THE DIMENSIONS OF THE CRITERIA OF CHOICE USED TO SELECT SUPPLIERS OF RAW MATERIALS AND INDUSTRIAL PRODUCTS IN FRANCE AND GREAT BRITAIN

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ABSTRACT

This study dealing with the criteria of choice of the suppliers of raw materials and industrial products shows that whereas French companies favor the quality of information and all forms of exchanges with the supplier, British companies tend to attach more importance to the quality of service and to the technical aspects of the product. This study also emphasizes six main dimensions of the criteria of choice which are: the global offer of products or services comprising all economic characteristics of products; the interfirm relationship consisting of all the inter company exchanges excluding economic ones (exchange of informations with the supplier, frequency of exchange with the supplier, exchanges of competence with the supplier, quality of information); the quality of service; the technicality of the product; the interpersonal relationship and the importance or the volume of purchase. Applications are numerous especially in the segmentation of industrial markets. In the field of research these dimensions can be linked to interfirm relational situations.
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Introduction

No company can be run properly without referring to a precise list of criteria of choice. However most studies on the criteria of choice are based upon the exchanges of products or services between companies, with priority given to the customers' expectations, (Banville and Dornoff, 1973 ; Lehmann and O'Shaughnessy, 1974) to the perceived risk (Valla, 1978 ; Leroux-Sostènes, 1995), to the way the different categories of products take part in the production process (Kotler, 1994). These studies do not take into the consideration all the aspects of the running of companies, i.e. the relations of interaction between companies. Besides, the scale of importance and ranking commonly used in the measure of the criteria of choice do not enable us to take into account the competitive environment of companies. Finally the multiple criteria of choice which are proposed make it difficult for the supplying company to apply the results of studies to all the situations. It may be therefore more profitable for the supplying company to know reliable dimensions or criteria to determine their differentiating process and build up their offers of products frequently bought as raw materials or industrial products including components.

The purpose of this article is threefold: 1/ Proposing the dimensions of determining characteristics for the criteria of choice concerning the raw materials and the industrial products starting from the supplier/buyer relations. 2/ Comparing the results of the French and British companies and discussing the strategic options the supplier can choose. 3/ Proposing implications in the field of research.

This article falls into five parts. The first one deals with the research framework with the definition and identification of the criteria of choice and the building up of hypothesis. The second is linked to methodology, dealing with the measure of the criteria of choice and presents the collected data. The third presents the results of the survey concerning the importance, the determining characteristics, the dimensions of determining characteristics of the criteria of choice. This part includes a comparison between English and French companies. The fourth deals with the relations between the dimensions of the determining characteristics of the criteria of choice and the variables linked to the attitudes measured in this survey. Finally the object of the conclusion is to discuss the results and the implications in the field of research.

1 Determining of characteristic i = (the importance of characteristic i) x (the perceived difference between the competitive products by companies on characteristic i).
Framework of research and hypothesis

For this study, we propose this framework of research (figure 1)

The types of buyer/supplier relationships (Häkansson, 1982)

- The criteria of choice based on the exchange of products or services
  - Banville and Dornoff, 1973
  - Lehmann and O'Shaughnessy, 1974
  - Valla, 1978
  - Leroux-Sostènes, 1995

- The dimensions of the determining characteristics

- The criteria of choice based on inter company relationships
  - Bonoma and Johnston, 1978
  - Häkansson, 1982
  - Turbull and Valla, 1986
  - Valla, 1987
  - IMP Group, 1988
  - Segal, 1989; Ford, 1990
  - Lockett and Naude, 1991

Figure 1. The framework of the research

The seller's success often depends on his skill to predict and to foresee the buyer's motivations about a specific product (Banville and Dornoff, 1973). In other words, his skill to identify properly the criteria of choice of his product or his competitors' and to use them correctly.

The criteria of choice can be defined as the characteristics of the product, of the supplier or of the buyer/supplier relationships, that the buyer company uses as a basis of evaluation of the product or of the supplier. The identification of the criteria of choice can be examined from the point of view of exchanges of products or services, or from the point of view of the buyer/supplier relationships.

The criteria of choice based on the exchange of products or services

Dealing with the criteria of choice from the point of view of product or services exchanges means consists in starting from different categories of products to point out the implicit characteristics (figure 2).
THE CRITERIA OF CHOICE BASED ON THE EXCHANGE OF PRODUCTS OR SERVICES

Buyer's expectations

The approach based on the importance of the product in the production process and so on the producers' cost
Kotler, 1994

The concepts based on the demand the products meet
Lehmann and O'Shaughnessy, 1974

The concepts based on the purchasing motivations
Banville and Dornoff, 1973

Perceived risk

The concepts based on perceived risk
Valla, 1978

The concepts based on product risk
Leroux-Sostènes, 1995

Figure 2. The criteria of choice based on the exchange of products or services

There are three main approaches to the categories of products based on the products/services exchanges - the first based on the buyer's expectations, (Banville and Dornoff, 1973; Lehmann and O'Shaughnessy, 1974), the second based on the perceived risk, (Valla, 1978; Leroux-Sostènes, 1995) and the third on the way the product is included in the production process, (Kotler, 1994).

For the first approach, two different and complementary concepts can be pointed out.

The first concept is based on the demand the products meet (Lehmann and O'Shaughnessy, 1974). According to this approach, there are four categories of products which correspond to a group of criteria of choice, i.e. regularly purchased products, products requiring precautionary measures, high performance products, "political" products i.e. products which may cause conflicts inside the purchasing center. The dominating criterion for all the products seems to be the reliability in delivery delays, whereas the product requiring precautionary measures must be accompanied with objective criteria such as price associated with the supplier's reputation.

Then comes the conception defining the products in connection with the purchasing motivations or the industrial buyers' motivations. A study carried out by Banville and Dornoff, 1973, dealing with the criteria of choice of the suppliers of
construction materials shows that the notions of service are considered as key ones, whereas economic criteria (price, quality) are more important than non economic criteria (reputation). The analysis based on the size of companies shows the order is little modified, however non economic criteria are given the priority by small organizations. Finally the analysis based on the type of purchased product shows very little modification of the order of economic criteria but a modified order of non economic criteria; for example the friendly relationship with the suppliers is more important in the choice of a distributor of household appliances than in the choice of a concrete manufacturer. In a nutshell these two studies show the existence of either economic parameters, price, reliability of delivery delays, services, user friendliness, quality of the product... and non economic aspects such as friendly relationship.

Two conceptions can also be found in the approach of the categories of products based on perceived risk.

The first one relies on perceived risk (Valla, 1978). In this one the products can be grouped in three categories. Ordinary products, (consumable products, oil, lubricating products), light equipment goods (light hand or electrically powered tools). They are bought in small or medium quantity at a low nominal price. They are often standardised. The key products in the production process are the ones which would bring the production process to a halt in case of failure in the supplying process. No variation in the quality of this product can be admitted (strong, ...). The strategic products (capital products or certain intermediate goods) on those which involve both the production process as well as the future of the company. The decisions are made by the purchasing center. The information to deal with is often considerable and the number of consultations is very high. Each purchasing decision is often considered as a new task. The analysis of the characteristics of the products based on this concept brings out at least five criteria of choice i.e. price, possibilities of substitution (standardisation), existence of norms, user friendliness, reliability in the delivery process.

The second concept is based on the product risk (Leroux-Sostenes, 1995) and proposes that there are four main parts in the variable "product risk" which are the difficulty in the purchasing process, the research of information, the incurred expenses, the duration of the supplier/buyer relationships. In this approach, there are three different categories of product, raw materials, capital goods and services. Risk being excluded as its importance varies according to the categories of products, the predominant criteria of choice are price and delivery delays.

The last approach is based on the importance of the product in the production process and so on the producers' cost (Kotler, 1994). In this one three categories of
products can be defined - raw materials and semi finished products i.e. product fully used in the manufacture of the finished product. The technical characteristics of these products are defined beforehand. The buyer makes his purchasing decision according to price, supplying reliability and quality of follow up in the case of identical characteristics. The materials partially used in the finished product, for instance heavy capital goods which are characterised by high prices and anomalous selling process. The purchasing decision results from a vote taking by the board of director or the executive board. The market in which competition is very aggressive means that prices and terms of payment will be stressed. Finally the products which have no influence on the finished product, (consumable goods, equipment). They are often bought directly from the suppliers by large users and technical negotiators for example craft men, repair people.

If the parts included in the product become "ordinary", price will become the predominant characteristic. The criteria of choice are then : price, delivery delays, terms of payment, reliability and quality of follow up and product technicality.

In a nutshell all the approaches based on the exchanges of products/services between companies, except maybe Sostenes-Leroux's which deals partially with the aspects of inter company relationships (duration of relations' buyer/supplier), enable us to emphasize the following elements.

Firstly economic criteria of choice include price, user friendliness, reliability of delivery delays, terms of payment, supplying reliability, quality of follow-up and possibilities of substitution. The hypothesis is that all these characteristics which are found in all these approaches for all the categories of products make up the essential elements of the product or service. This dimension can be defined as global offer (product or service).

Secondly technical criteria of choice. In fact the notions of product technicality whatever the approach maybe appear implicitly i.e. high performance products or products requiring precautionary measures or the technical specifications of product. Our hypothesis leads to think that these notions are another dimension of the criteria of choice called product technicality.

The criteria of choice based on inter company relationships

The second fundamental approach deals with inter company relations with two main concepts - the one relying on the dyadic relationship by Bonoma and Johnston, 1978, and the other on the interactive relationship by IMP Group, 1988 (figure 3).
The concepts relying on the dyadic relationships
Bonoma and Johnston, 1978

The concepts relying on the interactive relationships
IMP Group, 1988

Figure 3. The criteria of choice based on intercompany relationships

Starting from the first conception based on the dyadic relationships "buyer/supplier", Segal, 1989, uses the industrial buyer's preference for a single supply source (SSS) versus multiple sources of supply (MSS) as an effective basis of industrial market segmentation. The firms indicating 90% and above of their purchase volume attributed to one vendor were labelled as firms having a preference for SSS and the companies attributing less than 90% of their purchase volume to more than one source were classified as companies with a preference for MSS.

As a result of a study conducted in relations with 91 companies in the sector of chemistry Segal shows how companies of both types (single supply sources and multiple supply sources) perceive the importance of the sellers. The results show significant differences in the appreciation of 9 out of 12 studied attributes. The SSS group evaluated courtesy and helpfulness of sales personnel to be of much greater importance than the MSS group. The vendor attribute perceived as the most important to MSS firms was the quality of product supplied. Therefore this study suggests that according to the author's hypothesis for the SSS group, a high level of priority is placed on the personal, in the supplier selection process, whereas The MSS group attach less importance to the personal selling of trading relationships.

Consequently we can propose the hypothesis that taking the results of this study into consideration as well as Banville and Dornoff's study, 1973, the personal factors of the buyer/seller relationship are another aspect of the criteria of choice. We call this aspect "interpersonal relationship".

The second conception is based upon the interaction relationship. The approach of the dyadic relationship of Bonoma and Johnston, 1978, does not enable us to define all the criteria of choice generated by inter company relationship. The interaction models based on the general theory of systems which study simultaneously the buyer/supplier relationships enable to have a better comprehension of these relationships.
The interaction approach comes from a representation of the operating system of the industrial markets (Cova and Salle, 1992), which can be conveyed as follows "no analysis can deal with the supplier and with the customer separately, to understand the operating system of industrial markets" [Häkansson, 1982; Turnbull and Valla, 1986; Valla, 1987; International Marketing and Purchasing (IMP) group, 1988; Ford, 1990; Lockett and Naude, 1991]. The buyer/supplier relationships have to be considered in a short term or a long term perspective and not as a series of local transactions.

The interaction process means several episodes and events which contribute to make the buyer/supplier relationships long lasting. These episodes may be commercial transactions, crises due to technical or tariff disagreements etc. The episodes appear in the form of four types of exchanges - exchanges of products or services, exchanges of information, social exchanges and financial exchanges.

Lockett and Naude for example use this approach to study the purchasing decision process. They show, on the one hand that the duration of the process enables the company to determine the needs with accuracy on the other hand that the selected supplier is the one who has carried on the negotiation with the buyer by providing for instance complementary information (exchanges of information, frequency of exchange) and by taking into consideration such dimensions as how the buyer is perceived (social exchanges) different from those only connected to efficiency of the system or the demanded product.

So the results of Häkansson's, 1982; Turnbull's and Valla's, 1986; Valla's, 1987; IMP group's, 1988; Ford's, 1990; Lockett and Naude's, 1991 works show how important the other forms of exchanges are: namely exchanges of products or services, exchanges of information, social exchanges and financial exchanges as criteria of choice. We think that some of these forms of exchanges are another dimension of the criteria of choice that we call "inter company relationships".

This concept also shows that the analysis of the criteria of choice cannot be separated from the type of buyer/supplier relationships. In this framework and especially referring to Häkansson's works we can propose four types of relationships enabling us to understand all the criteria of choice.

The first one deals with limited relationships for an ordinary purchasing situation (non modified purchase, concerning an ordinary product. These are simple transactions this is a classic situation in which the company makes a choice among proposed alternatives (products or suppliers). So this is an exceptional purchasing situation concerning raw materials or other industrial products.
The second one deals with *extensive relationships* for a simple purchasing situation and/or an ordinary product. This is the most frequent situation which corresponds to the usual relationship between the supplier and the buyer. In this one there are regular transactions linked to regular purchases of raw materials or industrial products from the same supplier; lasting exchange relationships resulting in regular purchases and exchanges of information, products or services; partnership concerning short or long term agreement, the reduction of costs, the improvement of products or the sharing of risk taking. At last alliance concerning long term agreement on some activities of the partner companies such as agreement on research and development.

The third one deals with *complex purchasing situations* (a new purchase) and is linked to limited relationships. So this is what can be called the *first transaction* whatever the product may be. This relation corresponds either to a situation in which the transaction takes place for the first time, or because of the existence of a new supplier or because of the existence of a new product.

At last the fourth one corresponds to a *complex purchasing situation for extensive relationships* with the supplier whatever the product may be. This situation results in a wish to change the established relationships with the supplier. This need to change may have technical, commercial causes or may be linked to the development of the product or to a change in the ownership of the purchasing or the supplying company. The purchase criteria dealt with in this study concern the first two situations.

**Hypotheses**

Finally based on an analysis of marketing literature comprising interviews with two large industrial companies a list of hypotheses can be proposed.

The first hypothesis H1 is linked to the dimensions of the determining characteristics whose final list of 30 characteristics comprises 4 dimensions: the *global offer* of product or service concerning all the services linked to the product and all the economic aspects of the product. The *inter company relationships* take into consideration all the criteria linked to exchanges but different from the product/services ones. The *interpersonal relationships* combine personal factors of buyer supplier relationships. Finally the *technicality of the product* comprises all the technical specifications of the product (table 1).
The dimensions of the determining characteristics | The characteristics
---|---
The global offer of products or services is made up of 14 characteristics | Easy ordering, Variety or range of product, User-friendliness, Delivery delay, Volume or importance of purchase, Price, Possibility of replacing the product by another one, Existence in the company of a formalized quality control procedure, i.e. technical certification / all clear for sale, Financial exchange with the supplier, Quality of service, Cost of operation, Ease of operation, Possible training, Flexibility, payment conditions.
The inter company relationships comprises 8 characteristics | Future potential of the supplier, Existence of the customer service, Quality of information, Development of partnership relationships, Frequency of exchange with the supplier, Tendency to obtain information, Exchange of information with the supplier, Exchange of competence with supplier.
The interpersonal relationships is made up of 4 characteristics | Friendly relationships, Personality of the seller, Supplier's reputation, Supplier in the neighbourhood.
The technicality of the product comprises 4 characteristics | Product reliability, Technical flexibility, Technical specifications of the product, Frequency of technological improvement.

Table 1. The dimensions of the determining characteristics (hypothesis H1)

The second hypothesis H2 is linked to the existing relationship between the different types of relational situations - simple transactions, regular transactions, lasting exchange relationships, partnership, alliance - and the determining characteristics on the one hand and the dimensions of the determining characteristics on the other hand. Our hypothesis is that if the global offer is made up of economic characteristics in a situation of simple relationship companies favor the global offer (H2.1.) whereas in a situation of lasting relationship the companies favor interfirm relationship (H2.2).

Besides, the results of the studies show that the influence of the size of companies upon the criteria of choice is not considerable however as the economic criteria are
often based on product/service exchanges we can propose another hypothesis (H3): the company size has no significant influence on the order of the criteria of choice. If the global offer is made up of economic criteria of choice it will not vary according to the size of companies (H3.1). Large companies favor inter company relationship (H3.2) and small or medium sized companies favor interpersonal relationships (H3.3).

Finally, literature shows the importance of the relations between the purchasing procedures or other associated characteristics such as company size and the criteria of choice. It is the importance of risk taking, then the duration of purchasing procedures which are longer for capital goods than consumable products; the number of selected supplies, the quantity of information needed, the company size, sectors of activity.

Methodology

The measure of the determining criteria of choice, of the perceived risk, of the quantity of information, the technical adequation of the product and the definition of requirements.

The method of dual questionnaire proposed by Pras, 1977, will be used to measure the determining criteria of choice. The scale of importance and difference comprising 7 terms proposed by Salerno with the following levels i.e - no importance (0), very little importance (1), little importance (3), medium importance (5), large importance (7) very large importance (8), extreme importance (10) - will be used. The level of uncertainty and the consequences of risk are measured with the same scale of importance. The quantity of information, the technical adequation of the product and the definition of requirements are measured with a Likert scale.

The choice of the categories of products and the measure of the different relational situations

After choosing one of the types of proposed product (raw materials or industrial products) the companies are asked to evaluate the product according to three categories: ordinary products, key products for the production, strategic products, proposed by Valla, 1978, with a scale distributing 100 points. The choice of this approach in product evaluation is linked to the fact we think that a product can belong to the three categories of product because of its characteristics.

The criteria of choice for the raw materials or industrial products are measured according to five types of relational situations which are: simple transactions, regular
transactions, lasting exchange relationships, partnership, alliance. Concerning these different relationships the companies are asked to distribute 100 points.

**Analyzing unit**

The buying situation in which the studied companies is a repurchasing situation (with or without change of the products or change of the suppliers). In this situation repurchasing situation can depend upon one person (Pingry, 1974; Jackson and Ostrom, 1978; Hutt and Speh, 1981; Patton, Putto and King, 1986; Otéro, 1992). Therefore the analyzing unit we shall refer to is the person in charge of purchasing or the company manager. A decision matrix unit based on the Buygrid Model of Robinson, Faris and Wind, 1967 and on the Supplier Choice Model of Woodside and Vyas, 1987 enabled us to define the relative influence of the different members of the purchasing department.

**Collecting data**

1099 companies members of the "Compagnie des Dirigeants et des Acheteurs de France" (CDAF) have supplied the data between April and July 1994 in France. 174 questionnaires out of 182 from all sectors and all sizes can be studied. 72 questionnaires out of 81 have been supplied by British companies members of the "The Chartered Institute of Purchasing & Supply".

**Processing data**

At first the average score of importance and determining characteristics are calculated but the scores of importance of the other variables measured in this study as well. Then the dimensions of the determining characteristics are studied with the aid of Churchill's approach dealing with the construction of scales method, Churchill, 1979 (figure 4).
The relations between the types of relational situations, the variables concerning the company profile, the importance of determining characteristics and the dimensions of determining characteristics are studied with "the analysis of variance" and the "t-test for comparing groups means". So, company segmentation is carried out with the aid of multiple correspondence analysis.

Results

Industrial products represent 52.5 % and raw materials represent 47.5 % of the tested products. The key products in the production are 50 % in France and more than 40 % in Great Britain of the products studied in this survey.

The regular transactions and the lasting exchange relationship represent more than 50 % of the relations respectively 64.92 % for France and 56.5 % for Great Britain.
This leads us to conclude that companies tend to prefer stable relationships. This stability doesn't lead to partnership in its restrictive form. Thus partnership and alliance together only represent a little more than 1/5 of the total relationship whatever the country may be. These results correspond to the theory dealing with inter company relations (Hakansson, 1982).

Except partnership and alliance which are not significant correlated with one another, all the relational situations are correlated negatively with one another, significant at 0.01. This means that in a purchasing sequence, when a relational situation is used, it excludes the other relational situations. Besides the categories of products have a significant correlation with the types of relational situations. So for an ordinary product, simple transactions tend to be used, for a strategic product, partnership or alliance tend to be used (positively significant at 0.01).

Two main purchasing situations can be described: the limited relation purchasing attitude corresponding to a simple transaction for an ordinary product; and the extensive relationship purchasing attitude corresponding to partnership or alliance for a strategic product or key product for the production process.

The importance and determining characteristics of criteria of choice

As a rule, the economic criteria of choice and the other linked to inter company exchanges are decisive. The companies of both countries have the 15 following determining characteristics in common: delivery delay, price, existence in the company of a formalized quality control procedure, i.e. technical certification / all clear for sale, quality of information, cost of operation, future potential of the supplier, exchange of information with the supplier, development of partnership relations, quality of service, volume or importance of purchase, technical specifications of the product, technical flexibility, existence of the customer service, reliable product, user-friendliness (table 2).

2 17 characteristics out of 30 are determining upon a total sample including 19 in France and 16 in Great Britain. The considerable number of determining characteristics can be justified on the one hand by the fact that the method of comparison of average score in relation with the total average of the average scores almost always leads to keep nearly 50 % of the criteria as determining criteria; on the other hand in industry, companies use a minimal list of the criteria they look for.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>France</th>
<th>Great Britain</th>
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<tr>
<td></td>
<td>Rank order</td>
<td>Rank order</td>
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<tr>
<td>delivery delay</td>
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<td>2</td>
</tr>
<tr>
<td>price</td>
<td>2</td>
<td>3</td>
</tr>
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<td>existence in the company of a formalized quality control</td>
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<tr>
<td>quality of information</td>
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<tr>
<td>cost of operation</td>
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<td>8</td>
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<tr>
<td>future potential of the supplier</td>
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<td>10</td>
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<tr>
<td>exchange of informations with the supplier</td>
<td>7</td>
<td>16</td>
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<tr>
<td>development of partnership relations</td>
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<td>11</td>
</tr>
<tr>
<td>exchange of competences with the supplier</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>quality of service</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>volume or importance of purchase</td>
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<td>14</td>
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<tr>
<td>technical specifications of product</td>
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<td>technical flexibility of product</td>
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<td>existing customer service</td>
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<td>7</td>
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<tr>
<td>ease of operation</td>
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<td>17</td>
</tr>
<tr>
<td>frequency of technological improvement</td>
<td>16</td>
<td>18</td>
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<tr>
<td>reliability of the product</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>user-friendliness</td>
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<td>possibility of replacing the product by another one</td>
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<td>tendency to obtain information</td>
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<td>24</td>
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<tr>
<td>frequency of exchange with the supplier</td>
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<td>22</td>
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<tr>
<td>flexibility, payment conditions</td>
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<td>variety or range of product</td>
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<td>personality of the seller</td>
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<td>supplier reputation</td>
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<td>financial exchange with the supplier</td>
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<td>possible training</td>
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<tr>
<td>friendly relations</td>
<td>30</td>
<td>20</td>
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| Sample size - Average mean score                      | 150            | 56             |

Table 2. The average scores of the determining characteristics in France and in Great Britain

Since these characteristics are important but without differentiating significantly the companies' offers (except product reliability in Great Britain which is both important and differentiating), the four following characteristics: reliable product, ease of operation, user-friendliness, technical specifications of the product, can be considered as minimal demands to meet by any supplier who wants his offer to be selected. Generally speaking, France favors the quality of information exchanges, Britain tends to favor the service connected with the product or the technological aspects of the product. The average scores of determining characteristics and the order of criteria of choice are slightly modified according to the purchasing situation. In Great Britain, in an extensive
buyer/supplier purchasing attitude companies give a higher determining score to the technical flexibility of the product and the frequency of the technological improvement and in France to flexibility, terms of payment and the development of partnership relationships (t-test significant at 0.05 for 227 degrees of freedom).

Analysing these results according the size of the company (staff) shows that in France 6 characteristics define small companies as follows (up to 375 employees) and large companies (more than 375 employees), these characteristics are : development of partnership relations, delivery delay, technical specifications of the product, price, cost of operation, technical flexibility. However there is no significant difference in the evaluation of the determining characteristics by the two groups of companies in France (smaller and larger one) in Britain as well. Six characteristics differentiate smaller companies from larger companies including technical specifications and delivery delay (common to the two countries). For Great Britain, reliable product, existence of the customer service, volume or importance of purchase must be added. Technical specifications only are considered as more determining by larger companies than by smaller ones (t significant at 0,01). Finally there is no significant difference in the evaluation of the determining characteristics according to the sector of activity.

The dimensions of determining characteristics

The reliability analysis gives values of coefficient $\alpha$ of Cronbach (Cronbach, 1951) satisfactory for all the conceptualized dimensions with $\alpha = 0.89$ for the global offer, $\alpha = 0.88$ for the inter company relationship, $\alpha = 0.75$ for the technicality of the product. The interpersonal relationship whose reliability is $\alpha = 0.69$ is just acceptable according to criteria proposed by Nunnaly, 1978, and Peterson, 1995. We keep the 30 items after this first analysis.

The factor analysis (varimax) of the 30 items produces 6 factors which represent 63.1% of the variance. This analysis shows three dimensions in the global offer : global offer ($\alpha = 0.88$), quality of service ($\alpha = 0.76$), volume or importance of purchase ($\alpha = 0.57$). So the 6 final dimensions of the determining characteristics, comprise in addition to the 3 mentioned dimensions : the inter company relations ($\alpha = 0.88$), the interpersonal relationships ($\alpha = 0.64$), the technicality of the product ($\alpha = 0.68$). Excluding the importance or volume of purchase which has an exploratory aspect, all the reliability coefficients are satisfactory. All the items are kept at the end of this second analysis.

The confirmatory factors analysis by Lisrel, confirms the results. The 6 dimensions explain 65.9% of the variance, including 45% for the first two dimensions.
which are the global offer and the inter company relationship. The correlations between the dimensions are all significant at 0.05 (table 3).

<table>
<thead>
<tr>
<th></th>
<th>Global offer</th>
<th>Interfirm relat.</th>
<th>Quality of serv.</th>
<th>Technicality</th>
<th>Person relat.</th>
<th>Imp. of purchase</th>
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<td>Interfirm relat.</td>
<td>0.69</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of serv.</td>
<td>0.60</td>
<td>0.63</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technicality</td>
<td>0.52</td>
<td>0.50</td>
<td>0.50</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person relat.</td>
<td>0.37</td>
<td>0.50</td>
<td>0.41</td>
<td>0.21</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Imp. of purchase</td>
<td>0.60</td>
<td>0.62</td>
<td>0.48</td>
<td>0.41</td>
<td>0.31</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 3. The correlations between the dimensions of the determining characteristics

The internal coherence of the measure scale tested on the sample of raw materials and industrial products is correct (table 4). Each of the two sample extract 6 factors corresponding to the results of the total sample and explain 69.5 % and 64.3 % of the variance respectively. The correlations between the dimensions of the determining characteristics are all significant at 0.001. Moreover the difference of $\chi^2$, significant at 5 % for 1 degree of freedom, between the unique factor model and the six factors model shows that the scale is not unidimensional. Finally in France the global offer and the inter company relationship are the most decisive dimensions with an average determining score of 35.32 each followed by the technicality of the product (35.21), the importance or volume of purchase (33.43), the quality of service (27.82) and the interpersonal relationships (21.30). However no dimension differentiates France from Britain.

Besides, this scale complies with the principles of converging validity. All the dimensions share more than 50 % of variance with their measures ; of discriminant validity, all the dimensions share more variances with their measures than with the other dimensions except between the importance of volume of purchase and the global offer on the one hand and with the interpersonal relationship on the other hand ; of predictive validity, as the companies tend to use simple transactions are more sensitive to the global offer than those tending to use other forms of relations. The inter company relationship and the quality of service differentiate smaller from larger companies, the latter ones considering those dimensions as more decisive ones. However, generally speaking, there is little relation between the dimensions of determining characteristics and the variables describing the attitudes measured in this study : namely the number of selected suppliers, the duration of a purchasing process, the level of perceived risk and the definition of requirements.
### Global Offer
- delivery delay
- user-friendliness
- cost of operation
- possibility of replacing a product by another one
- existence in the company of a formalized quality control
- ease of operation
- variety or range of product
- frequency of technological improvements
- price
- easy ordering
- financial exchange with the supplier

### Interfirm relationship
- tendency to obtain information
- quality of information
- exchange of information with the supplier
- frequency of exchange with the supplier
- development of partnership relations
- exchange of competences with the supplier
- existing customer service
- supplier's reputation

### Quality of Service
- possible training
- technical flexibility
- quality of service
- supplier in the neighbourhood

### Technicality of the Product
- product reliability
- technical specifications of the product

### Interpersonal relationships
- friendly relations
- personality of the seller

### Importance of Purchase
- flexibility, payment conditions
- volume or importance of purchase

### % of Variance

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Raw materials n = 96</th>
<th>Industrial products n = 107</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
</tr>
<tr>
<td>Delivery delay</td>
<td>72</td>
<td>57</td>
</tr>
<tr>
<td>User-friendliness</td>
<td>81</td>
<td>60</td>
</tr>
<tr>
<td>Cost of operation</td>
<td>84</td>
<td>76</td>
</tr>
<tr>
<td>Possibility of replacing a product by another one</td>
<td>66</td>
<td>57</td>
</tr>
<tr>
<td>Existence in the company of a formalized quality control</td>
<td>60</td>
<td>62</td>
</tr>
<tr>
<td>Ease of operation</td>
<td>57</td>
<td>57</td>
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<tr>
<td>Variety or range of product</td>
<td>60</td>
<td>60</td>
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<tr>
<td>Frequency of technological improvements</td>
<td>60</td>
<td>60</td>
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<tr>
<td>Price</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Easy ordering</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Financial exchange with the supplier</td>
<td>41</td>
<td>41</td>
</tr>
</tbody>
</table>

### Table 4. Internal coherence of the measure scale of the dimensions of the criteria of choice

**Applications:** The segmentation of industrial markets in France:

One of the possible applications of the dimensions of determining characteristics is the use of microsegmentation complying with the description of the segmentation variables proposed by Wind and Cardozo, 1974, or Choffray and Lilien, 1978.

---

3 Loadings x 100.
The variables

<table>
<thead>
<tr>
<th></th>
<th>Eigenvalue 1</th>
<th>Eigenvalue 2</th>
<th>Class size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of product</td>
<td>BIE 0.068</td>
<td>0.167</td>
<td>94 75</td>
</tr>
<tr>
<td>Quantity of searched information</td>
<td>QI 0.458</td>
<td>0.023</td>
<td>30 143</td>
</tr>
<tr>
<td>Level of perceived risk</td>
<td>RIS 0.373</td>
<td>0.096</td>
<td>39 134</td>
</tr>
<tr>
<td>Technical adequation of the product</td>
<td>TC 0.450</td>
<td>0.074</td>
<td>23 151</td>
</tr>
<tr>
<td>Definition of the requirements</td>
<td>BE 0.338</td>
<td>0.033</td>
<td>54 119</td>
</tr>
<tr>
<td>Global offer of product or service</td>
<td>OFF 0.040</td>
<td>0.535</td>
<td>69 85</td>
</tr>
<tr>
<td>Inter company relationships</td>
<td>CO 0.170</td>
<td>0.395</td>
<td>75 85</td>
</tr>
<tr>
<td>Quality of service</td>
<td>SER 0.121</td>
<td>0.320</td>
<td>114 53</td>
</tr>
<tr>
<td>Technicity of the product</td>
<td>TE 0.176</td>
<td>0.188</td>
<td>92 78</td>
</tr>
<tr>
<td>Interpersonal relationships</td>
<td>IND 0.010</td>
<td>0.222</td>
<td>138 33</td>
</tr>
<tr>
<td>Volume or importance of purchase</td>
<td>IMA 0.132</td>
<td>0.203</td>
<td>84 85</td>
</tr>
<tr>
<td>Duration of the purchasing process</td>
<td>DUR 0.142</td>
<td>0.25</td>
<td>47 59 66</td>
</tr>
<tr>
<td>Average value of purchase</td>
<td>VM 0.143</td>
<td>0.141</td>
<td>43 48 46</td>
</tr>
<tr>
<td>Sector of activity</td>
<td>SEC 0.120</td>
<td>0.142</td>
<td></td>
</tr>
<tr>
<td><strong>Eigenvalue</strong></td>
<td><strong>0.1957</strong></td>
<td><strong>0.1831</strong></td>
<td></td>
</tr>
</tbody>
</table>

The size of the sectors of activity

<table>
<thead>
<tr>
<th>Sector of activity</th>
<th>Class size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgy</td>
<td>49</td>
</tr>
<tr>
<td>Food processing</td>
<td>11</td>
</tr>
<tr>
<td>Chemistry</td>
<td>24</td>
</tr>
<tr>
<td>Textile</td>
<td>10</td>
</tr>
<tr>
<td>Furniture</td>
<td>33</td>
</tr>
<tr>
<td>Manufacture</td>
<td>15</td>
</tr>
<tr>
<td>Services</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 5: The variables used to segment the French market

Segmentation enables us to answer 2 questions at least. The first deals with the dimensions of the determining characteristics in the different sectors of activity. The second one is linked to the relationships between the purchasing procedures and these dimensions by sectors or groups of activities.

The multiple correspondence analysis (figure 5) of the dimensions of determining characteristics in France\(^4\) and of the variables of the purchasing procedure including the

\(^4\) We segment the French market only because of the small size of the British sample.
search of a good technical adequation, the definition of requirements in the form of needs (search for solution), the importance of the perceived risk and the quantity of searched information, shows that the first factor axis with an eigenvalue of 0.19 is above all explained by the variables of purchasing procedures and perception of the situation (65% of the variance). This axis shows an opposition between the strong evaluation of these variables (the quantity of searched information, technical adequation, the importance of the perceived risk, the definition of requirements to a weak evaluation of the same variables. The industrial products and the service sector are located in the strong evaluation zone. For this industrial products or the sector of activity, we can affirm that companies look for a high technical adequation of the product, perceive a high risk and define their requirements in the form of needs (search for solution). The duration of the purchasing process is paradoxically slow (2 weeks maximum), although the average value of purchase is low, the quantity of searched information is considerable, while the companies linked to chemical or capital goods, but also raw materials are positioned in a low evaluation zone of these characteristics. In these sectors, the companies are also characterized by a high average value of purchased products. They attach little importance to interpersonal relationship.

The second axis with an eigenvalue of 0.18 is explained by the dimensions of determining characteristics (more than 72% of the variance). This axis opposes the dimensions of the determining characteristics in the strong evaluation to the dimensions of the determining characteristics with a low evaluation. The textile, furniture, food processing sectors are characterized by a strong evaluation of the global offer product/services, of the inter company relationship, of the importance or the volume of purchase. Excluding chemistry and capital goods for which the interpersonal relationships have little importance, there are no real sectors linked to a low evaluation in of all the dimensions of determining characteristics.
DISCUSSING THE RESULTS AND CONCLUSION

The results of this study show that the economic criteria of choice and those linked with the exchanges between companies are decisive, which corresponds to our knowledge of the criteria of choice. The relationships between the determining characteristics or the dimensions of the determining characteristics are not systematic. However as a rule, in a limited purchasing situation (simple transactions or ordinary products), companies favor the global offer which corresponds to the hypothesis.

In an extensive relational purchasing situation buyer/supplier French companies attach a larger determining score to the development of partnership, flexibility and terms of payment and favor the quality of information and exchanges. So it is the interest of French-based companies suppliers to favor this characteristic whereas in the same situation British companies give a larger determining score to the technical
flexibility of the product and the frequency of the technological improvement. They generally favor the technical aspects of the product and those linked with the quality of service. However the hypothesis affirming that interpersonal relationships would be favored by small-sized companies is not confirmed.

To conclude we can notice that although this study deals with the criteria of choice concerning two categories of products only, they can be applied to other products. Companies work in a specific relational framework which can appear in buyer/supplier episodes or lasting relation (Häkansson and Ostberg, 1975; Lockett and Naude, 1991). The main interest of this study is to use this framework as a starting point and to propose a nearly exhaustive list of criteria of choice relying both on product/service exchanges and on interfirm relationship. Moreover the former studies consisted only in emphasizing the relative importance of each criterion. This study proposes for the first time to group all the characteristics in dimensions with the aid of a rigorous and proved methodology. This enables us to reproduce the data easily and above all to have far more stable dimensions than before. In the field of research the characteristics and dimensions proposed in this study constitute a segmentation base of the industrial markets by the desired benefits. Our future studies will tend to link them with the involvement profiles of the customer companies.
REFERENCES


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Patton, Puto and King, (1986), Witch Buying Decision are made by Individuals and not by Groups, Industrial Marketing Management, vol. 15.