbody>
</table>

SOURCE: Denscombe, 1998

When choosing case study as the research strategy, its structure needs to be designed. There are according to Yin (1994) two different ways of tackling this, 1) by conducting a single-case study or 2) to carry out a multiple-case study.

A single-case study is according to Yin (1994) most favorable in the following situations:

1. the case represents a critical case in testing a well-formulated theory
2. the case represents an unique or extreme situation
3. The case is of revelatory nature and researchers have had no previous access to observing and analyzing the phenomena. The evidence from multiple-case studies is regarded as being more compelling and robust, but they are also more expensive and time-consuming to perform. When the multiple case studies strategy is chosen, replication logic instead of sampling logic should be used, (i.e. the case selection should be performed in order to produce similar or contrasting results). (Ibid.). We chose to conduct a multiple case study as our research purpose not includes a critical case, furthermore, it is not an unique or extreme situation, nor is it of revelatory nature. Instead we strive for more compelling and robust evidence.

3.5 Data Collection

After having chosen a research strategy, the researcher needs to decide what method to use for collecting data (Yin, 1994). According to Saunders et al. (2000) there are two types of data, secondary and primary data. Data that has already been collected, by other researchers for another purpose, is called secondary data (Saunders et al., 2000). Primary data is data that a researcher collects on his/her own for a specific purpose (Eriksson & Wiedersheim-Paul, 1999). In our study we have chosen to collect material from both primary and secondary data.

There are different ways to collect the necessary data for a case study, which provides the essential basis for a study, and the data-collection is highly influenced by the methodology chosen (Home and Solvang, 1997). Yin (1994) states that there are six sources of evidence for the collection of data when conducting case studies: documentation; archival records; interviews; direct observations; participant-observations and physical artifacts. All of these sources of evidence have both strengths and weaknesses, but none is considered superior to the other (Ibid.). It is therefore best to use several of them. Yin (1994), for example, recommends that documents can be used in conjunction with other sources of evidence such as interviews. Interviews are according to Yin (1994) a good source of evidence when case studies are about human affairs, since these are best interpreted through the eyes of a well-informed respondent. Furthermore an interview is the most advantageous approach when a large number of questions need to be answered; questions are complex or open-ended; and the order and logic of questioning need to be varied
(Saunders et al., 2000). To complement an interview, Yin (1994) recommends using documentations, especially when conducting a case study. Below we have explained the strengths and weaknesses with these sources of evidence, and also different types within each source.

Table 3.3: Sources of Evidence: Strengths and weaknesses

<table>
<thead>
<tr>
<th>Source of Evidence</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews; Open-ended: allows for discussion</td>
<td>Targeted – focuses directly on case study topic</td>
<td>Bias due to poorly constructed questions</td>
</tr>
<tr>
<td>Focused: allows some discussion, also called semi-structured</td>
<td>Insightful – provides perceived casual inferences</td>
<td>Response bias</td>
</tr>
<tr>
<td>Structure: pre-stated questions</td>
<td></td>
<td>Inaccurate due to poor recall</td>
</tr>
<tr>
<td>Documentation; Written reports</td>
<td>Stable – can be reviewed repeatedly</td>
<td>Retrievability – can be low</td>
</tr>
<tr>
<td>Agendas</td>
<td>Unobtrusive – not created as a result of the case study</td>
<td>Biased selectivity, if collection is incomplete</td>
</tr>
<tr>
<td>Letters</td>
<td>Exact – contains exact names, references, and details of an event</td>
<td>Reporting bias – reflects (unknown) bias of author</td>
</tr>
<tr>
<td>Administrative documents</td>
<td>Broad coverage – long span of time, many events, and many settings</td>
<td>Access – may be deliberately blocked</td>
</tr>
<tr>
<td>Formal studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newspaper clippings and other articles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: Adapted from Yin, (1994)

Another, quite new, secondary source of evidence is Home pages, which are, if thoroughly and well developed, an excellent way of gaining information about a firm or an organization (Saunders et al., 2000). However this source of evidence has not yet been evaluated much in literature.

Documentation such as letters, articles, books and administrative documents can be very useful as a complement to other sources of evidence (Yin, 1994). This very source of evidence is stable, unobtrusive, exact and has a broad coverage regarding the span of time.

Nevertheless, documentation also incorporates some advantages (e.g. biased selectivity if the collection is incomplete or the possibility of low retrievability). Even though we are aware of these drawbacks, we chose to use documentation as the source of secondary data as the advantages cited above are salient. The documentation
examined included the companies’ websites as well as brochures, annual reports and media articles.

*Interviewing* is the technique researchers conducting case studies tend to rely most upon (Yin, 1994; Marshall and Rossman, 1999). This study is no exception and therefore interviewing is the investigation’s main source of primary data.

There are according Yin (1994) several ways of interviewing:

- **In an open-ended interview** the respondent is not asked any structured questions. The respondent is given the opportunity to freely express his/her opinion.

- **In a focused interview** the respondent is interviewed for a short space of time but is still allowed to express freely his/her opinion. However, the conversation is somewhat limited to a for each question relevant topic area.

- **In a structured interview** the respondent answers structured questions in the form of a survey.

For this study, face-to-face focused interviews were conducted by the use of a semi-structured interview guide based on the study’s emerged frame of reference. While doing so we were able to focus directly on the case study’s topic and retrieve thereto related casual inferences without which this study would have been impossible to complete. These benefits were considered of greater importance than the negative aspects of this source of evidence, which are the risk of bias due to poorly, constructed questionnaires, response bias or inaccuracies due to poor recall. We tried to minimize the response bias by introducing and explaining concepts unfamiliar to the respondent.

Direct *observation* is according to Potter (1996) together with interviewing overlapping since the insights gained from interviewing are difficult to distinguish from those gained from direct observations. The strengths of this method incorporate real time insights and coverage of contextual events. However, there is a risk of selectivity and reflexivity when performing observations and the time consuming and cost aggregating nature of this method may be seen as weaknesses.

As mentioned, the most important source of evidence for this study was interviews. To use a structured interview is best when conducting descriptive research; and semi-structured is good for exploratory research (Saunders et al., 2000). The time for the interviews was limited, and as Yin (1994) recommends in this situation and in
compliance with what Saunders et al., (2000) recommends, focused (or semi-structured) interviews were conducted. This enabled us to have a dialogue with the respondents and ask questions that were open-ended but still gives a well-structured interview. However at points during the interviews the discussions ran smoothly and we felt that it was necessary not to stick to the questions in the interview guide, to allow the interviewees to express freely. When choosing between face-to-face or telephone interviews, our choice fell on the face-to-face interview. The main advantage with this kind of interview is that the researcher can adopt questions, clarify doubts, pick up on body language and ensure that the questions are properly understood (Sekaran, 1992).

The documentations that we have used include written reports and newspaper articles. Written documents have been used in combination with other sources of evidence, mainly to gain background information and raise questions and create interest. By mixing and matching several methods triangulation can take place and enhance the quality of a research (Saunders et al., 2000). Saunders et al. refer to triangulation as: ‘the use of different data collection methods within one study in order to ensure that the data are telling you what you think they are telling you”. The triangulation in this study consists of documentation and interviews.

### 3.5.1 Sample Selection

When the sources of evidence have been chosen, next step is to decide appropriate sample(s). In this section we explain how we carried out the selection of the cases. Miles and Huberman (1994) argue that sampling in qualitative research involves two actions:

**Boundary setting:** This helped us to define aspects of our case that were manageable to study. Given the limits of time and means we decided to focus on Oil and Gas Industry in Iran. We decided to study only TIJD and OIEC companies that are involved in SouthPars projects in Iran and dealing with POGC (Pars Oil and Gas Company). Time and financial constraints also influenced our choice, thus the geographical proximity was decisive.

**Creation of a frame:** This action enabled us to uncover, confirm and qualify the fundamentals of our study. Since we were determined to conduct a multiple-case study providing more robust and compelling results, we had to select cases by
using the replication logic, in accordance with Yin (1994). Hence, we anticipated a multi-case study to produce somewhat similar results. These assumptions were based on the similarity of the two companies’ target market, both operating mainly in the Oil and Gas market in Iran.

The initial contact with the two companies was taken via telephone. We presented the scope of study to the people of respective company.

3.6 Data Analysis

In order to answer our research questions the collected data needs to be thoroughly analyzed. Yin (1994) explains that every investigation should start with a general analytic strategy, allowing the researcher to decide what to analyze and why. He continues by discussing how this could be done, namely through examining, categorizing, tabulating, or otherwise recombining the evidence. Saunders et al. (2000), as well as Yin (1994), claim that there is no traditional way of analyzing qualitative data and therefore it is more time consuming to analyze than quantitative data. Miles and Huberman (1994) recommend that the collected data should be analyzed in three stages:

- **Data Reduction**: This stage of qualitative data analysis selects, abstracts, simplifies, focuses, and transforms the collected data. The purpose is to organize the data so that final conclusions can be drawn and verified.
- **Data display**: When having reduced the data, it should be displayed in an organized, compressed way, enabling easy conclusion drawing.
- **Conclusion drawing**: In this stage the researcher decides the meaning of occurrences, noting regularities, patterns, explanations, possible configurations, casual flows, and propositions.

It is important to make sure that the analysis is of the highest quality possible, and it can be done by following four principles recommended by Yin (1994). The first thing to consider is that as much evidence as possible has been sought and that no loose ends have been left in the interpretation. Second, all major rival interpretations of the subject should be included. Third, the most significant aspects of the case study need to be addressed. Finally, authors’ own expert knowledge, on the studied issue or similar ones, should be brought in.

The way researchers deal with collected data is decisive for the quality of the research. The real challenge in qualitative studies involves the process of using the data collected rather than the process of collecting the data itself (Wolcott, 1994).
In a qualitative study like ours, any structuring and organization of information was impossible prior to the completion of the data collection. Moreover, as stated by Johansson-Lindfors (1993) the collected data needed to be converted into some interpretative form before it could be analyzed.

After the data was collected, we structured it according to the selected theories. We decided to follow Holme and Solvang’s (1997) recommendation to perform a systematic analysis, beginning with a within-case analysis followed by a cross-case analysis. In the within-case analysis, we aimed at reducing data. This enabled us to sharpen, sort, focus, discard and organize data in a more efficient manner. Furthermore, a comparison with our frame of reference was conducted to the cases separately.

For the cross-case analysis, we compared the reduced data of the within-case analyses, displaying in an organized and compressed way in order to find out whether the cases support or contradict the frame of reference. Miles and Huberman (1994) state that good displays are tools aiding to perform a valid qualitative analysis.

Conclusion drawing was the third and final stage of the data analysis. This was performed by noting regularities, patterns, explanations, possible configurations, casual flows and propositions. However, we tried to draw such conclusions lightly, while maintaining both openness and a degree of skepticism.

3.7 Quality Criteria for Research

It is important that a research project has high quality, and this can not be achieved only through collecting data. The criterion for testing whether a thesis has high quality or not is whether the research instruments are neutral and if the same conclusions should be drawn by other researchers (Denscombe, 1998). To increase the possibility of getting the right meaning of the answers, the researcher has to pay extra attention to reliability and validity (Saunders et al., 2000).

Due to the fact that a research design is supposed to represent a logical set of statements, it is important to study its quality. Therefore, according to Yin (1994) four different test criteria for evaluating the quality of the research design have been developed. According to Yin (1994 p. 33, with reference to Kidder and Judd, 1986) these criteria are:
Construct validity that concerns the establishment of correct operational measures for the concepts being studied. In order to increase the construct validity we followed Yin’s (1994) tactics for improving the quality of the research. Multiple sources of evidence (i.e. documentation, interviewing and observation) were used in accordance with the principle of triangulation. We also did our best to establish a chain of evidence throughout the entire report. Furthermore, we made key informants review the study report allowing for feedback and comments. We also tried to be as objective as possible while collecting data. We additionally consider the respondents’ great interest and co-operation in our study contributing to the credibility of this study.

Internal validity relates to the establishment of a casual relationship whereby certain conditions are shown to lead to other conditions, as distinguished from fake relationships (applies for explanatory studies only, not for descriptive or exploratory studies). The purpose of our study is mainly descriptive and exploratory, thus the internal validity will be neglected in this study.

External validity establishes the domain to which a study’s findings can be generalized. We are aware of that study alone does not offer a good basis for generalizations. Nevertheless, case studies do not rely on statistical but on analytical generalizations (Yin, 1994). We therefore try to infer a specific set of results to some broader theory and not to other case studies. In designing our research we used the replication logic as proposed by Yin (1994) when selecting suitable cases.

Reliability demonstrates to which extent the operations of a study, such as the data collection procedures, can be repeated with the same results. Even though one can not exactly repeat a qualitative study as stated by Johansson-Lindfors (1993), we have tried to improve the reliability by carefully describing the steps being followed. Both a protocol and a record were kept. We tried to make as many steps as operational as possible. We had also in advance also read about the companies, and we taped the interviews to reduce the errors and bias.
4. Case Study Evidence

The empirical evidence presented in this chapter concerns the two case studies of OIEC and TIJD. We present data related to their supplier selection criteria and dimensions and roles in the buying center in different buyclasses. The first case relates to OIEC and the second case to TIJD.

The presentation of the case study evidence is organized around the theoretical variables selected in the frame of reference. These theoretical variables are:

- Supplier selection criteria
- Buyclasses, dimensions and roles in the buying center

4.1. Case one: OIEC

Oil Industries Engineering & Construction Co. (OIEC) was established in April 26, 1987, to help repair the mass destruction of oil and gas installations and the crisis resulting from economic blockade during the Iran-Iraq war. The object of the Company was to achieve self-sufficiency and maximum exploitation of domestic technical equipment and manpower in the oil, gas and petrochemical industries. Oil Industries Engineering & Construction Co. was primarily charged to repair the heavy damages inflicted to the country's oil and gas refineries and installations and rebuild and commission them again.

Scopes of Activity of OIEC are as following, especially in Oil, Gas & Petrochemical project:

- Management
- Exploration research & development, engineering studies, design & technical supervision & inspection
- Providing projects equipment and material supply
- Implementing construction & installation works
- Pre-commissioning, commissioning & operation
- Provision of machinery & spare parts
- Planning, project control, service provision & related training
- Investing & joining with other companies

OIEC has following affiliated companies:

Energy Industries Engineering & Design Co. (EIED)
Qeshm Oil & Energy Industries’ Development Co. (QOEID)
Qeshm Oil Industries Engineering and Construction Co. (QOIEC)
Global Industries’ Construction and Installation Co. (GICI)
Kish Petroleum Engineering Co. (KPE)
Persia, Qeshm Oil & Gas Drilling Co. (PQOGDC)
Oil Industries Machinery Co. (OIMC)

At OIEC there are approximately 60 professionals working with purchasing tasks. The respondent for our interview at OIEC holds the title as Logistics director and Vice-president. He joined OIEC 5 months ago and willing to change the purchasing organization and behavior in OIEC based on his more than twenty years past experience in various companies.

4.1.1 OIEC's Supplier Selection Criteria

There is no written procedure in the OIEC for supplier selection. Besides there are some un-written procedures that at the moment OIEC based on that selecting their suppliers. The suppliers that OIEC contract are selected from a list of qualified suppliers (for the relevant product segment). The qualified suppliers are evaluated before each project's tender and even during the contract. The most important parameters for OIEC with the equal weight are price, quality and delivery time. All other parameters will be evaluated in relation to these three main parameters. He explains that new suppliers are found at special events such as trade fairs or even based on their own introduction to the company. When searching for new suppliers the basic demands from OIEC must be fulfilled, they look at the
commercial and technical potential. The suppliers should be introduced by procurement department to the company. Then the engineering department will be responsible for assessment of the potential supplier. After approval of engineering department, for entering to a qualified suppliers list of OIEC the transaction committee of company should approve the vendor as a qualified vendor. In each project the end user will give a list of potential vendors to OIEC and if OIEC wants to add some vendors to this list from his qualified vendors then he should get the approval of end user. This is the job of procurement department.

Logistics department is responsible for procurement, insurance, transportation, customs clearance (each big project has its own task force team for logistics). At the moment there are two task forces in OIEC for logistics. One of them is responsible for South Pars phases 9, 10 project with 750 Mill. US$ procurement budget and the other one is responsible for Siri and other small projects with more than 150 Mill. US$ procurement budget. Now the sourcing department that is looking for new vendors is in the engineering department but in the future it will be shifted to the commercial department.

Both contractors and vendors must be assessed by this department before their selection and then this assessment will be continued during the bid phase and also even after getting the order. In total in OIEC engineering department has more important role in the vendor selection. All the procedures are also applicable for subvendors in case of end user request but communication with subvendors must be done via original vendors.

There is no preferred vendor but in case of a certain license or instruct from end user then OIEC must act based on the instruction. Meanwhile besides there is no written preferred vendor but the relations with vendors and their past experiences make some kind of unofficial preferred vendors for OIEC.

Vendors should receive minimum requirement for being approved by engineering dept. and afterward the procurement dept. could send the inquiries to them. OIEC could buy the goods from vendors even with higher prices that technically are in a better position.

A group in OIEC is preparing the necessary procedures for vendor selection.
4.1.2 Buyclasses, Dimensions and Roles at OIEC

Buyclass Practices
All purchases in OIEC are project purchases, but it can be divided to new projects and repetitive projects so we will assume that OIEC has two groups of purchases, (new purchases and repetitive purchases). The new purchase involves the procurement of components that have been purchased before in other similar projects. The repetitive purchase relate to the procurement of new components that require some additional information or adjustments. The respondent declares that OIEC always have two kinds of purchases going on but it is not easy to mention the proportion of these two kinds of purchases.

Dimension of Buying Center
The number of individuals involved in a purchase depends on the buying situation and the type of component. The respondent discloses that irrespective of the buying situation there are always a purchasing officer responsible for the purchase and a technical officer responsible for the technical issues of relevant purchase.

New Purchase
The number of departments involved is highly dependent on the type of component being purchased. The respondent states that purchasing managers are involved in heavy purchases and technical directors in critical items. When it comes to the departments participating in a New Purchase, the respondent discloses that the purchasing department and technical department are always involved. In a new purchase the number of individuals involved varies between eight to twelve.

Repetitive Purchase
The respondent reveals that repetitive purchase has less sensitivity in the company and it is very uncommon that upper level managers are involved in repetitive purchase and the purchase almost is complete copy of previous jobs. The number of departments participating in repetitive purchase is the same but as mentioned with less sensitivity especially technically wise. In a repetitive purchase the number of individuals getting involved varies between eight to twelve.
Allocation of Roles in OIEC’s Buying Center

New Purchase

The person initiating a purchase of a new component always depends on the motive why a new component is being purchased. Because all the components will be purchased for projects so the initiator is from technical department. The procurement and technical managers together with transaction committee make the decisions. The persons influencing the purchase are all the persons involved in the purchasing from various departments. The purchasing officer is the one who controls the majority of the information in purchases related to this buyclass. The component is finally will not be used by OIEC and it will be used by end user.

Repetitive Purchase

The person initiating a purchase of a new component always depends on the motive why a new component is being purchased. Because all the components will be purchased for projects so the initiator is from technical department. The procurement and technical managers together with transaction committee make the decisions. The persons influencing the purchase are all the persons involved in the purchasing from various departments. The purchasing officer is the one who controls the majority of the information in purchases related to this buyclass. The component is finally will not be used by OIEC and it will be used by end user.
The only difference with the new purchase is the less sensitivity in the purchase and faster processes.

4.2 Case Two: TIJD Corporation

Corporate Data in Summary

Founded: May 1, 1961
Paid-in Capital: Yen 13,018 million
Number of employees: 973
Stock Exchange Listing: Tokyo Stock Exchange
Number of Shareholders: 17,063
Worldwide Network:
- Head Office (Chiba, Japan)
- Tokyo Head Office (Tokyo, Japan)
- Technology Research Center (Chiba, Japan)
- Overseas Offices (Beijing, Shanghai, Jakarta, Moscow, Tehran)

Business Fields
- Gas and Alternative Clean Energy
- Oil, Power Generation and Nuclear Energy
- Petrochemicals and Chemicals
- Industrial Plants
- e-solution
- Environmental Conservation

Business Activities:
- R&D collaboration, design, engineering procurement, construction, test operations and technical guidance in such areas as general chemicals, oil refinement, natural gas, electric power, nuclear power, advanced production systems, distribution, medicine, biotechnology, environment at each manufacturing plant.
- Procurement, development and sales of systems engineering and other software.

TIJD is a joint venture for the South Pars phases 6,7,8 projects between Toyo (Japan), IDRO (Iran), JGC (Japan) and Daelim (Korea). Toyo in this project is the leader so we chose its profile to present.

The Division of Purchasing is responsible for the purchases at TIJD and employs 40 people. The technical department assists the purchasing division from technical point of view. The respondent for the interview at TIJD works at the division of Purchasing as Director in Tehran office. He has been active in the purchasing department during
the last four years (beginning of establishment of TIJD). The budget of purchasing of components needed for South Pars phases 6, 7, 8 projects is about 600,000 US$.

4.2.1 TIJD’s Supplier Selection Criteria
As it was mentioned before TIJD is a joint venture of four different companies with possible four different criteria and procedures for vendor selection. So in this project it was decided that all four partners should bring their qualified vendor list and present it to the TIJD management team. After getting approval from the management team of TIJD the list has been sent to the end user for final approval. The approved list added to the already existing list of end user and became the final vendor list of project. The delivery and prices are the most important factors for selection in TIJD and then afterwards other factors such as quality coming.

4.2.2 Buyclasses, Dimensions and Roles at TIJD

Buyclass Practices
All purchases in TIJD are project purchases, but it can be divided to new projects and repetitive projects so we will assume that TIJD has two groups of purchases, (New purchases and Repetitive purchases). The repetitive purchase involves the procurement of components that have been purchased before in other similar projects. The new purchase relate to the procurement of new components that require some additional information or adjustments. The respondent declares that TIJD has only one project and the proportion of the expansion to the original new project is about 25%.

Dimension of Buying Center
The number of individuals involved in a purchase depends on the buying situation and the type of component. The respondent discloses that irrespective of the buying situation there are always a purchasing officer responsible for the purchase and a technical officer responsible for the technical issues of relevant purchase.

New Purchase
The number of departments involved is highly dependent of the type of component being purchased. The respondent states that purchasing managers are involved in heavy purchases and technical directors in critical items. When it comes to the departments participating in a new purchase, the respondent discloses that the purchasing department and technical department are always involved. In a new purchase the number of individuals involved varies between eight to twelve.

Repetitive Purchase
The respondent reveals that repetitive purchase has less sensitivity in the company and it is very uncommon that upper level managers are involved in repetitive purchase and the purchase almost is complete copy of previous jobs. The number of departments participating in repetitive purchase is the same but as mentioned with less sensitivity especially technically wise. In a repetitive purchase the number of individuals getting involved varies between eight to twelve.

Allocation of Roles in TIJD’s Buying Center

New Purchase
The person initiating a purchase of a new component always depends on the motive why a new component is being purchased. Because all the components will be purchased for projects so the initiator is from technical and procurement department together. The procurement manager and project director make the decisions. The persons influencing the purchase are all the persons involved in the purchasing from various departments. The purchasing officer is the one who controls the majority of the information in purchases related to this buyclass. The component is finally will not be used by TIJD and it will be used by end user.

Repetitive Purchase
The person initiating a purchase of a new component always depends on the motive why a new component is being purchased. Because all the components will be purchased for projects so the initiator is from technical and procurement department together. The procurement manager and project director make the decisions. The persons influencing the purchase are all the persons involved in the purchasing from various departments. The purchasing officer is the one who
controls the majority of the information in purchases related to this buyclass. The component is finally will not be used by TIJD and it will be used by end user.
5. Analysis

In this chapter we start comparing the empirical findings with the frame of reference (within-case analysis) provided in chapter two. In the second part of the chapter we compare the two cases with each other (cross-case analysis). In the within case analysis there are tables showing comparisons between the empirical findings and corresponding theory. In the cross-case analysis the comparative tables illustrate the two cases.

In situations throughout the entire analysis where there is a match between the variables compared, the cell is shaded in grey. In occurrence of data retrieved in one case, having no equivalence in the other case or in theory, not applicable (hereafter N/A) is displayed.

5.1 Within-case Analysis: OIEC

In the following section we analyze the second research question, which was stated as: “What factors affect the buying behavior of EPC companies?”

5.1.1 Supplier Selection Criteria at OIEC

The most important criteria when selecting suppliers is quality, price and delivery. Two other criteria of extreme importance are Desire for business and management and organization. Nevertheless, there are some irregularities concerning the priority some criteria are given. In table 5.1 OIEC’s selection criteria are presented and also compared with the ranking stated by Dickson (1966). Environmental friendliness and safety are the criteria with average and considerable importance respectively. These two criteria are however not included in Dickson’s study. It is interesting to notice the importance OIEC address these criteria and we believe this may be due to an increased environmental awareness among various stakeholders or interest groups and escalating safety concerns. Dickson’s study was conducted in 1966 and as the environmental debate was not very widespread, the industry suffered from little pressure regarding pollution restrictions. Quality and delivery are by both OIEC and Dickson’s study evaluated to be of extreme importance, which is not very surprising as this has been a tendency for a long time in industrial buying. OIEC estimate the price criterion to be extremely important that is not in line with the Dickson’s study
that has been considered with considerable importance. We believe that it is because of enormous pressure cost wise in the companies especially in the projects. Spare parts are not included in Dickson’s study but regarded as of considerable importance by OIEC. This is an interesting issue and may depend on the pressure from End User side to ensure availability of the plant in the future for him. Technical capability, financial position, Repair service, Attitude, Impression and Geographical location are in line with Dickson’s study. Desire for business and Management and organization criteria are considered by OIEC to have the extreme importance that are not in line with Dickson’s study that reached to the conclusion of considerable importance. We believe that this irregularity is because of the increasing role of human resources of the companies and vendors because of complexity of the environment and the need for very good people to be able to manage critical and challenging situations. Performance history criterion in Dickson’s study has extreme importance but OIEC it has considerable importance. We believe it is because of more available choices of vendors for companies today and also fast changing environment and also companies that make this criterion less important than the past. Warranties and claim policies are also the same. We believe that it is because OIEC in the contract with their vendors has a clear warranty and claim policy and in most cases the vendors must use this procedure so its importance decreased from Dickson’s study time. Importance of procedural compliance criterion has been decreased from considerable importance in Dickson’s study to average importance from OIEC’s point of view. We believe that it is also because of the definition of the procedures to the vendors from OIEC side in the beginning of the contract and the necessity of the compliance from vendor’s side. Reputation and position in the industry criterion also lost his weight from OIEC point of view in comparison to Dickson’s study in 1966. We again believe that the brand is not so important anymore for the users especially when the price has extremely important role in the purchasing so it has slight importance for OIEC. Amount of past business criterion also lost his weight because of the same reasons and has slight importance for OIEC in comparison to the average importance in Dickson’s study. Production facilities and capacity criterion in less important for OIEC than what presented in Dickson’s study. For OIEC it has only average importance. Importance of operating controls criterion has been decreased from considerable importance in Dickson’s study to average importance from OIEC’s point of view. We believe that it is also because of the definition of the controls to the vendors from OIEC side in the
beginning of the contract and the necessity of the controls from vendor’s side. Importance of training aids has been increased from slight importance in Dickson’s study to considerable importance in OIEC. We believe it is because of the complexity of sealing systems in the rotating equipments and also the increasing demand from end user side to increase the availability of the plant.

As OIEC’s evaluation of selection criteria match with most important criteria proposed by Dickson we believe his study is a good description of the supplier selection criteria for this case but it needs adjustments to be able to consider the current legislations and regulations in the industry and also to be able to be matched with the sealing systems industry.
Table 5.1: Within-case Analysis – Selection criteria at OIEC

<table>
<thead>
<tr>
<th>OIEC’s Evaluation</th>
<th>Criteria</th>
<th>Dickson’s (1966) Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average importance</td>
<td>Environmental Friendliness</td>
<td>N/A</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Safety</td>
<td>N/A</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Spare parts</td>
<td>N/A</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Quality</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Delivery</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Performance History</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Warranties and claim policies</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Production facilities and capacity</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Price</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Technical capability</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Financial position</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Procedural compliance</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Slight importance</td>
<td>Reputation and position in industry</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Desire for business</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Management and organization</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Operating controls</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Repair service</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Attitude</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Impression</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Geographical location</td>
<td>Average importance</td>
</tr>
<tr>
<td>Slight importance</td>
<td>Amount of past business</td>
<td>Average importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Training aids</td>
<td>Slight importance</td>
</tr>
</tbody>
</table>
5.1.2 Buyclasses, Dimensions and Roles at OIEC

In this very section we provide a within-case analysis related to the first research question, which was stated as: “How is the buying behavior of EPC companies in Sealing Systems Industries?”

Buyclass Practises
We identified OIEC to categorize purchases into two main groups of purchasing processes, (i.e. new purchase and repetitive purchase) hence; we can only apply two buyclasses proposed by Robinson et al. (1967). The new purchase conducted by OIEC corresponds to the buyclass “modified rebuy” since they both relate to a purchase based on some previous experience. The “repetitive purchase” refers to the straight rebuy situation in theory. We found a “new task” buying situation at OIEC to be irrelevant to study. An analysis of this buyclass would not be meaningful and is therefore not included in our analysis about the dimensions of, and the roles in the buying center.

Dimensions of the Buying Center
Referring to the dimensions chosen for this study, we present the following analysis. 

Vertical Involvement
The hierarchical levels involved in a modified rebuy (new purchase) situation at OIEC are:

- Top Management (e.g. Transaction committee)
- Policy level operating management (e.g. Procurement director)
- Policy level operating management (e.g. Technical director)
- Lower level operating management (e.g. procurement and technical expert)
- Cleric Staff

In a straight rebuy situation the hierarchical levels include the same. Ownership is not involved in the purchase of components for any of the two buyclasses.
Lateral involvement

The number of departments involved in a modified rebuy situation is two and they are:

- Purchasing department
- Technical department

In a straight rebuy situation the number of departments is the same

Extensivity

The number of people involved in a modified rebuy purchase varies between eight and twelve, for a straight rebuy the figure is same.

We find the three dimensions described by Johnston and Bonoma (1981) to be of significant help when describing the different dimensions of OIEC's buying center as it enabled us to measure the qualitative information. We suppose the same number of hierarchical levels, lateral involvement and extensivity between a modified and straight rebuy to depend on the fact that in projects there is not so much difference between modified and straight rebuy and there is only less sensitivity in a straight rebuy.

Roles in the Buying Center

Referring to the roles in the buying center cited by Bonoma (1982) we presented the following analysis.

Modified rebuy

The initiator in a modified rebuy situation is an engineer in the technical department. The procurement manager and transaction committee are decider. The influencers are all the experts in the procurement and technical department. The purchasing officer is purchaser and gatekeeper in this type of purchase. Finally, the end user will use the component.

Straight Rebuy
The *initiator* in a modified rebuy situation is an engineer in the technical department. The procurement manager and transaction committee are *decider*. The *influencers* are all the experts in the procurement and technical department. The purchasing officer is *purchaser* and *gatekeeper* in this type of purchase. Finally, the end user will use the component.

The theory about roles in the buying center proposed by Bonoma (1982) is very useful in a modified rebuy situation when identifying the persons active in the purchasing of components at OIEC.

### 5.1.3 Summary of Within-case Analysis: OIEC

In figure 5.1 a summary is provided for the within-case analysis of OIEC. The supplier selection criteria of extreme importance are displayed. The dimensions and roles in the buying center are specified for two different buyclasses.
Figure 5.1: Summary of Within-case Analysis: OIEC
5.2 Within-case Analysis: TIJD

In the following section we analyze the first research question, which was stated as: “What factors affect the buying behavior of EPC companies?”

5.2.1 Supplier Selection Criteria at TIJD

The most important criteria when selecting suppliers is delivery and price. Nevertheless, there are some irregularities concerning the priority some criteria are given. In table 5.2 TIJD's selection criteria are presented and also compared with the ranking stated by Dickson (1966). Environmental friendliness and safety are the criteria with average and considerable importance respectively. These two criteria are however not included in Dickson's study. It is interesting to notice importance TIJD address these criteria and we believe this may be due to an increased environmental awareness among various stakeholders or interest groups and escalating safety concerns. Dickson's study was conducted in 1966 and as environmental debate was not very widespread, the industry suffered from little pressure regarding the pollution restrictions. Delivery criterion is by both TIJD and Dickson's study evaluated to be of extreme importance, which is not very surprising as this has been a tendency for a long time in industrial buying. TIJD estimate the price criterion to be extremely important that is not in line with the Dickson's study that has been considered with considerable importance. We believe that it is because of enormous pressure cost wise in the companies especially in the projects. Spare parts are not included in Dickson's study but regarded as of average importance by TIJD. This is an interesting issue and may depend on the pressure from End User side to ensure availability of the plant in the future for him. Quality criterion for TIJD has considerable importance against the extreme importance in Dickson's study. We believe that it does not mean that quality's importance reduced during time, TIJD states that components of project has clear specifications and if a vendor meet the specifications then the quality is ok and acceptable TIJD is not willing to pay more price to higher quality when it is not necessary in the project. Production facilities and capability, technical capability, management and organization, operating controls, attitude and geographical location are in line with Dickson's study. Performance history criterion in Dickson's study has extreme importance by TIJD it has considerable importance. We believe it is because of more available choices of vendors for companies today and also fast changing environment and also companies that make this criterion less important than the past.
Warranties and claim policies are also the same. We believe that it is because OIEC in the contract with their vendors has a clear warranty and claim policy and in most cases the vendors must use this procedure so its importance decreased from Dickson's study time. Reputation and position in the industry criterion also lost his weight from TIJD point of view in comparison to Dickson's study in 1966. We again believe that the brand is not so important anymore for the users especially when price has extremely important role in the purchasing so it has average importance for TIJD. Importance of procedural compliance criterion has been decreased from considerable importance in Dickson's study to average importance in TIJD's point of view. We believe it is also because of the definition of the procedures to the vendors from TIJD side in the beginning of the contract and the necessity of the compliance from vendor's side. Amount of past business criterion gain more importance, in Dickson's study we experience average importance that in TIJD's point of view, we see considerable importance. TIJD relies on the relations with suppliers and their performance in the past with TIJD. Importance of training aids has been increased from slight importance in Dickson's study to average importance in TIJD. We believe it is because of the complexity of sealing systems in the rotating equipment and also the increasing demand from end user side to increase the availability of the plant. Financial position criterion has average importance for TIJD in comparison to its considerable importance in Dickson's study. We think it is because that TIJD does not consider this criterion as a stand alone criterion and it is related to other criteria also. Repair service criterion in Dickson's study has considerable importance but in TIJD it has average importance. We think it is because TIJD is not responsible for operating plants so they are not so much interested in the repairs also. Repair is something related to the end user and if there is not any pressure from end user side, the TIJD or other EPC companies will not take care about it. Desire for business in Dickson's study has considerable importance but TIJD believes that it has average importance only. TIJD thinks that in this very challenging market all vendors have desire for business and this criterion is not so much important. Impression criterion in Dickson's study has average importance but in TIJD it has considerable importance. TIJD thinks impression criterion as an internal criterion. It means what is the impression of the vendor inside TIJD organization. It means that impression is in relation with amount of the past business criterion that also has a considerable importance for TIJD.
Table 5.2: Within-case Analysis – Selection criteria at TIJD

<table>
<thead>
<tr>
<th>TIJD’s Evaluation</th>
<th>Criteria</th>
<th>Dickson’s (1966) Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average importance</td>
<td>Environmental Friendliness</td>
<td>N/A</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Safety</td>
<td>N/A</td>
</tr>
<tr>
<td>Average importance</td>
<td>Spare parts</td>
<td>N/A</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Quality</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Delivery</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Performance History</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Warranties and claim policies</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Production facilities and capacity</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Price</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Technical capability</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Financial position</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Procedural compliance</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Reputation and position in industry</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Desire for business</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Management and organization</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Operating controls</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Repair service</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Attitude</td>
<td>Average importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Impression</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Geographical location</td>
<td>Average importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Amount of past business</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Training aids</td>
<td>Slight importance</td>
</tr>
</tbody>
</table>
5.2.2 Buyclasses, Dimensions and Roles at TIJD

In this very section we provide a within-case analysis related to the first research question, which was stated as: "How is the buying behavior of EPC companies in Sealing Systems Industries?"

Buyclass Practices
We identified TIJD to categorize the purchases into two main groups of purchasing processes, (i.e. new purchase and repetitive purchase) hence; we can only apply two buyclasses proposed by Robinson et al. (1967). The new purchase conducted by TIJD corresponds to the buyclass "modified rebuy" since they both relate to a purchase based on some previous experience. The “repetitive purchase" refers to the straight rebuy situation in theory. We found a "new task" buying situation at TIJD to be irrelevant to study. An analysis of this buyclass would not be meaningful and is therefore not included in our analysis about the dimensions of, and roles in the buying center.

Dimensions of the Buying Center
Referring to the dimensions chosen for this study, we present the following analysis.

Vertical Involvement
The hierarchical levels involved in a modified rebuy situation at TIJD are:

- Top management (e.g. Project Director)
- Policy level management (e.g. Procurement manager)
- Upper level operating management (e.g. Engineering Director)
- Lower level operating management (e.g. buyer, transportation coordinator, inspection coordinator, project controller, expeditor)
- Clerical employees (e.g. secretary)

In a straight rebuy situation the hierarchical levels include the same. Ownership is not involved in the purchase of components for any of the two buyclasses.

Lateral Involvement
The number of departments involved in a modified rebuy situation is two and they are:

- Purchasing department
- Engineering department

In a straight rebuy situation the number of departments are the same.

**Extensitivity**

The number of people involved in a modified rebuy purchase varies between eight and twelve, for a straight rebuy the figure is same.

We find the three dimensions described by Johnston and Bonoma (1981) to be of significant help when describing the different dimensions of TIJD’s buying center as it enabled us to measure the qualitative information. We suppose the same number of hierarchical levels, lateral involvement and extensivity between a modified and straight rebuy to depend on the fact that in projects there is not so much difference between modified and straight rebuy and there is only less sensitivity in a straight rebuy.

**Roles in the Buying Center**

Referring to the roles in the buying center cited by Bonoma (1982) we presented the following analysis.

**Modified rebuy**

The *initiator* in a modified rebuy situation is a buyer in procurement department and an engineer in the engineering department. The procurement manager and project director are *deciders*. The *influencers* are all experts in the procurement and technical department. The purchasing officer is *purchaser* and *gatekeeper* in this type of purchase. Finally, the end user will use the component.

**Straight Rebuy**

The *initiator* in a modified rebuy situation is a buyer in procurement department and an engineer in the engineering department. The procurement manager and project
director are *deciders*. The *influencers* are all experts in the procurement and technical department. The purchasing officer is *purchaser* and *gatekeeper* in this type of purchase. Finally, the end user will use the component.

The theory about roles in the buying center proposed by Bonoma (1982) is very useful in a modified rebuy situation when identifying the person's active in the purchasing of components at TIJD.

### 5.2.3 Summary of within-case Analysis: TIJD

In figure 5.2 a summary is provided for the within-case analysis of TIJD. The supplier selection criteria of extreme importance are displayed. The dimensions and roles in the buying center are specified for two different buyclasses.
Figure 5.2: summary of within-case Analysis: TIJD
5.3 Cross-case Analysis

In this section a cross-case analysis is presented in order to identify similarities and differences between the two cases. The first theoretical variable to be analyzed is the supplier selection criteria and thereafter dimensions and roles in the buying center.

5.3.1 Selection Criteria

In table 5.5 OIEC’s and TIJD’s evaluation of the supplier selection criteria are presented and compared.

The environmental friendliness and safety criteria are by both OIEC and TIJD have average and considerable importance respectively. The criteria of delivery and price are by both cases given extreme importance. The quality criterion is by TIJD assessed to be of considerable importance but considered extremely important by OIEC. Both TIJD and OIEC state performance history, warranties and claim policies and technical capability as of considerable importance. Both TIJD and OIEC state procedural compliance, attitude, geographical location and training aids as of average importance. Spare parts, financial position and repair service are prioritized to be of average importance for TIJD and of considerable importance for OIEC. On the other hand, production facilities and capacity, operating controls and impression are prioritized to be of considerable importance for TIJD and of average importance for OIEC. Criterion of reputation and position in the industry has average importance for TIJD and slight importance for OIEC. Management and organization criterion has extreme importance for OIEC and considerable importance for TIJD. The most remarkable differences between the cases is desire for business and amount of past business. The desire for business criterion has average importance for TIJD but it has extreme importance for OIEC. Also amount of past business criterion has considerable importance for TIJD and slight importance for OIEC.
### Table 5.3: Cross-case Analysis – Selection criteria for TIJD and OIEC

<table>
<thead>
<tr>
<th>TIJD’s Evaluation</th>
<th>Criteria</th>
<th>OIEC’s Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average importance</td>
<td>Environmental Friendliness</td>
<td>Average importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Safety</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Spare parts</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Quality</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Delivery</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Performance History</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Warranties and claim policies</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Production facilities and capacity</td>
<td>Average importance</td>
</tr>
<tr>
<td>Extreme importance</td>
<td>Price</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Technical capability</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Financial position</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Procedural compliance</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Reputation and position in industry</td>
<td>Slight importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Desire for business</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Management and organization</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Operating controls</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Repair service</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Attitude</td>
<td>Average importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Impression</td>
<td>Average importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Geographical location</td>
<td>Average importance</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>Amount of past business</td>
<td>Slight importance</td>
</tr>
<tr>
<td>Average importance</td>
<td>Training aids</td>
<td>Average importance</td>
</tr>
</tbody>
</table>
5.3.2 Buyclasses, Dimensions and Roles at TIJD and OIEC

Buyclass Practises

TIJD and OIEC have grouped their purchases in a similar way (i.e. project purchase and repetitive purchase). TIJD is performing only one project purchase and also one repetitive purchase because of it is a joint venture temporary company but OIEC as a permanent company has more experience.

Dimensions of the Buying Center

In table 5.6 provided below we compare the vertical and lateral involvement as well as the extensivity of the buying center for the two cases.

**Table 5.4: Cross-case Analysis – Dimensions of the Buying Center**

<table>
<thead>
<tr>
<th>TIJD</th>
<th>Dimensions of the BC</th>
<th>OIEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Top management</td>
<td>Vertical involvement in a modified rebuy</td>
<td>1. Top management</td>
</tr>
<tr>
<td>2. Policy level</td>
<td></td>
<td>2. Policy level</td>
</tr>
<tr>
<td>3. Upper level</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>4. lower level</td>
<td></td>
<td>4. Lower level</td>
</tr>
<tr>
<td>5. Cleric employees</td>
<td></td>
<td>5. Cleric employees</td>
</tr>
<tr>
<td>1. Top management</td>
<td>Vertical involvement in a straight rebuy</td>
<td>1. Top management</td>
</tr>
<tr>
<td>2. Policy level</td>
<td></td>
<td>2. Policy level</td>
</tr>
<tr>
<td>3. Upper level</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>4. lower level</td>
<td></td>
<td>4. Lower level</td>
</tr>
<tr>
<td>5. Cleric employees</td>
<td></td>
<td>5. Cleric employees</td>
</tr>
<tr>
<td>1. Purchasing Department</td>
<td>Lateral involvement in a modified rebuy</td>
<td>1. Purchasing Department</td>
</tr>
<tr>
<td>2. Engineering Department</td>
<td></td>
<td>2. Engineering Department</td>
</tr>
<tr>
<td>1. Purchasing Department</td>
<td>Lateral involvement in a straight rebuy</td>
<td>1. Purchasing Department</td>
</tr>
<tr>
<td>2. Engineering Department</td>
<td></td>
<td>2. Engineering Department</td>
</tr>
<tr>
<td>8-12</td>
<td>Extensivity in a modified rebuy</td>
<td>8-12</td>
</tr>
<tr>
<td>8-12</td>
<td>Extensivity in a straight rebuy</td>
<td>8-12</td>
</tr>
</tbody>
</table>
The number of hierarchal levels in a modified rebuy situation is not the same for the two organizations. Regarding the lateral involvement in a modified rebuy, both organizations incorporate two same departments. In a straight rebuy situation, the involved departments and hence number of departments is the same. When it comes to extensivity, the number of people participating in a modified rebuy is at OIEC and TIJD same and between eight to twelve. The extensivity in a straight rebuy is for both TIJD and OIEC same and between eight to twelve.

Following the discussion from the within-case analysis about the number of levels, departments and individuals getting involved in a straight rebuy as compared to a modified rebuy, the similarities of the dimensions of the buying center between the two cases are salient. We believe this to occur due the organizational structure likeness of the two companies. Moreover, we presume that the process of buying components is conducted in an industry-wide standardized manner. Both companies are active members of Iranian projects and they have same End users with clear and similar instructions.

Roles in the Buying Center

In table 5.7 we make a comparison of the identified roles within the two organizations’ buying center.
**Table 5.5: Cross-case Analysis – Roles in the Buying Center**

<table>
<thead>
<tr>
<th>TIJD – project purchase</th>
<th>Roles in the BC – modified rebuy</th>
<th>OIEC – project purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineer</strong></td>
<td>Initiator</td>
<td><strong>Engineer</strong></td>
</tr>
<tr>
<td>Buyer</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Procurement Manager</strong></td>
<td>Decider</td>
<td><strong>Procurement Manager</strong></td>
</tr>
<tr>
<td>Project Director</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>All experts in Procurement and engineering departments</td>
<td>Influencer</td>
<td>All experts in Procurement and engineering departments</td>
</tr>
<tr>
<td>Purchasing officer</td>
<td>Purchaser</td>
<td>Purchasing officer</td>
</tr>
<tr>
<td>Purchasing officer</td>
<td>Gatekeeper</td>
<td>Purchasing officer</td>
</tr>
<tr>
<td>End user</td>
<td>Users</td>
<td>End user</td>
</tr>
</tbody>
</table>

---

**Modified Rebuy**

The *initiator* in a modified rebuy is for TIJD is an engineer and a buyer. In OIEC the *initiator* is an engineer. In OIEC procurement manager is *decider*. The procurement manager in TIJD has the same role but in TIJD there is second decision maker called project director. The *influencers* in TIJD and OIEC are same and all experts in
procurement and engineering departments. Regarding the purchaser, gatekeeper and users, the roles are distributed equally for the two cases.

**Straight Rebuy**

The *initiator* in a modified rebuy is for TIJD is an engineer and a buyer. In OIEC the *initiator* is an engineer. In OIEC procurement manager is *decider*. The procurement manager in TIJD has the same role but in TIJD there is second decision maker called project director. The *influencers* in TIJD and OIEC are same and all experts in procurement and engineering departments. Regarding the purchaser, gatekeeper and users, the roles are distributed equally for the two cases.

In both modified and straight rebuy the only differences are at *initiator* and *decider*. In TIJD in both positions there is one more responsible person in comparison to OIEC. We think it is because in TIJD they want to share the responsibility more than OIEC.
6. Conclusions and Recommendations

In this last chapter we address the overall conclusions of this study, the recommendations for management as well as some suggestions for future research. It is essential to consider the conclusions of this study as the outcome of the investigation of two case studies, TIJD and OIEC. The conclusions should be assessed in relation to the research methods used.

6.1 Overall Conclusions

The selected theoretical variables were very helpful in providing structure to our research. However, some of these variables (i.e. Dickson, 1966 and Bonoma, 1982) to some extent failed to adequately reflect more modern industrial buying behavior. Consequently, it is not very surprising to find some of the variables investigated to be slightly “out of date”. In the following section we attempt to present our main findings in relation to the research questions stated in chapter one.

We would like to remind the reader of the first research question which was stated as follows:

- How is the buying behavior of EPC companies in Sealing Systems Industries?

There is a clash with the theory about buyclasses formulated by Robinson et al. (1967) as purchases in our cases are divided into two groups (i.e. modified and straight rebuy) and not three as suggested in theory. We believe the absence of new task purchases to depend on the fact that much has not revolutionized the basic components in sealing systems since its invention. We found that the two buyclasses stated above are representative for how EPC companies in international projects and sealing systems industries categorize their purchases.

The dimensions and roles in the buying center represent nearly a perfect match between the cases. We found that vertical and lateral involvement as well as individuals to participate in a straight rebuy situation and modified rebuy is the
same. Moreover, we identified the similarity of the roles in the buying center in straight and modified rebuy situations.

We would like to remind the reader of the second research question which was stated as follows:

- *What factors affect the buying behavior of EPC companies?*

This question brought up some interesting issues about supplier selection criteria in the sealing systems industry in international projects. The first finding of this study is that the most important supplier selection criteria shared by both companies are price and delivery.

### 6.2 Recommendations

In this section we present some recommendations for managers both in the perspective of buyer as well as of sellers. We also provide some suggestions for future research.

#### 6.2.1 Recommendations for Management

In this section we provide managerial recommendations for buyer and sellers of sealing systems in international projects based on this study’s findings. First out are the recommendations for buyers.

**Recommendations for Buyers:**

- Our first recommendation for management is to ensure that the supplier selection criteria reflect the company’s core values.
- Moreover, we would like to give a warning to managers that prioritize the price criterion higher than quality and safety, as it is dangerous to make trade-offs on quality and security issues.
- We would recommend an increase in the number of influencers in a modified rebuy situation in order to grasp ideas from additional departments specially from end user. Furthermore, we believe that
influencers from lower levels in the hierarchy could generate fresh ideas and some alternative thinking in the process of buying components.

Recommendations for Sellers:

- It is important to carefully identify the buyer's selection criteria and position the product according to these criteria.
- Try to identify the different roles in the buying center and be aware of that each of these roles has different functions. It is essential to provide the right message to the right person at the right time.
- It is very important to carefully identify the end user's selection criteria.

6.2.2 Directions for Future research

We have in this study aimed for a better understanding of the industrial buying behavior of sealing systems in international projects. The past research about IBB were reviewed and used for the formulation of the research questions. These questions were then used for exploring and describing the supplier selection, the roles and certain dimensions of the buying center. This study will hopefully increase the knowledge base and contribute to the theory.

This research has provided further insights and new angles in an area that has been investigated for several decades. However, there is still a vast amount of issues to explore, to describe and to explain. Some suggestions are presented below.

We would find it interesting to investigate the relationship to which extent the core values of a company are reflected in the choice of suppliers. The extent to which principles are followed more practically will of course be difficult to measure but extremely exciting from a moral perspective.
We also think that analyzing and trying to understand the buying behavior of end users is also very important and interesting.

Finally we think the theory about roles in the buying center needs to be investigated more thoroughly. Maybe there are more roles so far unknown to discover as new emerging technologies are changing the traditional means of doing business.
List of References


Andersson, S. (1979), Positivism Kontra Hermeneutik, Bokforlaget Korpen: Goteborg.


List of Appendices

Appendix One: Dickson's Vendor Selection Criteria

Appendix Two: Interview Guide
### Appendix One

**Dickson's Vendor Selection Criteria**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Factor</th>
<th>Mean Rating</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality</td>
<td>3.508</td>
<td>Extreme importance</td>
</tr>
<tr>
<td>2</td>
<td>Delivery</td>
<td>3.417</td>
<td>Considerable importance</td>
</tr>
<tr>
<td>3</td>
<td>Performance History</td>
<td>2.998</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Warranties and claim policies</td>
<td>2.849</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Production facilities and capacity</td>
<td>2.775</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Price</td>
<td>2.758</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Technical Capability</td>
<td>2.545</td>
<td>Average importance</td>
</tr>
<tr>
<td>8</td>
<td>Financial Position</td>
<td>2.514</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Procedural compliance</td>
<td>2.488</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Communication system</td>
<td>2.426</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Reputation and position in industry</td>
<td>2.412</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Desire for business</td>
<td>2.256</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Management and organization</td>
<td>2.216</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Operating controls</td>
<td>2.211</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Repair service</td>
<td>2.187</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Attitude</td>
<td>2.120</td>
<td>Slight importance</td>
</tr>
<tr>
<td>17</td>
<td>Impression</td>
<td>2.054</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Packaging ability</td>
<td>2.009</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Labor relations record</td>
<td>2.003</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Geographical location</td>
<td>1.872</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Amount of past business</td>
<td>1.597</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Training aids</td>
<td>1.537</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Reciprocal arrangements</td>
<td>0.610</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Dickson, (1966, p. 38)
Interview Guide/English version

1. Introductory questions about the respondent and the organization

Date: _______________________________________________
Name of the firm: _______________________________________
Name of respondent: _________________________________

- Could you please tell us about your position and department in the company?
- For how long have you worked for the company?
- What are your functions in the company?
- How many people are there within your organization?
- How many departments are there within your organization?
- How does your company generally buy components?
- What is your total budget for the purchase of components?

2. Supplier Selection Criteria

- How does your company go about when selecting suppliers of components?
- What are the selection criteria for your company when selecting suppliers of components?
- How would you rank the following criteria?

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Slight</th>
<th>Average</th>
<th>Considerable</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warranties and claim policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production facilities and capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Capability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedural compliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reputation and position in the industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for business</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management and organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating controls</td>
<td></td>
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<td></td>
<td></td>
</tr>
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<td>Repair service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographical location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of past</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Could you please motivate your rankings?

3. This set of questions deals with the purchase of components based on previous purchases of similar components but which differ in aspects such as quality, price, and supplier etc.

- How many people are generally participating when purchasing a component?
- How many different departments are generally involved when purchasing a component?
- What are the function(s) of these departments involved?
- Which authorities within the organization are generally involved when purchasing a component?
- Who is involved in the purchase? Which functions do they exert and to which department do they belong?

<table>
<thead>
<tr>
<th>Who</th>
<th>Position/title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiates the purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takes the decision to buy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the major influence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issues the order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handles most of the information regarding the purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses the component</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- How great is the proportion of these components (components based on a previous purchase of similar components) compared to the total purchase of components?

4. This set of questions deals with the purchase of components that have never been purchased before.

- How many people are participating when purchasing a totally new component never previously purchased by your organization?
- In such a situation, how many departments are involved?
- What are the function(s) of these departments involved?
- Which authorities within the organization are generally involved when purchasing a totally new component?
- Who is involved in the purchase? Which functions do they exert and to which department do they belong?

<table>
<thead>
<tr>
<th>Who</th>
<th>Position/title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiates the purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takes the decision to buy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Has the major influence
Issues the order
Handles most of the information regarding the purchase
Uses the component

- How great is the proportion of these components (never purchased before) compared to the total purchase of components?

5. This set of questions deals with the purchase of components purchased as a pure replacement with the same brand and the same supplier.

- How many people are participating when purchasing a component identical with previously purchased components?
- In such a situation, how many departments are involved?
- What are the function(s) of these departments involved?
- Which authorities within the organization are generally involved when purchasing such a replacement component?
- Who is involved in the purchase? Which functions do they exert and to which department do they belong?

<table>
<thead>
<tr>
<th>Who</th>
<th>Position/title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiates the purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takes the decision to buy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the major influence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issues the order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handles most of the information regarding the purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses the component</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- How great is the proportion of these components (components purchased as a pure replacement) compared to the total purchase of components?
General Information on the Purchasing Area:

1. Would you like to tell us some general information about suppliers, type of product bought and countries purchasing from?

2. The purchasing process has been theoretically described through eight different phases. Do you recognize these stages/phases in your firm? Do they fit or are there phases missing? Are there too many? Please explain! Why/Why not/How?

<table>
<thead>
<tr>
<th>Buyphase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recognition of a need</td>
</tr>
<tr>
<td>2. Determination of solution characteristics</td>
</tr>
<tr>
<td>3. Description of solution characteristics</td>
</tr>
<tr>
<td>4. Search for suppliers</td>
</tr>
<tr>
<td>5. Acquisition and analysis of proposals</td>
</tr>
<tr>
<td>6. Evaluation of proposals and selection of suppliers(s)</td>
</tr>
<tr>
<td>7. Selection of an order routine</td>
</tr>
<tr>
<td>8. Performance feedback and evaluation</td>
</tr>
</tbody>
</table>

May we contact you for further questions, if needed?

Thank you for your time! It has been appreciated!