"AN INVESTIGATION OF THE ATTRIBUTES CONSIDERED IMPORTANT IN THE PURCHASE OF DIFFERENT INDUSTRIAL PRODUCTS."

BY

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DECLARATION.

THIS PROJECT IS MY OWN ORIGINAL WORK AND HAS NOT BEEN PRESENTED FOR A DEGREE IN ANY OTHER UNIVERSITY.

SIGNED: ----------
FREDERICK OWUOR OUKO

THIS PROJECT HAS BEEN SUBMITTED FOR EXAMINATION WITH MY APPROVAL AS THE UNIVERSITY SUPERVISOR.

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DEDICATION

TO MY PARENTS WHO HAVE ALWAYS BEEN THERE FOR US.

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ABSTRACT

The primary objectives of this study was to determine whether the choice criteria used by purchasing agents to select suppliers varies with the type of product and the type of industry. The industries of concern were food processing engineering and chemicals while the products of concern were consumable supplies and processed materials.

Through the use of factor analysis the interrelationships among the large number of attributes was examined so as to achieve a smaller set of attributes which might be more desirable. The relationship between the industries was examined throguh the use of rankings by the industries and graphical presentation of the mean attribute importance.

The findings from the analyses led to the conclusion that the attributes considered important will vary with the type of product and the type of industry. A similarity in the general trend of the relative importance of the attributes was observed between the industries in some cases.

The observations of this study should be interpreted in consideration of the limitations of the study, specifically with regard to sample size and the statistical package used.

CHAPTER ONE

1.1. BACKGROUND

The industrial market consists of all the individuals and organizations acquiring goods and services that enter into the production of other products and services that are sold, rented or supplied to others.[1] The industrial market or the industrial buyers constitute the largest market of all. It is a huge market and the shilling volume of transaction involved in industrial buying significantly exceeds that of the ultimate consumer market.

All the formal organizations in the economy, be they public or private, profit or non-profit participate in the exchange of industrial products and services. The process of acquiring industrial products is usually referred to as the industrial buying process. It is complex in nature and a number of considerations are important to the purchase decision.

A key figure in the process is the purchasing agent whose evaluation of suppliers and products is likely to influence if not determine the company's final choice.[2] Purchasing can be defined both in a narrow and a broad sense. In a narrow sense, the term purchasing simply describes the process of buying; however in the broader sense, the term involves determining the need, selecting the supplier, arriving at a proper price, terms and conditions, issuing the contract or order and following up to ensure proper delivery.[3]

The purchasing decision however, is not solely in the hands of the purchasing manager or agent. In any large organization

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there exists a group of individuals who are known as the buying center. The buying center can be defined as the members of an organisation who interact during the buying decision process.[4] Jackson, Keith and Burdick found that perceptions of the relative influence of buying center members changed across product types.

The major thrust of this study will be to determine what the purchasing managers or members of the buying center consider when they are choosing or evaluating a supplier (vendor). The choosing or evaluation of the buying center members or purchasing managers will be with respect to two product types. That is, processed material and consumable supplies.

1.2. Statement of the Problem

The sales person who understands the industrial buying decision environment and the factors that influence buyer attitudes performance and sales outcomes can plan better selling strategies and adapt more effectively to situational contingencies during the sales call.[5]

There is no better way for the sales person to understand the industrial buying environment, than through being aware of the attributes that industrial buyers take into account when making their purchasing decisions. It is therefore necessary that a study be carried to find out those supplier attributes that are considered important across product decisions and across industries.

1.3. Objectives of the Study

(i) To determine how the choice criteria used by purchasing agents in selecting suppliers vary with the type of product and the type of industry.

a) To determine whether the choice criteria will vary between three categories of manufacturing firms (That is, food processing, engineering and chemical products)

b) To determine whether the choice criteria will vary between two categories of products. (That is, consumable supplies and processed materials).

ii) To examine the interrelationship among the large number of attributes so as to achieve a smaller set of attributes which might be more desirable.

1.4. Rationale for the study objectives

Although the industrial buying process is fairly standardized across manufacturing firms there is a likelihood of slight differences occurring. As previously mentioned Jackson, Keith and Burdick found that perceptions of the relative influence of buying center members changed across products.[6] This therefore means that the supplier attributes considered may also vary with the type of product. But the variations may not stop at the product level, since a more fundamental difference may be the nature of the industry. Dalrymple and Parson[7] found that industrial buying procedures vary widely across firms and even within companies, implying that industrial suppliers must tailor

their sales presentations to the needs of the particular buying situation.

Also, it is important that one considers the various attributes that are important in the evaluation and selection of a supplier. Most studies have come up with a large number of attributes which they consider important. Dempsey[8] in a survey of purchasing managers came up with twenty attributes which he listed from the most important (that is, delivery time) to the least important (that is, labor relations record) Lehman and Oshaugnessy[9] had seventeen attributes and argued for the necessity to come up with fewer attributes which would encompass the rest. It is possible to come up with fewer attributes because most of the attributes are highly correlated.

1.5. The Research Setting

The study was carried out in Nairobi's manufacturing sector. Most of the manufacturing firms in Kenya are concentrated in the Eastern part of Nairobi, in a place known as the Industrial Area. The firms within this Industrial Area are not only large in number but they are also diverse in nature.

1.6. Importance of the Study

The study is of importance to the following groups of people

i) Industrial Marketers

It will enable them to develop an effective marketing programme. This will be achieved through knowledge of the various attributes which are considered important for different industrial products and between industries.

ii) Organisational buyers

Such buyers will be made aware of what is generally considered as important attributes for different industrial products and between industries. The buyers who were not previously aware of choice criteria used by the large firms will be made aware of what it takes to be successful.

iii) Scholars

The study will expand on the body of knowledge currently available and may also enable a better understanding of choice criteria among different products and among different industries.

1.7. Plan of materials in the Report

This research report is divided into five chapters. The first chapter that is already covered is the introduction of the report. It gives background information on the report. Also included in the chapter are statement of the problem, objectives of the study, rationale for the study objectives, the research setting and importance of the study.

The second chapter is a review of the relevant literature for the study. The third chapter deals with the research design for the study. It considers the population of interest, the sampling plan and the data collection method. The fourth chapter concentrates on data analysis and interpretation of results while chapter five contains the summary, conclusions and limitations of the study, and suggested directions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1. INTRODUCTION

As stated in chapter one, the industrial market or the industrial buyers constitute the largest market of all. That is, it is much bigger than the consumer market. It includes all the formal organisations in the economy be they public or private, profit or non-profit. It is therefore a relevant sector of any economy with far reaching consequences in terms of growth and development.

While industrial buyers are important to an economy as a whole, they are of immediate concern to industrial marketers. These are individuals or firms who sell products to the industrial buyers. Therefore it is important for them to always ensure that they are aware of the industrial buyers needs and wants.

Industrial or organisational buying has been defined as the decision making process by which formal organisations establish the need for purchased products and services and identify, evaluate and choose among alternative brands and suppliers.[1] Therefore it is imperative that the industrial marketers be aware of the decision making process not just within industries but also between firms in an industry.

The decision making process of manufacturing (industrial) firms with regard to supplier choice is the concern of this study. Therefore included in the literature are issues such as the objectives of purchasing, the classification of industrial

products, the industrial buying process and supplier (vendor) evaluation.

2.2. Differences between organisational (industrial) and consumer buying.

A common body of knowledge, principles, and theory applies to both consumer and industrial market, but because their buyers function quiet differently they merit separate attention.[2] This means that at the most general level the principles and practices of marketing will cut across both consumer and industrial marketing. But there is need to look at the buyers and the marketing in consumer and industrial markets within the different contexts in which they exists.

It may be possible to understand the differences between industrial and consumer marketing based on certain criteria.[3] First, differences related to the characteristics of the market. Industrial and consumer markets exhibit different characteristics. Perhaps the more fundamental difference is in the nature of the demand. The demand for industrial goods is ultimately dependent upon the demand for related consumer goods and its considered as derived demand.[4] The industrial markets will also be characterised by demand concentration. Wilson has noted that industrial markets are marked by three types of concentrations; geographic, industrial and purchasing.[5] Consumer markets on the other hand are made of final consumers and demand is spread throughout the population.

Secondly, differences related to the characteristics of the industrial buyers. The industrial buying process is complex in

nature. Even where the unit of analysis in consumer marketing is the household rather than the individual consumer, consumer buying behaviour never reaches the complexity of industrial buying even when we compare like types of buying decisions.[6] The buying process is made complex by the multiple buying influences involved in almost all industrial purchases. There is also the need for more technically qualified and professional buyers as compared to consumer markets and these professionals, are usually, guided by more rational buying motives.

Thirdly, differences related to the characteristics of the products involved. It is not just the industrial buying process that is complex. The technical nature of most industrial products also adds to the complexity because a great deal of factual information must be reviewed with the firm and agreements reached on precise product specifications.[7] Also, there is a predominance of raw and semi-finished goods in industrial purchasing and there is tremendous emphasis on the importance of product service after the sale on the industrial market.

Fourthly, differences related to the characteristics of the channels involved. The major difference is that the channels of distribution in the industrial market are generally shorter and more direct. This therefore implies that there is much more usage of the direct channel in the industrial market than in the consumer market. Also the middlemen in the industrial markets are different from those in the consumer market and physical distribution is extremely important in the industrial market because of production line inventory requirements.

Fifthly, differences related to the promotional activities. The recognition that decision making is carried out by groups of changing composition is a prerequisite to the design of effective promotional strategy.[8] Some of the major differences include; a generally much heavier emphasis on personal selling in industrial marketing, the sales people in industrial marketing are more like consultants and technical problem solvers to their customers than the sales people in the consumer market and also there is minimal use of advertising in industrial marketing.

Lastly, differences related to the pricing characteristics. Generally compared with the pricing decisions for consumer products those made by industrial marketers frequently are affected more heavily by legal and economic forces.[9] Also other differences include the fact that prices are often based on competitive bidding in the industrial market. Further arrangements are often provided by industrial marketing firms and negotiated prices are very common in the industrial market.

Due to the fundamental differences between the consumer and industrial markets there is need to make the job of marketing management in each market a separate area of specification.

2.3. The Five 'Rights'

Traditionally, purchasing objectives have been summarised as; to procure goods and services of the right quality, in the right quantity, at the right time, from the right supplier, at the right price.[10] These are usually described as the five 'rights' and they are further discussed in the next page:

i) The right quantity

The right quantity that a firm should order is not always the quantity requested. There is but one quantity to purchase for any given transaction, but, since there are many different kinds of transactions, the determination of the correct quantity to order is a complicated matter. It is important to order the right quantity because, if too small a quantity is purchased, the unit cost will usually be higher and shortages may increase affecting work and the relationship between vendor and purchases. On the other hand, where the quantity purchased is too large, the excess inventory will raise costs. Placing orders at the wrong time can also be costly in the same manner.

ii) The right time

There is only one right time to purchase the right quantity. Proper buying involves buying to meet the production schedules without loading warehouses with inventory. It also involves buying in such a manner that one minimizes the unfavourable effects of price-level changes. Delivering of orders on time is a standard purchasing objective. When goods or materials arrive late or work is not completed at the right time, then sales and production may be affected. Due to the dynamic nature of the markets, purchasing personnel must constantly study all the varied factors which affect the markets for materials and suppliers in order to buy at the right time.

iii) The right quality

The term quality, as used in the field of purchasing refers

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to the suitability of a product for its intended use. Quality can be defined as the whole set of features and characteristics of a product or service which are relevant to meeting requirements. Quality and reliability are often used interchangeably.

iv) The right supplier

The selection of the source of supply is said to be the acid test of sound purchasing where one makes the correct source decision in a particular instance then the buying companies needs should be met perfectly. Therefore the company would receive the right goods, in the right conditions, in the right quantity, at the right time and at the right price. Poor selection of suppliers may result in inability to achieve the purchasing objectives. The purchaser must find the supplier who will furnish the optimum combination of these purchasing factors.

v) The right price

Price is usually considered last of the five 'rights' not because it is least in importance, but because price usually depends on the rest of the package; quality, quantity, time and suppliers. The right price is said to be the price that is reasonable and fair to both the buyer and seller. It is important to note that the right price is not necessarily the lowest price. Since the lowest price may not provide the proper quality for the intended purpose, as it may not secure the proper service and so on. The factors which may affect the pricing decisions include; cost of production, value as perceived by

customers, competition and other market considerations.

The buyer will usually obtain communication on prices through four methods: a price list is made available, prices are quoted on request, based on an internal price list not available to customers and/or individual quotations based on specially prepared estimates are made on request. Selected bids as tenders are then submitted. In the consideration of the quotations some form of price analysis is always used. Price analysis, attempts, without delving into cost details, to determine if the price offered is appropriate.

In conclusion it is important to note that other than the five rights there are also other important purchasing objectives. These include:

a) To manage the firms inventory so as to give the best possible service to users at the lowest price;

b) To maintain sound co-operative relationships with other departments in the firm, for example production and marketing.

c) To develop staff, policies and procedures within the firm that will ensure the achievement of the firms objective.

It is important to note that these purchasing objectives are achieved within an environment in which the business operates. It is within this environment that there exists certain factors that will influence industrial buying.

2.4. The factors that influence industrial buying

There are four main groups of influences on the industrial buyer. These four main groups can be classified as;[11]

i) Environmental factors

The organisational decision process is significantly influenced by the relationships of the organisation and its members with the larger environment. In the larger environment one will find forces that are either physical, technological, economic, political, legal or cultural in nature. These forces interact and the result is the complex nature of the environmental influences on the buying decision process.

Physical forces affect the buying behaviour at the most basic level. They define the constraints within which the buying task must be accomplished and the options available to the buying organisation. Such physical factors include climate and geographic location of the organisation and these define the availability of certain products. Also the geographic location of a supplier may have an important bearing on whether he will be selected or not.

The technological environment includes such broad realms of human activity as communication and transportation systems as well as electronic data processing capabilities, biological and mechanical knowledge and practice, metals technologies and energy conversion techniques. Technology influences the nature and availability of goods and services. In addition to influencing what is bought, technology also influences the nature of the buying process, for example, through the use of computer technology for vendor analysis.

The economic environment for the buying organisation reflects a wide variety of factors and has both task and non-task

consequences. Here, one considers factors like the level of primary demand, the economic outlook, the level of inflation and also the availability of money and credit. The economic environment has it's greatest impact in defining the availability of goods and services, the ability of buying organisations to finance transactions and the price that will be paid.

The political - legal climate should be taken into account since it affects the operations of a firm. The political environment is defined here to include governmental activities as well as political parties. The governments will also exert a more direct influence through the creation of a legal environment within which the buying activities take place. Political - legal factors affect issues like tariffs and trade agreement, spending, government funding and also protection from competition and maintaining standards of quality for product and services.

Culture, which can be defined as the sum of shared meanings that characterize a society is also a factor in the external environment. Values will influence both the organisation and its members. The organization and its members will behave in a manner which reflects both the individual culture and the corporate culture.

ii) Organisational factors

These are the factors that are within the firm and will therefore affect its general operations internally. These organisational factors include tasks, the organizational structure, technology and the people. These four interacting sets of variables are highly dependent on one another and define

the information, expectations, goals, attitudes and assumptions used by each of the individual actors in his decision making activities.

Tasks refer to the work performed to achieve the goals and objectives of the firm. The buying task is just one of the many tasks performed by the organisation in pursuit of its objectives and the purpose of all organisational buying is to help the organisation achieve its objectives. The solution of that specific problem then becomes the goal for the buying process.

The organisational structure refers to the systems of communication, authority, status, rewards, the hierarchy within the organisation and the allocation of tasks and duties within the organisation. All these aspects of the organisation structure influence the organisational buying process.

Technology will have an impact on both what is bought and the nature of the buying process itself. Technology includes the physical plant and equipment owned and used by the firm; it also includes the policies and procedures which serve as guidelines and also the systems within the organisation. Before any selling effort is made it is important that one should have an adequate understanding of the organisational technology in potential customer organisations.

The importance of people is discussed under interpersonal and individual factors.

(iii) Interpersonal factors

Organisations are made of people who interact in their day

to day work. They share knowledge and attempt to influence the outcome of the process to their advantage. Interpersonal influence can therefore be simply defined as the influence of one person or another.

In the case of purchasing the important group is those who make up the buying center. The buying center can be defined as the members of the organisation who interact during the buying process.[12] There are several distinct roles in the buying center and these include; users, influencers, buyers, deciders and gatekeepers. By understanding these roles then one will understand the nature of interpersonal influence in the buying decision process.

iv) Individual factors

Each of the participants in the buying decision process has personal motivations, perceptions and preferences. The behaviour of these individuals in formal organisations is a complex interaction of personal, group and organisation behaviour. The individual factors are influenced by the participants education, income, age, personality and other factors.

2.4.1. The Buying Center

Due to the important nature of the buying center in any buying decision process, there is need for a more detailed analysis. The buying center as previously defined refers to the members of the organization who interact during the the buying process.[13] According to Webster and Wind, the buying center includes all members of the organisation who play any of six roles in the purchase decision process.[14]

i) Users

These are the members of the organisation who will use the product or service. The users may exert their influence either individually or collectively. Users can affect the buying decision in either a positive way - by initiating the buying proposal and helping to define the product specifications - or in a negative way by refusing to work with the materials of certain suppliers for any of several reasons.

ii) Influencers

These are the organisation's members who influence the buying decision. The influence can either be direct or indirect and is usually achieved by them defining the criteria which constrain the choices that can be considered in the purchase decision or by providing information with which to evaluate alternatives. Examples of influencers include technical personnel.

iii) Deciders

There are the members of the organisation who must authorize the proposed actions. The deciders therefore have either formal or informal power to determine the final selection of suppliers.

iv) Buyers

These are the persons within the organisation with the formal authority for selecting the suppliers and arranging the terms of purchase. The buyers may help shape product specifications but they play their major role in selecting vendors and negotiating where the purchase decision is a complex

one. The buyers might include high level officers participating in the negotiations.

v) Gatekeepers

These are group members who have the power to prevent sellers or information from reaching members of the buying center. In formal organisations these may include purchasing agents who have formal responsibility and authority for managing the relationship of the firm with vendors and potential vendors.

McCabe[15] argues that extensive support is found in the buying literature for the view that at high levels of uncertainty, organisational decision making process are characterised by a constriction of authority (i.e decisions are made at higher level of the organisation by a smaller number of organisational members) and an increase in rule governed behaviour as decision units act to minimize errors often associated with decision making in uncertain situations. It is important to keep in mind however, the fact that, the influence structure varies. The influence structure of the buying center is likely to vary across a number of factors that characterize the purchase situation, such as buy class, type of product and type of decision.[16]

2.5. Types of buying situations

Members of a multiple-purchase influence group at a given buy phase may find that their decision making process is a function of the type of buying situation with which they are involved.[17] This may be necessary due to the fact that the same product may elicit markedly different purchasing patterns in

different organisations, with different levels of experience and information.

The terms normally suggested for describing the three distinct types of buying situations or buy classes are: new task, modified rebuys and straight rebuys.

i) New Tasks

This is a situation in which the need or problem is perceived by organisational decision makers as totally different from previous experiences. Since the problem encountered is a new one, the information requirements are high for the purposes of solving the problem and searching for alternative suppliers. When confronting a new task buying situation organisation buyers operate in a stage of decision making referred to as extensive problem solving.[18]

ii) Modified Rebuy

These are situations that are characterised by an essentially recurring problem. The organisational decision makers therefore feel that significant benefits may be derived by re-evaluating the alternatives. The buyers may therefore seek additional information and also consider alternative solutions. The factors that may trigger reassessment may be internal (for example, search for quality improvement) or external (for example costs). Limited problem solving best describes the decision-making process in this kind of situation.

iii) Straight Rebuy

This is a situation where there is a continuing or recurring

requirement. The buyers therefore have substantial experience in dealing with the need. The information requirements are minimal if any and there is no consideration of alternatives. Routine response behaviour is the decision process approach organisational buyers employ in the straight rebuy.[19]

2.6. Classification of industrial goods (products)

Students of marketing have traditionally classified products into different types on the basis of varying product characteristics. Hoordewier, John and Nevin[20] argued that in practice, industrial firms distinguish between two very different kinds of purchases. Those for items repetitively needed in production or in maintenance (for example, fasteners, bearings and paint) and those for capital equipment (for example, milling machines and power generating devices). Therefore the basis for classification in this case was the frequency of purchase.

Kotler[21] took an approach that is quite different from Hoorderwier, John and Nevin. His basis for classification is in terms of how the industrial goods enter the production process and their relative costliness. He states that we can distinguish three groups; raw materials and parts, capital items and supplies and services.

i) Materials and parts

These are goods that enter the manufacturers' product completely. They fall into two classes; raw material and manufactured materials and parts.

ii) Capital items

These are goods that enter the finished product partly. They include the groups; installation and accessory equipment.

iii) Supplies

These are items that do not enter the finished product at all.

Lehman and O'shaughnessy[22] in their 1974 study introduced a totally new perspective to the classification of products. Their classification is based on the type of problem likely to arise in adopting a particular product. They came up with four types of products;

i) Routine order product

This is a product that is frequently ordered and used. There is no problem in learning how to use such products, nor is there any question about whether the product will do the job. Therefore, this type of product is expected to cause no significant problems in use.

ii) Procedural problem products

These are products that the buyer is also confident they will do the job. However, problems are likely because personnel must be taught how to use the product.

iii) Performance problem products

These are products where there is doubt as to whether the product will perform satisfactorily in the application for which it is being considered. Here the problem concerns the technical

outcomes of using the product.

iv) Political problem products

These are products that give rise to 'political' problems in that there is likely to be difficulty in reaching agreement among those affected if the product is adopted. 'Political' problems occur when the products necessitate large capital outlays since there are always allocational rivals for funds, more frequently, political problems will arise when the product is an input to several departments whose requirements may be congruent.

Stanton[23] developed a classification with five categories. He states that the practices used in marketing various industrial goods are just too different and consequently one can separate industrial goods into five categories; raw materials, fabricating materials and parts installations, accessory equipment and operating supplies. This classification is based on the broad uses of the product.

i) Raw materials

Raw materials are those industrial goods that will become part of another physical product. Raw materials have usually not been processed in any way, except as necessary for economy or protection during physical handling. Such raw materials include:-

a) Goods found in their natural state such as minerals and land products; and

b) Agricultural products such as fruits and animal products

c) Fabricating materials and parts.

ii) Fabricating materials and parts

These are industrial goods that become an actual part of the finished product. They have already been processed to some extent. But the fabricating materials will undergo further processing. Examples include pig iron to steel and yarn being woven into cloth. Fabricating parts will be assembled with no further change in form, for example zippers on clothing.

iii) Installation

These are manufactured industrial products - the long-lived and expensive major equipment of an industrial firm. Examples of installations include large generators in a dam or blast furnances for a steel mill.

iv) Accessory equipment

This is equipment that is used in the production operations of an industrial firm, but it does not have significant influence on the scale of the operations in the firm. Accessory equipment does not become part of the finished product. The life of such accessory equipment is shorter than that of installations but longer than that of operating suppliers. Examples of accessory equipment include cash registers in retail stores and small power tools.

v) Operating supplies

These are goods that are short lived in nature. They are also low price items usually purchased with a minimum of effort. They are in a firms day to day operations but do not become a part of the finished product. Examples of operating suppliers

include fabricating oils, pencils and stationery.

Webster[24] developed one of the most elaborate classification of industrial goods and services. According to him industrial goods and service can be categorized in a variety of ways. A typical scheme involves: construction; heavy equipment; light equipment; components and subassemblies; raw materials; processed materials; maintenance; repair and operating supplies; and services.

i) Construction

This includes the design and fabrication of building and other structures such as drilling rigs, chemical processing plants, and also towers and cranes.

ii) Heavy equipment

This involves large machinery and includes such equipment as super computers, locomotives presses and earth moving equipment.

iii) Light equipment

This will consist of small pieces of equipment which typically have lower purchase prices and often shorter life times than heavy equipment. Examples include power-operated hand tools, fork-lift trucks and small motors.

iv) Components and sub-assemblies

These are fabricated items that become part of the finished product, examples include small motors and fasteners.

v) Raw materials

These are basic products that tend to be found in the natural environment. They include products of the sea, farm, forest and mine that are at beginning of manufacturing process. Examples include fish, wheat, logs and iron ore.

vi) Processed materials

These are raw materials that have had their value enhanced by certain processes. Such processes include refining, crushing and cutting. Such processed materials are usually of a standard grade and size.

vii) Maintenance, Repair and Operating (MRO) Supplies

These are consumed by the organisation in its day to day operations but do not become part of the finished product. Such items can normally be acquired from many sources and one brand is easily substituted for another.

viii) Services

These include all the intangible products used up by the organisation. Such services may be purchased along with physical products. For example, a service contract may be part of an equipment purchase.

Haas[25] developed a classification with six categories. This classification is wide enough to generally include all the products but not too wide to 'confuse' them. The classification's six product types are explained in the next page:

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i) Heavy equipment

These are basically capital goods such as metal-cutting machine tools (lathes, boring mills, grinds), metal forging machines (foging presses and forging machines), forklifts and blast furnances.

ii) Light equipment

The transaction values are considerably lower than of heavy equipment and the products are not permanently affixed to the buyers physical plant. For example, portable power tools like drills, saw grinders and also measuring instruments such as calculators and so on.

iii) Consumable suppliers

These are the products that are used up or consumed by the purchasing company in the operation of its business. Such product include cleaning compounds, business forms, soaps, cutting fluids and small tools such as welding rods, drill bits and so forth.

iv) Component parts

These are products that are purchased for the purpose of inclusion into the final product of industrial company. Examples include motors, gears, nuts, bolts and screws.

v) Raw materials

These include all those products generated by the extractive industries, that, in turn, sell those products to their customers with little or no alteration. Examples include coal, iron ore,

bauxite, crude oil, lead and other similar products.

vi) Processed materials

These include all types of processed materials not considered component parts. Typical of the products in this classification are steel plates, chemicals, glass, coke, sheet metals, leather, aspholt and others.

What is evident is that different authors will have different classifications for the different products that are used by the organisational buyers. Therefore, due to the wide number of classifications available, it is important that one should adapt the one that is most suitable. For purposes of this study, Haa's classification is adapted, but only with respect to two product types, that is, consumable supplies and processed materials.

2.7. The industrial buying process

There is no single format which dictates how industrial companies actually purchase goods and services, but there is a relatively standard process that is followed. The process usually involves eight stages with the buyers facing a new task buying situation usually going through all stages of the process.[26] Those buyers making modified or straight rebuys will skip some of them. The buying decision phases include the following:[27]

i) Need recognition

The buying process usually begins when someone in a company or a department within the company realizes a need or problem.

It is this need or problem that triggers off the purchasing decision. The need recognition can result from either internal or external stimuli. The internal stimuli can include equipment breakdown or the launch of a new product, while external stimuli include new ideas from outside the firm, for example ideas observed in an exhibition. Therefore the recognised need or problem can be met by acquiring a specific good or service.

ii) Definition of the characteristics and quantity of item needed

In this phase the firm has recognised a need or problem, and thus prepares a need description that defines the characteristics and the quantity of the needed item. This need description is usually done through use of a requisition form. For complex items, there is need for the buyer to work with other knowledgeable people, for example engineers or consultants. It is at this stage that the party involved in purchasing will want to rank the importance of certain attributes, for example, price, reliability, service and durability, desired in the item.

iii) Development of the specifications to guide the procurement

The buying organisation through the relevant departments will develop the item's technical product specification. These may include factors like design standardization and material specification. It is these specified specifications that are used to guide acquisition of the necessary items.

iv) Search for and qualification of potential sources

Having come up with the product specifications, the buyer

now conducts a search for the potential sources or vendors. This search can be done through use of trade directories, computers or even recommendations from other companies. The buyer's main objective will be to come up with a list of qualified suppliers. But the qualifications sought will vary with the type of buying organisation, the specific buying situation and the various buying influences involved.

v) Acquisition and analysis of proposals

Once the qualified suppliers have been identified, proposals based on the specifications are solicited, acquired and analyzed for price, service, delivery and so on. Where the item involved is complex or expensive, then the buyer will need detailed written proposal from each potential supplier. The buyer will then review their formal presentations.

vi) Evaluation of proposals and selection of suppliers

The various proposals submitted by the competing suppliers are now reviewed by the buying center. Where the cost of producing the product in-house in a make or buy situation, is found to be lower, then the buying process for the product is terminated. However, if the inverse is true, the process continues. In this phase the evaluation is not done only on the basis of technical competence but issues such as ability to deliver on time and to provide the necessary services are also addressed. It is therefore necessary for the buying center to draw up a list of the desired suppliers and their relative importance. It is on the basis of this that a supplier or a group of suppliers is chosen.

vii) Selection of order routine

In this phase, the buyer will prepare an order routine specification. This includes the final order with the chosen supplier(s), listing the technical specifications, the quantity needed and the various contractual terms. Also copies of the other interested departments within the organisation. The purchase process is completed when the ordered item is delivered and accepted for use.

viii) Performance, feedback and evalution

It is in this final phase of the buying process that the performance of the product and the vendor is evaluated. The performance can be reviewed either formally or informally. The review is conducted, for example, to determine a departments level of satisfaction or dissatisfaction with the purchased product in terms of the problem recognised for which the product was purchased. On the basis of this feedback then a firm may continue using the supplier(s) or may switch to another supplier(s) who may be able to provide the required product item.

It is important to note that there is no single format which dictates how industrial companies actually purchase goods but the eight stage model is a relatively standard one. The value of this particular description of the organisation decision process is that it is based upon field research where these activities were actually observed as distinct phases in the purchasing process.

This study's area of interest is the attributes considered important in the purchase of different industrial products. It is therefore mainly concerned with phase six of the buying process. That is, the phase concerned with evaluation of proposals and selection of suppliers. The importance of this phase in the buying decision process cannot be underestimated. Baily and Farmer[28] state that it would be reasonable to argue that the most important purchasing decisions are concerned with selecting the right sources of supply while according to Aljian[29] the selection of the source of supply is the acid test of sound purchasing.

2.8. Buyer motivations

The industrial buying influences may be motivated by both rational and emotional factors in choosing among suppliers of required goods and services.[30] The rational motivating factors are those based primarily on economic consideration while emotional motivating factors on the other hand are more subjective.

i) Rational motivation

These motivations being primarily economic include the following;

a) quality and uniformity of the products in relation to specifications;

b) lowest cost when the quality and uniformity are acceptable;

c) the competency of the service accompanying the product;

d) the competency of the technical assistance offered by the suppliers in setting up the equipment and training the workers;

e) certainity that the supplier can deliver in the desired quantitities and at the required times;

f) purchasing capital equipment that does not require worker training

These are therefore examples of what buyers look for on the rational side when they are judging suppliers in the buying process.

ii) Emotional motivations

Purchasing personnel are also affected or influenced by emotional considerations. These may vary between purchasing personnel but some of the more common characteristics include;

a) fear of the purchasing decision and possible repercussions

b) habit and complacency of the purchasing personnel

c) desire for security and preservation of status

d) fear of the buying company falling behind competitors because of faulty purchasing by the agent

The purchasing agent will thus make purchases on the basis of some of these emotional motives.

2.9. Decision criteria used on buying different products

Lehman and O'shaughnessy[31] in their study introduced certain criteria that can be used to understand how organisational buyers make decisions with regard to different types of products.

They stated that buying decisions often reflect five types of criteria:

i) Economic criteria

This is mainly concerned with the costs associated with buying, storing and using the product.

ii) Performance criteria

This evaluates the extent to which the product or service will do the job or maximize performance.

iii) Integrative criteria

It deals with the extent to which the supplier will go above the minimal expectation to meet the customers expectations.

iv) Adaptive criteria

It addresses the question of certainity with regard to the supplier delivering the specified product.

v) Legalistic criteria

Is there a need to keep certain legal or policy considerations in mind when buying the product or service?

The two authors further elaborated that the criteria will vary with the type of product and the application.

2.9 SUPPLIER (VENDOR) EVALUATION

Due to the complex nature of the industrial buying process and the importance of supplier (vendor) selection. A number of studies have been carried out to understand the nature of the buying process and the attributes which are considered important

in carrying out a vendor evaluation. These studies have mainly focused on the choice criteria used by purchasing agents to select suppliers.

According to Webster[32] many organisations use a more or less formal vendor evaluation scheme. He adds on that there are two major types of evaluations - the qualification of vendors as bidders for given procurement and the on-going review of present suppliers.

Webster elaborates further that the typical vendor evalution procedure requires a subjective judgment, often expressed in numerical terms, by purchasing officials. Each criterion carries a specialised weight and the products of numerical scores times weight are summed to arrive at an overall vendor score.

Among the most commonly used dimensions for vendor evalution according to Webster are reliability, product quality, price, service and technical competence. Other variables might include the quality of vendor management, labor relations, employee morale, cost consciousness, moderness of production plant and so on.

Studies have been carried out to examine the effect of situation variables on the relative influence of the buying center (Jackson, Keith and Burdwick 1984). Also some have set out to find what attributes the purchasing managers consider important in vendor selection (Dempsey 1978) (Baily and Farmer 1992) (Aljian 1982) (Rockley 1978). Others have looked at the industrial buyer - vendor relationships (Hoordewier, John and

Nevin 1990) while others have studied the buying group structure (McCabe 1987). Levit (1967) investigated the relative importance of companies reputation, salesman effort and sales-message quality in industrial purchasing. There has been reinforcement of the perception that there are guidelines used by professional buyers and sellers in guiding their respective thinking and behaviour in sales interactions, that is, script theory (Leigh and Rethans 1984).

Jackson, Keith and Burdwick[33] conducted a study to examine the effect of situational variables on the relative influence of the members of the buying center. This study examined purchasing agent perceptions of the relative influence of four different buying center members across five different product types three different types of buy classes and two different decision types.

The study confirmed previous evidence that perceptions of relative influence of buying center members changed across product types. Furthermore, it demonstrated that changes in these perceptions across product types depended upon whether the decision was supplier to select or product to buy. Finally, their study indicated that purchasing agents perception of the relative influence of buying center member in product and supplier decisions related to the purchase of a particular product.

A large number of studies have been carried out to find out what attributes the purchasing managers consider important in vendor selection. Dempsey[34] in a survey of purchasing managers

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listed the following attributes in order of importance:-

1. Delivery time
2. Quality
3. Price
4. Repair service
5. Technical capability
6. Performance history
7. Production facilities
8. Aid and advice
9. Control systems
10. Reputation
11. Financial position
12. Attitude toward buyer
13. Bidding compliance
14. Training aids
15. Progress communications
16. Management and organisation
17. Packaging capability
18. Moral/legal issues
19. Geographical location
20. Labor relations record

According to Dempsey the members of the buying center will rate the supplier against these attributes and will identify the most attractive supplier.

Aljian[35] argued that once the prospective bidders list is established it is necessary to assemble information about each source to judge properly its ability to fulfill the requirement.

The factors which he considered important were;

1. Management capability
2. Technical capability
3. Manufacturing capability
4. Labor management relations
5. Financial strengh
6. Ethics

In an article "what buyers really want"[36], purchasing executives listed the followed attributes as the most important in influencing the relationship between supplier and customer.

1. Quality products and services
2. On time delivery
3. Ethical corporate behaviour
4. Honest communication
5. Competitive prices

Other important factors included repair and service capabilities, technical aid and advice, geographic location, performance history and reputation.

Baily and Farmer[37] looked at certain situational variables and also the important attributes in vendor selection. They argued that the extent of investigation into suppliers will be affectd by the volume and value of possible expenditure.

According to Baily and Farmer, unusual or first time purchases, where the purchaser has little or no experience to call on, may justify extensive investigations, especially if the wrong choice of suppliers could have expensive consequences. They then listed the task variables which determine the choice of

supplier as the five traditional ones:-

1. Quality
2. Quantity
3. Timing
4. Services
5. Price

Others which they considered as important were financial stability, good management, seller being Electronic Data Interchange (EDI) connected, also the capability of delivering against Just-In-Time (JIT) schedule.

Lehman and O'shaughnessy[38] looked at the question of attribute importance from a totally different perspective. They argued that the choice to select suppliers may vary with the type of problem likely to arise in adopting the particular product.

The two authors then provided seventeen attributes which they argued will have different degrees of importance depending on the type of product.

1. Overall reputation of the supplier
2. Financing terms
3. Supplier flexibility in adjusting to your company's needs
4. Experience with supplier in analogous situation
5. Technical service offered
6. Confidence in the salesmen
7. Convenience of placing the order
8. Data on reliability of the product
9. Price
10. Technical specification

11. Ease of operation or use

12. Preferences of principal user of the product

13. Training offered by the supplier

14. Training time required

15. Reliability of delivery date promised

16. Ease of maintenance

17. Sales service expected after date of purchase

Profitability and solvency are the two most important features to be examined when appraising the viability of a supplier according to Rockley.[39] Rockely was therefore of the opinion that the other attributes, for example service and price, were secondary to the financial position of the firm.

Levit[40] on the other hand stated that supplier reputation was quait an important attribute. This was especially so far the producer of technically - advanced products which are used as components or as ingredients by other manufacturers. He further argued that the quality of the salesman's presentation in support of a product is an important variable in obtaining faviourable buyer reaction.

Hoorderwier, John and Nevin[41] studied the performance outcomes of purchasing arrangements in industrial Buyer - Vendor relationships. They stated that industrial firms distinguish between two very different kinds of purchases; those for items repetitively needed in productions or in maintenance for example, fasteners and bearings and those for capital equipment, for example milling machines and power generating devices.

They concluded that in repetitively used items (RUI's)

purchase, some of the actions relate to (for example, information provided to supplier and other dimensions related to actions of other party (for example, flexibility of supplier).

McCabe[42] evaluated the oppossing views of the relation between environmental uncertainty and buying group structure. While the study did not consider the attributes that are important in supplier selection, it showed the structure of buying units changing with varying levels of complexity and task uncertainty.

Script theory suggests that professional buyers and salesperson posses buying and selling scripts which guide their respective thinking and behaviour in sales interaction.[43] Professional buyers for example would have scripts for such often executed tasks as searching for potential sources, negotiating with vendors and final vendor selection. It is therefore imperative that the purchasing personnel be aware of these scripts. Since it is these scripts which would guide the purchase of different industrial products.

A lesson that can be learned from these studies is that one needs to understand the evaluation criteria of the purchasing managers if one is to successfully market industrial products. Therefore industrial marketers must be sensitive to the evaluation criteria of organisational buyers and to how these criteria are weighted.[44] On the other hand purchasing managers should exhibit certain competencies in supplier evaluation. After all, purchasing performance is an important determinant of a firms competitiveness.[45]

For purposes of this study, the researcher has adopted sixteen supplier attributes which he feels will be the most relevant with respect to the two products of interest, that is consumable supplies and processed material. The sixteen attributes are listed below:

1. Overall reputation of the supplier
2. Financing terms
3. Suppliers flexibility in adjusting to your needs
4. Experience with supplier in analogous situations
5. Technical service offered
6. Confidence on the salesmen
7. Convenience of placing the order
8. Data on reliability of the product
9. Price and price considerations eg. trade and price discounts
10. Technical specifications
11. Production facilities
12. Preferences of principal uses of the product
13. Reliability of delivery date promised
14. Brand name
15. Geographic location
16. Return provision eg. warranties

CHAPTER THREE

RESEARCH DESIGN

Introduction

This chapter deals with research design which was used to conduct the study. It covers the population of interest, the sample, data collection method and data analysis method.

3.1 The Population

The population of study comprised all large manufacturing firms in Nairobi. There are several measures of size, for example, net assets, turnover and number of employees But for purposes of this study the number of employees will be used. In kenya firms employing more than 50 employees are considered as large.[1]

3.2 Sampling and sample size

The sampling method that was used was the stratified sampling procedure. A stratified sample is a probability sample that is distinguished by the following two step procedure

(a) The parent population is divided into two mutually exclusive and exhaustive subsets.

(b) A simple random sample of elements is chosen independently from each group or subset.[2]

On the basis of the stratified sampling technique 60 manufacturing firms representing three categories of industries were selected. The categories of indusries represented were;

(1) Food Processing (I.S.I.C[3] 3121)

(2) Engineering (I.S.I.C 3820)

(3) Chemical (I.S.I.C 3529)

The total of 60 manufacturing firms represented 20 firms from each category of the industries.

3.3 Research Instrument

The required information was obtained by respondents filling out a questionnaire made up of two types of questions. The respondents were first required to rate on a semantic differential scale the relative importance of each of the sixteen attributes in choosing suppliers for each of the product types. Once these rating questions were answered, then an open question was provided where the respondents could fill out any factors or attributes which may not have been captured by the first sixteen factors.

A six-point scale was used to capture the information. A study conducted by Churchill and Peter found that there is a positive relationship between the number of items used in the scales and the reliability of the measure.[4] Therefore the more the items the better. The Churchill and Peter study also found that the hypotheses that scales with neutral points have higher reliability than forced choice scales was not supported.[5]

The questionnaire for purposes of this study was self administered where possible, however in certain circumstances it was left with the respondents and collected after a few days.

3.4. The Respondents

The respondents were the purchasing managers of their respective firms or individuals in charge of purchasing within the organisations. The purchasing managers were chosen because they head the purchasing department which acts as the

legally authorised representative of all others in dealing with firms supplying or aspiring to supply materials and services.[6]

3.5 Data Analysis

To examine the interrelationships in attributes, factor analysis was performed on the sixteen attributes for each of the product types. Factor analysis most distinctive characteristic is its data-reduction capability. Given an array of correlation coefficients for a set of variables, factor analytic techniques enable us to see whether some underlying pattern of relationships exist such that the data may be "rearranged" or reduced to a smaller set of factors or components that may be taken as source variables accounting for the observed interrelationships in data.[7]

To examine the differences, the attributes will be ranked on the basis of the highest average importance rating on a six-point scale. This will be to assess not only the differences between products but also between industries. Graphs will also be used to show the trends for each of the industrial categories.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.0 Introduction

In this chapter, data from the completed questionnaires is analysed and presented through the use of factor analysis, ranking and graphs. Factor analysis is used to examine the interrelationship in attributes for each of the products. Ranking is done using the mean score for each of the attributes. The graphs are used to compare the mean scores between the industries for each of the products. They show the trend in terms of attribute importance for each of the industries in the purchase of a given product.

4.1 Key

To ensure ease of analysis and for convenience purposes the various products have been abbreviated as follows:

IPM: Imported processed materials.

LPM: Local processed materials

LCS: Local Consumable supplies

ICS: Imported consumable supplies.

Abbreviations have also been used to differentiate between industries as follows:

IPMF: Imported processed materials purchased by the food processing industry.

IPME: Imported processed materials purchased by the Engineering industry.

IPMC: Imported processed materials purchased by the chemical industry.

LPMF: Local processed materials purchased by the food processing industry

LPME: Local processed materials purchased by the Engineering industry

LPMC: Local processed materials purchased by the chemical industry

LCSF: Local consumable supplies purchsed by the engineering industry

LCSE: Local consumable supplies purchased by the engineering industry.

LSCS: Local consumable supplies purchased by the chemical industry

ICSF: Imported consumable supplies purchased by the Food processing industry

ICSE: Imported consumable supplies purchased by the Engineering industry

ICSC: Imported consumable supplies purchased by the chemical industry.

To establish the level of importance there are six levels of importance ;

i) Most important

ii) Very important

iii) Important

iv) Somewhat important

v) Less important

vi) Least important

4.1 ATTRIBUTES USED IN THE QUESTIONNAIRE

To understand what factors firms consider important whe choosing a supplier the following attributes were used in the questionnaire.

Table 4.1

ATTRIBUTES USED IN THE QUESTIONNAIRE

1. Overall reputation of the supplier.
2. Financing terms
3. Suppliers flexibility in adjusting to your needs
4. Experience with suppliers in analogous situations
5. Technical service offered
6. Confidence in the salesmen.
7. Convenience of placing the order
8. Data on reliability of the product.
9. Price and price considerations eg. trade and price discounts.
10. Technical specifications
11. Production facilities
12. Preferences of principal user of the product
13. Reliability of delivery date.
14. Brand name
15. Geographic location
16. Return provisons eg. warranties.

4.2. Data analysis and findings on IPM, LPM, LCS and ICS

Ranking of IPM, LPM, LCS, and ICS

To investigate whether there is any difference in the attributes considered important in the purchase of IPM, LPM, LCS, and ICS. The attributes were first ranked depending on their means, those with the highest means were ranked first while those with the least means were ranked last. Where the means tied the attributes were considered to be equal in ranking. Also provided are standard deviations for each of the means.

TABLE 4.2

ATTRIBUTE	PRODUCT TYPE							
	IPM		LPM		LCS		ICS	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Reputation	5.30[a]		5.08	5	4.05	4	4.0	6
	(0.50)[b]		(0.62)		(0.60)		(0.63)	
Financing	5.74	3	1.85	15	1.93	16	5.90	1
	(0.44)		(1.27)		(0.66)		(0.30)	
Flexibility	5.10	7	4.63	7	3.40	8	4.42	3
	(0.70)		(1.10)		(1.10)		(0.62)	
Past Experience	5.15	6	5.45	3	4.54	2	4.16	6
	(0.24)		(0.64)		(0..60)		(0.52)	
Technical Service	4.03	12	3.88	10	3.63	6	3.87	8
	(0.42)		(1.06)		(0.74)		(0.88)	
Confidence in Salesmen	2.06	16	1.76	16	1.98	15	2.0	16
	(1.25)		(1.72)		(1.00)		(0.96)	
Convenience in ordering	2.19	15	3.38	13	2.08	14	2.42	15
	(1.25)		(0.75)		(1.12)		(0.68)	
Reliability data	5.83	2	5.93	1	4.30	3	4.26	5
	(0.18)		(0.27)		(0.27)		(0.93)	
Price	5.90	1	5.93	3	5.75	1	5.71	2
	(0.51)		(0.50)		(0.44)		(0.46)	
Technical Specifications	5.26	5	5.88	2	3.48	7	3.58	11
	(1.26)		(0.33)		(1.09)		(0.96)	
Production facilities	3.85	14	4.20	8	2.73	11	2.84	14
	(1.31)		(1.30)		(0.88)		(0.86)	
Preferences of user	4.18	9	2.18	14	2.70	12	3.13	13
	(1.77)		(1.30)		(0.76)		(0.62)	
Reliability data	4.07	11	4.85	6	3.68	5	4.35	4
	(0.62)		(0.62)		(0.76)		(0.66)	
Brand name	3.91	13	3.45	12	3.33	10	3.77	9
	(0.99)		(0.99)		(0.53)		(0.63)	
Geographic Location	4.48	8	4.2	8	2.70	12	3.61	9
	(1.21)		(1.24)		(0.82)		(0.72)	
Return Provisions	4.13	10	3.78	11	3.35	9	3.38	12
	(0.73)		(0.89)		(0.92)		(0.67)	

a = mean
b = standard deviation.

In the case of IPM, price was ranked first followed by reliability data, financing, reputation of suppliers and technical specifications in that order, while for ICS, financing was first, followed by price and flexibility of the supplier. It could therefore be concluded price is an important consideration when one is buying either IPM or ICS. Financing also features among the three important attributes for both types of products. Financing in this case was taken to mean provision of suitable payment arrangements eg. co-ordination by the supplier through a financial institution to avail foreign exchange or letters of credit. In the purchase of IPM, technical specification is important in that the products must conform to certain standards. ICS may not require very specific technical specifications. In both IPM and ICS, confidence in salesmen was considered least important.

The purchasers of LPM ranked reliability data as the most important attribute, followed by technical specifications, price and past experience while the purchasers of LCS considered price as the most important factor. Also rated highly were past experience with the supplier, reliability data, reputation of supplier and reliability of delivery date. It is thus evident that in the purchase of LPM, it is not just the price that is important but there are other more important attributes. The products should first and foremost be reliable as based on past data, and also technical specifications and past experience will be important. For LCS price is paramount while the other factors appear to be secondary.

It is thus evident that the attributes ranked highly in the case of IPM and LPM will be similar. These are price, technical specification, reliability data and past experience. The only major difference is in financing which is an important attribute when one considers imported items. This also applies to LCS and ICS where the major difference observed again is the issue of financing. In the four product types convenience in ordering, confidence in salesmen and preferences of users were ranked lowly.

4.3.1 Factor analysis on IPM questionnaire

Table 4.3 below shows the summary statistics relating to questions on IPM. It provides the average, mode and standard deviation.

Table 4.3

THE SUMMARY STATISTICS OF QUESTIONNAIRE (IPM)

	AVERAGE	MODE	STANDARD DEVIATION
Q1	5.30	5	0.49
Q2	5.74	6	0.44
Q3	5.10	5	0.70
Q4	5.15	5	0.25
Q5	4.03	3	1.31
Q6	2.06	2	1.06
Q7	2.19	2	1.25
Q8	5.83	6	0.18
Q9	5.90	6	0.51
Q10	5.26	6	1.26
Q11	3.85	6	1.42
Q12	4.18	2 and 6	1,77
Q13	4.07	4	0.62
Q14	3.91	3 and 4	0.99
Q15	4.48	4	1.21
Q16	4.13	4	0.73

From the above table, a look at the means of the attributes shows that most of them will fall under most important. Attributes 1,2,3,4,8 ,9, and 10 fall under most important, while attributes 5, 12, 13, 15 and 16 fall under very important. The rest fall between somewhat important and important. It is therefore evident that none of the attributes are considered less important or least important. Also a look at the modes shows

that most of them will fall under most important. modes for attributes 1. 2. 3. 4. 8 and 9.

In factor analysis. summary statistics are used to show the nature of the data. in terms of means and modes. The first step in the actual factor analysis process is the development of a correlation matrix.

Table 4.4

CORRELATION MATRIX (IPM)

	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16
a1	1.00	-0.29	0.27	0.33	0.19	0.28	0.36	-0.23	-0.16	-0.06	0.28	-0.04	0.26	0.38	0.18	0.53
a2		1.00	-0.02	-0.14	-0.07	0.18	0.03	0.31	0.31	0.00	-0.11	0.07	0.05	0.07	-0.13	0.04
a3			1.00	0.34	0.13	0.36	-0.17	-0.24	-0.43	-0.44	0.60	-0.47	0.41	0.73	0.26	0.60
a4				1.00	0.13	0.63	0.39	0.05	-0.01	-0.05	0.08	0.10	0.41	0.37	-0.11	0.57
a5					1.00	0.12	0.17	-0.17	-0.42	0.02	-0.42	-0.19	-0.09	0.07	-0.56	0.11
a6						1.00	0.51	0.01	0.06	0.04	0.04	0.17	0.31	0.45	-0.13	0.58
a7							1.00	0.03	0.42	0.39	-0.38	0.56	0.07	0.04	-0.31	0.16
a8								1.00	0.19	0.18	-0.27	0.09	-0.13	-0.45	-0.08	-0.02
a9									1.00	-0.06	-0.20	0.73	-0.08	-0.32	-0.04	-0.27
a10										1.00	-0.87	0.41	-0.52	-0.37	0.72	-0.34
a11											1.00	-0.48	0.44	0.48	0.76	0.46
a12												1.00	-0.46	-0.38	-0.31	-0.37
a13													1.00	0.63	0.21	0.67
a14														1.00	0.16	0.66
a15															1.00	0.30
a16																1.00

From the correlation matrix in table 4.4 variables 3 and 14. 9 and 12. 11 and 15. 13 and 16. and. 14 and 16 are highly

positively correlated variables 3 and 11, 4 and 6, 5 and 10, 3 aqnd 16, 4 and 16, 6 and 16, and 13 and 14 also have quite a high correlation on the other hand variables 5 and 15, and variables 10 and 13 are quiet highly negatively correlated, while variables 10 and 11 and 10 and 15 are highly negatively correlated. It is this correlation matrix that will be used to generate the factors for IPM, and thus the eigen values.

Table 4.5

EIGEN VALUES (IPM)

FACTOR	EIGEN-VALUE	% VARAIBLE	CUMULATIVE %
1	5.06589	31.7	31.7
2	3.18337	19.9	51.6
3	2.24841	14.1	65.6
4	1.49071	9.3	74.9
5	1.03492	6.5	81.4
6	0.73568	4.6	86.0
7	0.69953	4.4	90.4
8	0.39375	2.5	92.8
9	0.29638	1.9	94.7
10	0.21611	1.4	96.0
11	0.16915	1.1	97.1
12	0.15559	1.0	98.1
13	0.12432	0.8	98.8
14	0.08378	0.5	99.4
15	0.07329	0.5	99.8
16	0.02912	0.2	100.0

Table 4.5 provides the eigenvalues which are proportianal to the variance accounted for by each of the sixteen factors. Since the responses to the statements are standardized, the variance associated with the responses to the statements equals zero. By choosing the highest eigen - values, five factors are extracted for further analysis, that is factor 1 to factor 5. Factor 1 accounts for 31.7% of the variability while factor 2 accounts for 19.9% of the variability. The first five factors account for 81.4% of the variability. These five factors are the basis for the initial factor matrix which is made up of the principal factors.

Table 4.6

INITIAL FACTOR MATRIX (IPM)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5
1	-0.45	0.42	-0.02	-0.50	0.27
2	0.11	0.07	0.29	0.77	-0.30
3	-0.80	0.11	-0.19	0.12	-0.15
4	-0.39	0.66	0.17	-0.03	0.20
5	0.13	0.53	-0.73	0.12	0.11
6	-0.34	0.74	0.25	0.16	-0.08
7	0.18	0..77	0.36	-0.22	0.02
8	0.33	0.08	0.08	0.61	0.67
9	0.40	0.08	0.83	0.03	-0.06
10	0.71	0.50	-0.41	-0.05	-0.02
11	-0.82	-0.41	0.19	-0.08	0.08
12	0.61	0.34	0.56	-0.27	-0.08
13	-0.72	0.18	0.15	0.20	-0.03
14	-0.80	0.28	-0.07	0.03	-0.41
15	-0.55	-0.54	0.33	-0.14	0.32
16	-0.79	0.42	0.05	0.16	0.22

Table 4.6 represents a matrix where the sum of the squares of the values in each column add up to the associated eigenvalue. The first principal factor loads heavily on variables 3, 10, 11, 12, 13, 14 and 16. The second principal factor loads heavily on variable 4, 6, and 7. In the case of the third principal factor, it is loaded heavily on variables 5 and 6 while for the fourth principal factor it is variables 2 and 8. The fifth principal

factors load heavily on variable 8. This initial factor matrix enables the generation of revised communalities.

Table 4.7

FACTOR ANALYSIS OUTPUT OF COMMUNALITY

(PLACED IN VARIABLE COMMUNALS) FOR IPM

VARIABLE	COMMUNALITY
1	0.69713
2	0.79336
3	0.72072
4	0.66482
5	0.86121
6	0.75132
7	0.80842
8	0.94747
9	0.86769
10	0.92236
11	0.89339
12	0.88292
13	0.61375
14	0.88943
15	0.82822
16	0.88108

The above table is the factor analysis output of communality. Communality refers to the proportion of the variables variation to the total variation that is involved in the factors. In the case of the above 69.7% of variable 1 is involved in the factors while for variable 8 it is 94.7%.

variables 4 and 13 rank lowest in terms of their contribution to the factors. Through the use of the communalities, the final varimax rotated factor matrix is generated. The generation takes places with regard to a given maximum number of iterations.

TABLE 4.8

FINAL VARIMAX ROTATED FACTOR MATRIX (IPM)

FACTOR	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5
1	0.52	0.05	0.01	-0.64	-0.10
2	0.14	-0.03	0.11	0.86	0.14
3	0.57	0.24	0.51	0.03	-0.28
4	0.77	-0.07	0.13	-0.20	0.09
5	0.20	-0.78	-0.42	-0.15	0.15
6	0.82	-0.15	0.21	0.11	-0.04
7	0.47	-0.37	0.65	-0.17	0.00
8	0.00	-0.11	0.04	0.23	0.94
9	-0.05	0.16	0.87	0.28	0.11
10	-0.17	-0.92	0.16	-0.10	0.12
11	0.23	0.83	-0.33	-0.11	-0.16
12	-0.09	-0.27	0.90	-0.03	0.00
13	0.65	0.35	-0.21	0.12	-0.10
14	0.69	0.16	-0.33	0.09	-0.52
15	0.10	0.87	-0.12	-0.20	0.09
16	0.86	0.23	-0.27	-0.10	0.80

Table 4.8 the rotated factor matrix is an attempt to simplify the columns of the factor matrix by making all values close to either 0 or 1. The matrix represents the terminal

solution of the factors. In this final varimax rotated factor matrix, variable 4(Q4), variable 6(Q6), variable 13(Q13) and variable 16(Q16), load heavily on factor 1. Variable 5(Q5), variable 10(Q10), variable 11(Q11) and variable 15(Q15) load heavily on factor 2. Variable 7(Q7), variable 9(Q9) and variable 12 (Q12), load on factor 3, variables 1(Q1) and variables 2(Q2) load heavily on factor 4, while variable 8(Q8) loads heavily on factor 5. These results are reflected in the table below:

Table 4.9

THE FACTORS

Factor 1 will be made up of the following attributes:
- Return provisions eg. warranties
- Confidence in the salesmen
- Experience with suppliers in analogous situations
- Brand name
- Reliability of delivery date promised

Factor 2 will be made up of the following attributes:
- Technical specifications
- Geographic location
- Production facilities
- Technical service offered.

Factor 3 will be made up of the following attributes:
- Preferences of principal user
- Price and price considerations eg trade and price discounts
- Convenience of placing the order

Factor 4 will be made up of the following attributes:
- Financing terms
- Overall reputation of the supplier

Factor 5 will be will be made up of the following attribute:
- Data on reliability of the product.

4.3.2 Comparison between industries in choice of supplier attributes with regard to IPM.

The analysis here focuses on the comparison between three industries. That is, food processing, engineering and chemicals. Table 4.10 in the next page shows the differences reflected between the industries through the use of ranking.

Table 4.10

ATTRIBUTE	PRODUCT TYPE AND INDUSTRY IPM					
	FOOD		ENGINEERING		CHEMICALS	
	Mean	rank	mean	rank	mean	rank
Reputation	5.6 (0.52)	5	5.09 (0.30)	7	5.2 (0.42)	6
Financing	5.7 (0.48)	3	5.73 (0.47)	4	5.8 (0.42)	5
Flexibility	5.6 (0.52)	5	5.27 (0.47)	6	4.4 (0.52)	8
Past Experience	5.1 (0.32)	8	5.36 (0.50)	5	5.0 (0.00)	7
Technical service	3.3 (1.25)	13	5.09 (0.30)	7	3.7 (0.69)	10
Confidence in salesmen	2.1 (0.74)	15	2.27 (1.49)	15	1.8 (0.63)	15
Convenience in ordering	1.8 (1.23)	16	2.18 (1.49)	16	2.6 (0.97)	15
Reliability data	5.5 (0.53)	7	6.00 (0.00)	1	6.0 (0.00)	1
Price	5.9 (0.53)	1	5.82 (0.60)	3	6.0 (0.00)	1
Technical specification	3.7 (1.16)	12	6.00 (0.00)	1	6.0 (0.00)	1
Production facilities	5.8 (0.63)	2	2.64 (1.28)	14	3.1 (0.00)	13
Preferences of user	3.0 (0.94)	14	3.55 (0.52)	13	6.0 (0.00)	1
Reliable delivery date	4.4 (0.52)	10	3.82 (0.87)	11	4.0 (0.00)	9
Brand Name	4.3 (0.82)	11	4.73 (0.65)	9	2.7 (0.48)	14
Geographic location	5.7 (0.67)	3	3.73 (0.79)	12	3.7 (0.67)	10
Return Provisions	5.0 (0.47)	9	4.09 (0..70)	10	3.3 (0.48)	12

In two of the industries that is engineering and chemicals, reliability data and technical specifications both ranked first. This could have been as a result of the importance attached to the quality of the items bought by these two industries where precision is important. In the case of food processing reliability data ranked seventh while technical specifications was a distant twelfth. Price was important in all the three industries. It was ranked first in both food processing and chemical plastic while in engineering industries it was third. This means that there are other factors other than price that are important in engineering industries.

Also with a ranking of first was preference of users in the case of the chemical industry. This may be as a result of the differences in the products available to do the same job. It is therefore important that the users preferences are taken into account when choosing the product to acquire. User preferences was almost last in ranking for both food processing and engineering. Preferences of users was probably not an important issue in food processing where only limited quantities of IPM are used. In engineering as previously stated the technical aspects are more significant.

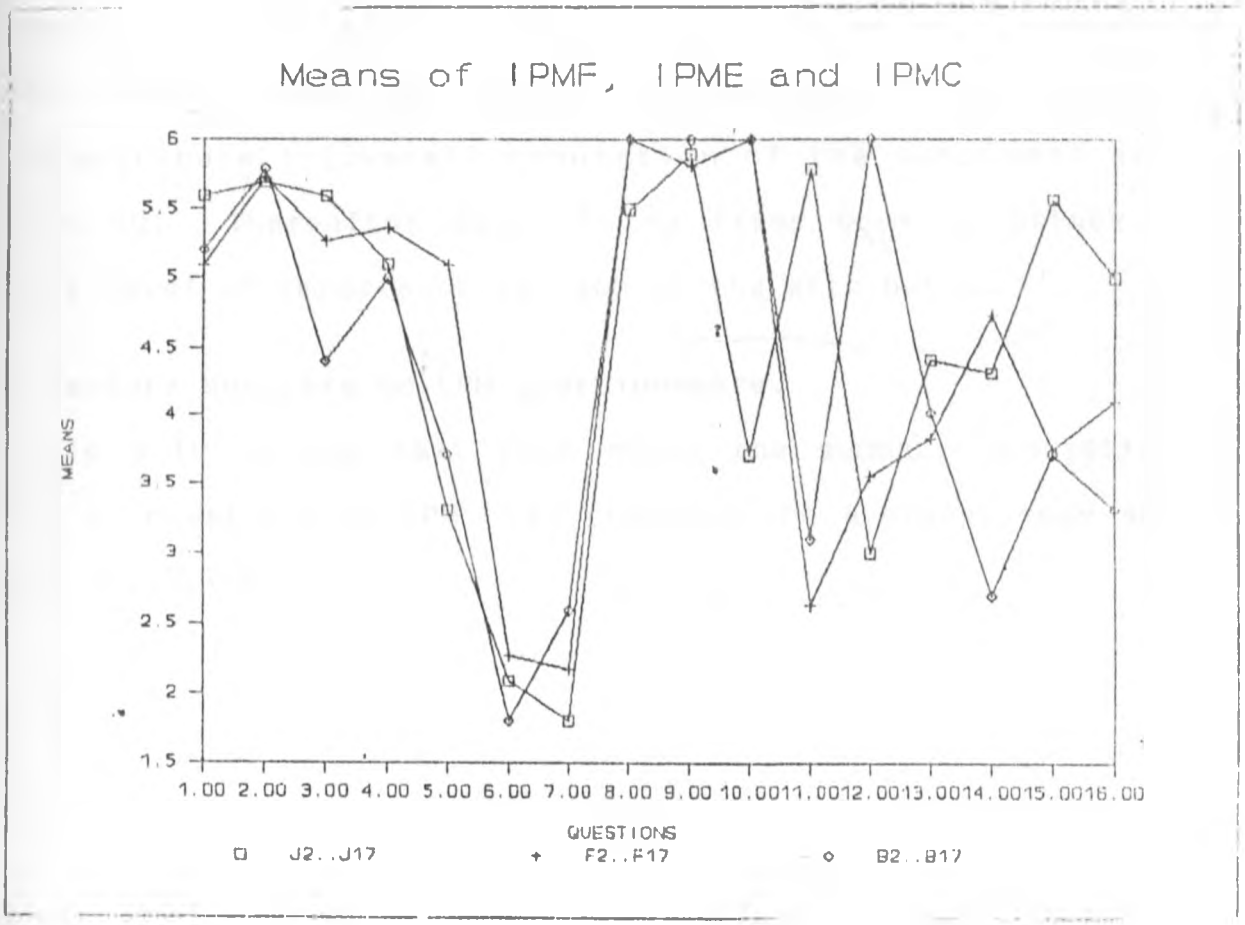
In food processing, production facilities was ranked second while geographic location was third. This could have been as a result of the importance attached by the food processing industries to the actual physical facilities where they get their materials. These facilities are supposed to maintain certain acceptable standards. Geographic location was also highly ranked

possibly due to accessibility, where one is buying IPM then they should be availed as soon as possible when required.

Financing was also ranked highly in the three industries. It was third in food processing, fourth in engineering and fifth in the chemical industry. The financing aspect is important in the acquisition of any imported materials. Convenience in ordering and confidence in salesmen were ranked either last or second from last in the three industries. They did not therefore seem to affect the firms judgement when making decisions regarding choice of the suppliers.

The trends in the choosing of the suppliers between the three industries is graphically displayed below.

Graph 4.1



KEY:
□ J2 .. J17 : Food Processing
+ F2 .. F17 : Engineering
◊ B2 .. B17 : Chemical

From Graph 4.1 the highest mean scores are those for attributes 8(Data on reliability of the product) and 10 (Technical specifications). These high scores are rankings for both the engineering and the chemical firms. The lowest mean

scores is that of attribute 6 (confidence in the salesmen) as ranked by the chemical industry. A similarly low score is recorded for food processing firms with regard to attribute 7(convenience in ordering).

The general trend can be said to be more or less similar between attribute 1 (overall reputation of the supplier) and attribute 10. Thereafter each of the firms seem to attach a different level of importance to each of the attributes.

4.3.3 Factors analysis on LPM questionnaire.

Table 4.10 in the next page shows the summary statistics relating to questions on LPM. It provides the average, mode and standard deviation.

Table 4.11

THE SUMMARY STATISTICS OF QUESTIONNAIRE (LPM)

	AVERAGE	MODE	STANDARD DEVIATION.
Q1	5.08	5	0.62
Q2	1.85	2	1.27
Q3	4.63	5	1.10
Q4	5.45	6	0.64
Q5	3.88	4	1.07
Q6	1.76	1	0.75
Q7	3.38	2	1.72
Q8	5.93	6	0.27
Q9	5.45	5	0.50
Q10	5.88	6	0.33
Q11	4.20	3	1.30
Q12	2.18	1	1.30
Q13	4.85	5	0.62
Q14	3.45	3	0.99
Q15	4.20	3	1.24
Q16	3.78	4	0.89

From the above table one can observe that about one third of the attributes will have means falling under most important. These are attributes 1, 4, 8, 9 and 10. One quarter of the means will fall under very important, that is, attributes 3, 11, 13 and 15. The rest will fall somewhere between less important and important. None of the attributes are considered least important. The modes will influence the means and therefore most

of the modes will also reflect the higher values in the scale. that is. 4. 5 and 6 are more common. than 1. 2 and 3.

After looking at the means and modes a correlation metrix is generated between the various variables. The correlation matrix will show the interrelationship between the various variables. The correlation will be either negative. zero or positive in nature.

Table 4.12

CORRELATION MATRIX (IPM)

	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16
a1	1.00	-0.36	-0.33	-0.24	-0.30	0.02	-0.34	-0.12	-0.03	0.04	0.30	-0.10	-0.17	0.32	0.11	-0.16
a2		1.00	-0.16	-0.39	0.40	0.47	0.77	0.01	0.22	0.07	-0.31	0.25	0.30	-0.32	0.12	-0.09
a3			1.00	-0.30	0.29	0.23	-0.29	0.08	0.40	0.01	0.41	-0.69	0.40	0.65	0.54	[illegible]
a4				1.00	0.05	-0.48	-0.22	0.20	-0.72	0.39	-0.49	0.24	-0.54	-0.37	-0.63	-0.63
a5					1.00	0.34	0.33	0.15	-0.13	0.03	-0.42	-0.02	0.16	-0.09	-0.27	0.27
a6						1.00	0.37	-0.30	0.41	-0.13	0.15	-0.03	0.13	0.25	0.35	0.46
a7							1.00	0.04	-0.01	0.11	-0.34	0.52	0.10	-0.49	-0.18	0.02
a8								1.00	0.07	0.47	0.04	-0.10	0.24	-0.006	0.05	0.04
a9									1.00	0.04	0.69	-0.41	0.63	0.51	0.79	0.57
a10										1.00	0.00	-0.18	0.15	-0.14	0.00	-0.01
a11											1.00	-0.42	0.79	0.75	0.85	0.79
a12												1.00	-0.40	-0.59	-0.46	-0.56
a13													1.00	0.28	0.44	0.54
a14														1.00	0.74	0.59
a15															1.00	0.57
a16																1.00

From the correlation matrix in Table 4.12 variables 2 and 7.

variables 9 and 11, variables 9 and 15, variables 11 and 14, variables 11 and 15 and variables 14 and 15 are highly positively correlated. Also positively correlated are variables 9 and 13 and variables 14 and 16. Variables 4 and 9, variables 4 and 15 and variables 4 and 16 are highly negatively correlated. Variables with very low correlations inlcude variables 1 and 6, variables 1 and 9, varible 1 and 10, variables 2 and 8, variables 3 and 10, variables 7 and 9, variables 10 and 11 and variables 10 and 15.

Table 4.13

EIGEN VALUES (LPM)

FACTOR	EIGEN VALUE	% VARIABLE	CUMULATIVE %
1.	5.51631	34.5	34.5
2.	3.25273	20.3	54.8
3.	1.94723	12.2	67.0
4.	1.48992	9.3	76.3
5.	1.07359	6.7	83.0
6.	0.62191	3.9	86.9
7.	0.55152	3.4	90.3
8.	0.37870	2.4	92.7
9.	0.31305	2.0	94.7
10.	0.25281	1.6	96.2
11.	0.18136	1.1	97.4
12.	0.12859	0.8	98.2
13.	0.11687	0.7	98.8
14.	0.07450	0.5	99.4
15.	0.05496	0.3	99.7
16.	0.04593	0.3	100.0

The above table provides the eigenvalues which are proportional to the variance accounted for by each of the sixteen factors. The responses to the statements are standardized and therefore the variance associated with responses to any statement equals zero. Six factors with the highest eigenvalues are extracted for further analysis. The first three factors account for 67.0% of the variability and the six chosen factors account

for 86.9% of the variability. These six factors are used to develop the initial factor matrix which is made up of the principal factors.

TABLE 4.14.

INITIAL FACTOR MATRIX (LPM)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1.	0.07	0.55	-0.21	-0.05	0.65	0.08
2.	-0.02	-0.91	-0.23	-0.13	0.12	0.15
3.	0.72	0.07	0.30	0.46	-0.02	-0.09
4.	-0.71	0.45	0.37	0.12	0.28	-0.03
5.	-0.05	-0.56	0.38	0.61	0.15	-0.21
6.	0.40	-0.55	-0.34	0.21	0.50	-0.06
7.	-0.24	-0.84	-0.06	-0.26	0.18	-0.10
8.	0.02	0.00	0.77	-0.34	-0.03	-0.45
9.	0.83	-0.21	-0.06	-0.34	0.00	0.05
10.	-0.05	0.02	0.71	-0.37	0.43	0.26
11.	0.80	0.34	-0.15	-0.34	0.06	-0.16
12.	-0.68	-0.28	-0.38	-0.28	0.06	-0.36
13.	0.62	-0.33	0.33	-0.21	-0.10	0.20
14.	0.82	0.34	-0.08	0.21	0.14	-0.16
15.	0.90	0.10	-0.12	-0.25	0.05	-0.18
16.	0.78	-0.34	0.13	0.23	0.00	0.07

Table 4.14 represents a matrix where the sum of the squares of the values in each column add up to the associated eigenvalue. The first principal factor loads heavily an variables 3, 4, 9, 11, 14, 15 and 16. The second principal factor loads heavily on variables 2 and 7 while the third principle factor loads heavily on variables 8 and 10. In the case of the fourth principal factor the important variable is 5, for the fifth

principal factor it is 1 while for the sixth it is variable 8. The initial factor matrix enables the generation of revised communalities.

TABLE 4.15

FACTOR ANALYSIS OUTPUT OF COMMUNALITY (PLACED IN VARIABLE COMMUNALS) FOR LPM.

VARIABLE	COMMUNALITY.
1	0.78927
2	0.88509
3	0.82947
4	0.93533
5	0.89829
6	0.87405
7	0.87533
8	0.90267
9	0.85578
10	0.89034
11	0.92924
12	0.90066
13	0.73157
14	0.88429
15	0.92870
16	0.79159

The above table represents the factor analysis output of communality. Communality refers to the proportion of the variables variation to the total variation that is involved in

the factors. In the above table 88.5% of variable 2 is involved in the factors, 87.5% of variable 7 and 88.4% of variable 14. Variable 13 ranks lowest in terms of contribution to the factors. Through the use of communalities, the final varimax rotated factor matrix is generated. The generation will take place with regard to a given maximum number of iterations.

TABLE 4.16

FINAL VARIMAX ROTATED FACTOR MATRIX (LPM)

FACTOR	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1	0.09	-0.04	-0.19	0.84	0.15	-0.14
2	0.04	-0.09	0.84	-0.35	0.17	-0.10
3	0.30	0.85	-0.09	0.00	-0.06	0.10
4	-0.75	-0.15	-0.31	0.35	0.23	0.28
5	-0.43	0.56	0.56	-0.15	-0.10	0.24
6	0.28	0.28	0.75	0.28	-0.17	-0.23
7	-0.05	-0.33	0.84	0.22	0.05	0.11
8	0.05	0.08	-0.06	-0.15	0.30	0.88
9	0.87	0.20	0.17	-0.10	0.14	-0.04
10	-0.06	0.02	0.06	0.15	0.86	0.35
11	0.88	0.14	-0.25	0.26	-0.03	0.08
12	-0.31	-0.75	0.35	0.04	-0.33	0.14
13	0.54	0.32	0.14	-0.43	0.35	0.06
14	0.59	0.58	-0.22	0.34	-0.18	
15	0.91	0.27	-0.04	0.15	-0.06	0.08
16	0.50	0.65	0.28	-0.17	0.04	-0.07

Table 4.16 the rotated factor matrix is an attempt to simplify the columns of the factor matrix by making all values close to either 0 or 1. This matrix represents the terminal solution of the fctors. In this final varimax rotated fctor matrix, variable 4(Q4), variable 9(Q9), variable 11(Q11) and variable 15(Q15) load heavily on factor 1. Variable 3(Q3), varible 12(Q12) and variable 16(Q16) load heavily on factors 2. Variable 2 (Q2), variable 6(Q6) and variable 7(Q7) load heavily on factor 3. For factor 4 it is variable 1(Q1), for factor 5 it is variable 10(Q10) and for factor 6 it is variable 8(Q 8). It is important to note that after the rotation, variable 8(Q8) which was loading heavily on both factors 3 and 6, now loads heavily on only one factor, that is factor 6. The loading of the various variables are reflected in the Table 4.17 in the next page. That is, the results of the analysis.

Table 4.17

THE FACTORS

Factor 1 will be made up of the following attributes:
- Geographic location
- Production facilities
- Price and price eg. trade and price discounts
- Experience with suppliers in analogous situations

Factor 2 will be made up of the following attributes:
- Supplier flexibility in adjusting to your needs.
- Preferences of principal user of the product
- Return provisions e.g warranties

Factor 3 will be made up of the following attributes:
- Convenience of placing the order
- Financing terms
- Confidence in the salesmen

Factor 4 will be made up of the following attribute:
- Overall reputation of the supplier.

Factor 5 will be made up of the following attribute;
- Technical specifications.

Factor 6 will be made up of the following attribute;
- Data on reliability of the product.

4.2.3.1 Comparison between industries in choice of supplier attributes with regard to LPM.

The analysis here focuses on the comparison between three industries that is, food processing, engineering and chemical. Table 4.18 in the next page shows the differences reflected between the industries through the use of ranking.

Table 4.18

ATTRIBUTE	PRODUCT TYPE AND INDUSTRY					
	LPM					
	Food		Engineering		Chemicals	
	Mean	Rank	Mean	Rank	Mean	Rank
1 Reputation	5.31 (0.48)	7	4.87 (0.64)	6	5.08 (0.67)	5
2 Financing	1.92 (1.38)	15	2.20 (1.66)	14	1.42 (0.51)	16
3 Flexibility	5.46 (0.52)	6	4.73 (0.59)	7	3.58 (1.24)	8
4 Past Experience	4.92 (0.28)	9	5.67 (0.72)	2	5.75 (0.45)	3
5 Technical Service	3.69 (1.18)	12	4.27 (1.03)	8	3.58 (0.90)	8
6 Confidence in Salesmen	2.08 (0.95)	14	1.27 (0.46)	16	1.92 (0.29)	15
7 Convenience in ordering	1.69 (0.95)	16	2.13 (1.73)	15	2.75 (0.75)	13
8 Reliability data	5.92 (0.28)	2	6.00 (0.00)	1	5.83 (0.39)	1
9 Price	6.00 (0.00)	1	5.27 (0.46)	4	5.08 (0.29)	5
10 Technical Specifications	5.85 (0.38)	3	6.00 (0.00)	1	5.75 (0.45)	2
11 Production facilities	5.69 (0.85)	4	3.4 (0.91)	11	3.58 (0.51)	8
12 Preference of users	2.15 (0.80)	13	2.53 (0.74)	13	5.75 (0.45)	2
13 Reliable delivery date	5.23 (0.44)	8	4.93 (0.59)	5	4.33 (0.49)	7
14 Brand name	4.54 (0.66)	10	3.07 (0.70)	12	2.75 (0.45)	13
15 Geographic Location	5.69 (0.63)	4	3.47 (0.83)	10	3.50 (0.52)	11
16 Return Provisions	4.54 (0.51)	10	3.80 (0.68)	9	2.92 (0.67)	12

In the chemical and engineering industries reliability data was yet again ranked first, like it was the case in LPM. As previously mentioned the quality of the items bought by these two industries are suppossed to be of the best quality possible. It is for this reason that technical specification is also ranked first in engineering and second in the chemical industry. In the case of LPM reliability data ranks second as oppossed to seventh as in the case of IPM. It seems that reliability data is important but in the case of IPM there were also other important factors coming into play. For example, financing is important when one is addressing the question of imports but this may not be the case with local products.

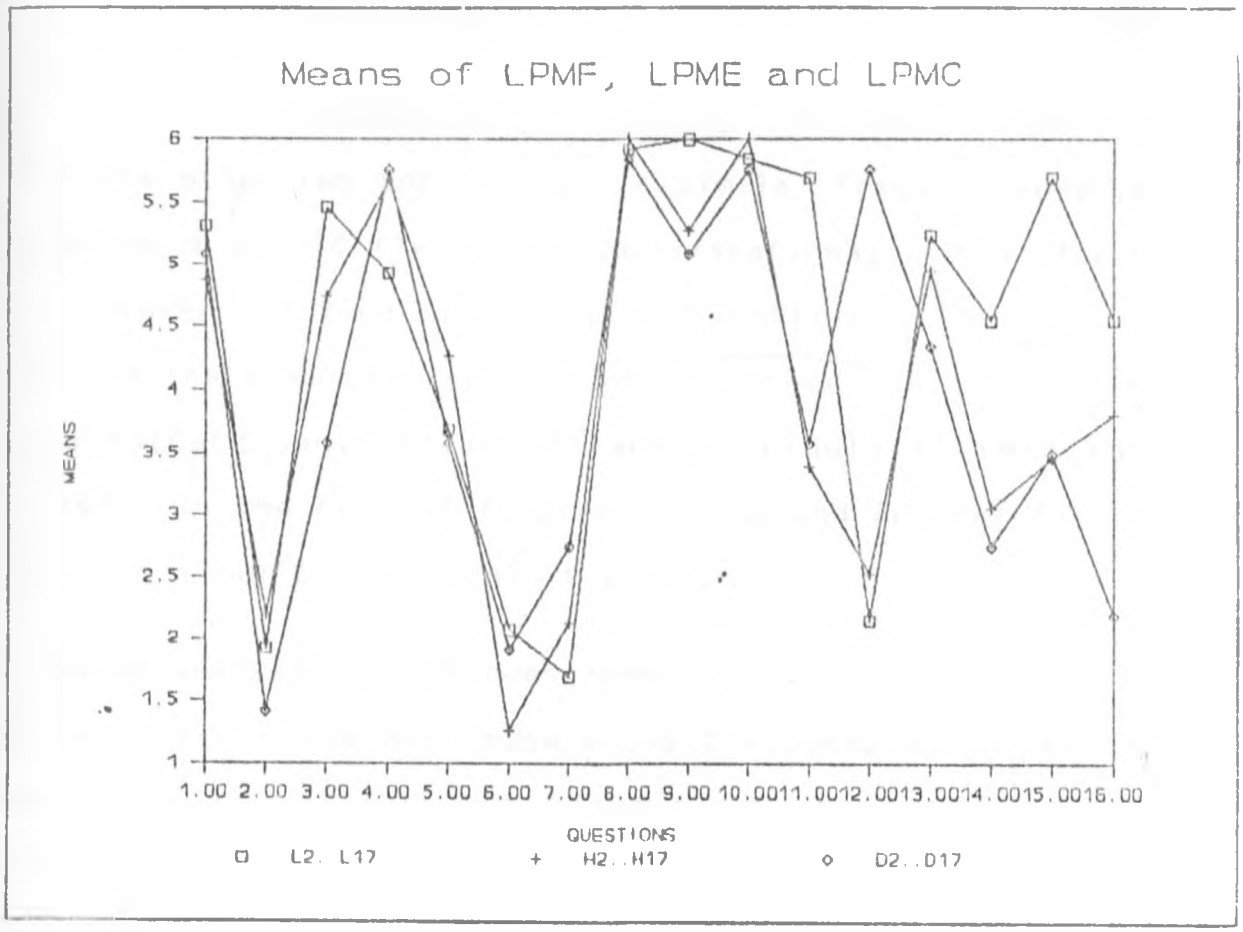
Past experience with the supplier was also ranked quite highly by the engineering and chemical industries. This can also be looked at in the context of the provision of products of the highest quality possible. These firms through past dealings with the supplier may be able to establish that certain technical specifications will be met by the supplier and that their products are reliable. This may not be the case with food processing where past experience was ranked ninth. The food procesing firms consider price, relaibility data, technical specifications and production facilities to be more important.

Confidence in the salesmen and convenience in ordering were again lowly ranked by all the three industries. They did not seem to be important issues in that regardless of who the salesmen were the firms purchasing indicated they had the ability to choose for themselves what is good for them. Ordering did not

seem to be a problem at all and that was why it was ranked last by food processing firms and fifth by engineering while the chemical plastic industries ranked it thirteenth. Financing, with regard to foreign exchange was also e lowly ranked. This could be explained by the fact that, there was no need for foreign exchange or special financing arrangement in the case of LPM.

The trend in the choosing of the suppliers between the three industries is graphically displayed in the next page.

Graph 4.2



KEY:
□ L2..L17: Food processing
+ H2..H17: Engineering
◇ D2..D17: Chemical

From Graph 4.2 the highest scores are those for attributes 9(price and price considerations) and 10 (Techncial specifications). Attribute 9 is ranked highly by food processing industries while attribute 10 is ranked highly by the chemical

industry. The lowest score is that of attribute 6 (confidence in the salesmen) as ranked by the chemical industry. The general trend seems to be similar except in the case of a few attributes.

In the food processing industry the mean declines in attribute 6 and 7 (convenience of placing the order) while it rises for the other two industries. A similar trend is observed in attributes 9 and 10 (Technical specifications). A difference in trend between the food processing and engineering industry on one hand and the chemical industry on the other can be observed in attribute 15(Geographic location) and attribute 16 (Return provisions). In the case of food processing and engineering the means decline while for chemical it rises.

4.2.4 Factor analysis on LCS questionnaire.

Table 4.19 in the next page shows the summary statistics relating questions on LCS. It provides the average, mode and standard deviation.

Table 4.19

THE SUMMARY STATISTICS OF QUESTIONNAIRE (LCS)

	AVERAGE	MODE	STANDARD DEVIATION.
Q1	4.05	4	0.60
Q2	1.93	2	0.66
Q3	3.40	4	1.10
Q4	4.54	5	0.60
Q5	3.63	4	0.74
Q6	1.98	2	1.12
Q7	2.08	2	1.00
Q8	4.30	5	0.87
Q9	5.75	6	0.44
Q10	3.48	4	1.09
Q11	2.73	3	0.88
Q12	2.70	2	0.76
Q13	3.68	4	0.76
Q14	3.33	3	0.53
Q15	2.70	2	0.82
Q16	3.35	4	0.92

From the above table, a look at the means of the attributes shows that most of them will fall under important, since most of them fall between 3 and 4. These inlcude attributes 3, 5, 10, 13, 14 and 16. There is only one attribute with an average above 5, that is attribute 9. Attribute 2 and 6 will have an average falling under less important while attributes 4 and 8 are rated as very important. The highest mode is 6 for attribute 9 while

the lowest is 2 for attributes 2, 6, 7, 12 and 15. The mode is likely to have on impact on the means. In that where the mode is 6 then these is a higher likelihood of getting a greater mean than where the mode is for example 3.

A correlation matrix can be developed to assess the interrelationship betwen the sixteen variables. It is this correlation matrix that is used in the factor analysis process.

TABLE 4.20

CORRELATION MATRIX (LCS)

	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16
a1	1.00	0.11	0.55	0.42	0.34	0.21	-0.17	0.37	-0.02	0.47	0.48	-0.04	0.15	0.29	0.29	0.23
a2		1.00	0.11	0.10	0.57	0.14	0.46	0.25	0.14	0.49	0.20	0.11	0.54	0.44	0.44	0.43
a3			1.00	0.49	0.56	0.42	-0.20	0.53	-0.30	0.51	0.55	-0.21	0.10	0.32	0.32	0.39
a4				1.00	0.50	0.49	-0.36	0.71	0.29	0.53	0.41	-0.28	0.22	0.21	0.21	0.51
a5					1.00	0.40	-0.07	0.64	0.11	0.76	0.43	-0.34	0.40	0.39	0.39	0.67
a6						1.00	-0.23	0.46	0.20	0.19	0.19	-0.36	-0.06	0.29	0.29	0.34
a7							1.00	-0.27	-0.01	0.08	-0.18	0.47	0.25	0.09	0.09	-0.11
a8								1.00	0.02	0.57	0.49	-0.46	0.35	0.40	0.40	0.54
a9									1.00	0.14	-0.12	0.00	0.15	0.00	0.00	0.29
a10										1.00	0.54	-0.10	0.48	0.28	0.28	0.62
a11											1.00	-0.20	0.08	0.63	0.63	0.66
a12												1.00	0.20	-0.07	-0.06	-0.36
a13													1.00	0.19	0.19	0.29
a14														1.00	0.23	0.34
a15															1.00	0.58
a16																1.00

From the correlation matrix in Table 4.20. The highest negative correlation is between variables 8 and 12. Variables 6 and 12 and variables 4 and 7 are also negatively correlated. The highest positively correlated variables are 5 and 10, variables 5 and 8, variables 5 and 16, variables 10 and 16, variables 11 and 14, variables 11 and 15, and variables 11 and 15, and variables 11 and 16. Very low correlations exist between variables 1 and 9, variables 7 and 9, variables 8 and 9, and variables 9 and 12.

TABLE 4.21

EIGEN VALUE (LCS)

FACTOR	EIGEN-VALUE	% VARIABLE	CUMULATIVE%
1	5:73309	35.8	38.8
2	2.38104	14.9	50.7
3	1.67256	10.5	61.2
4	1.31990	8.2	69.4
5	0.95925	6.0	75.4
6	0.83321	5.2	80.6
7	0.79637	5.0	85.6
8	0.54360	3.4	89.0
9	0.40114	2.5	91.5
10	0.36733	2.3	93.8
11	0.28058	1.8	95.6
12	0.21601	1.4	96.9
13	0.14987	0.9	97.8
14	0.14263	0.9	98.7
15	0.11341	0.7	99.4
16	0.09003	0.6	100.0

The above table provides the eigenvalues which are proportional to the variance accounted for by each of the sixteen factors. The responses to the statements are standardized and therefore the variance associated with the responses to any statement equals zero. Six factors with the highest eigenvalues are extracted for further analysis. The first two factors account for 50.7% of the variability, the first four, for 69.4%

of the variability and the first six for 80.6% of the variability. It is these six factors that are used to develop the initial factor matrix which is made up of the principal factors.

TABLE 4.22

INITIAL FACTOR MATRIX (LCS)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR. 6
1	0.54	- 0.04	-0.52	-0.15	0.44	-0.11
2	0.47	0.71	0.17	0.08	-0.22	-0.14
3	0.69	-0.18	-0.50	0.04	-0.05	-0.23
4	0.74	-0.27	0.14	-0.31	0.24	-0.03
5	0.83	0.17	-0.03	-0.19	-0.33	0.00
6	0.53	-0.34	0.27	-0.04	-0.06	-0.67
7	-0.19	0.79	0.03	0.19	-0.08	-0.26
8	0.82	-0.17	0.01	-0.12	-0.18	0.04
9	0.13	0.11	0.68	-0.44	0.41	0.00
10	0.78	0.32	-0.15	-0.25	0.00	0.16
11	0.72	-0.08	-0.21	0.45	0.24	0.26
12	[illegible]	0.60	0.18	0.02	0.50	0.18
13	0.39	0.63	0.09	-0.26	-0.05	0.18
14	0.24	-0.21	0.62	0.44	0.12	0.02
15	0.60	0.19	0.04	0.59	0.14	-0.09
16	0.81	0.07	0.28	0.17	0.02	0.24

Table 4.22 represents a matrix where the sum of the squares

of the values in each column add up to the associated eigenvalue. The first principal factor loads heavily on variables 3, 4, 5, 8, 10, 11 and 16. The second principal factor loads heavily on four variables. These are variables 2, 7, 12 and 13. In the case of the third principal factor, there is heavy loading on variables 9 and 14. For principal factors 4, 5 and 6, loading is heavily on variables 15, 12 and 6 respectively. The initial factor matrix enables the generation of revised communalities.

TABLE 4.22

FACTOR ANALYSIS OUTPUT OF COMMUNALITY.

(PLACED IN VARIABLE COMMUNALS) FOR LCS.

VARIABLE	COMMUNALITY.
1	0.79089
2	0.83260
3	0.81354
4	0.79929
5	0.86271
6	0.92998
7	0.77222
8	0.74567
9	0.84590
10	0.82913
11	0.90233
12	0.81410
13	0.65392
14	0.70080
15	0.77015
16	0.83579

The above table represents variables and their communalities. Communality refers to the proportion of the variables variation to the total variation that is involved in the factors. In the above table 81.4% of variable 3 is involved in the factors, 79.9% of variable 4 and the highest is variable 6

The lowest ranked is variable 13 in which only 65.4% is involved in the factors contribution. The final varimax rotated factor matrix is developed through the use of communalities. This generation of the final varimax rotated factor matrix takes place with regard to a given number of maximum iterations.

TABLE 4.24

FINAL VARIMAX ROTATED FACTORS MATRIX (LCS)

FACTOR	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1	0.10	0.88	-0.03	0.06	0.01	0.06
2	0.80	-0.08	-0.31	0.24	-0.02	0.18
3	0.22	0.68	0.22	0.15	-0.34	0.33
4	0.23	0.52	0.42	0.18	0.43	0.29
5	0.76	0.29	0.33	0.13	-0.06	0.27
6	0.05	0.18	0.21	0.18	0.15	0.89
7	0.36	-0.28	-0.74	0.00	-0.14	0.02
8	0.47	0.36	0.52	0.24	0.02	0.27
9	0.15	-0.08	-0.02	0.02	0.90	0.09
10	0.73	0.50	0.14	0.13	0.09	-0.02
11	0.18	0.53	0.20	0.72	-0.15	-0.11
12	-0.06	0.11	-0.85	-0.12	0.12	-0.22
13	0.75	0.07	-0.15	0.00	0.20	-0.16
14	-0.12	-0.27	0.18	0.68	0.28	0.21
15	0.26	0.22	-0.14	0.77	-0.14	0.18
16	0.57	0.19	0.32	0.63	0.19	0.06

Table 4.24 the rotated factor matrix is an attempt to simplify the columns of the factor matrix by making all values close to either 0 or 1. The matrix represents the terminal solution of the factors. In this final varimax rotated factor matrix, variable 2(Q2), variable 5(Q5), variable 10(Q10) and variable 13(Q13) load heavily on factor 1. Variables 1(Q1) and 3(Q3) load heavily on factor 2. For factor 3 it is variables 7(Q7) and 12(Q12). Variables 11(Q11), variable 14(Q14) and variable 15(Q15) load heavily on factor 4. Variables 9(Q9) and 6(Q6) load heavily on factors 5 and 6 respectively. Variable 12(Q12) which was previously loading heavily on factors 2 and 5 now loads heavily on factor 3 after the rotation. These results are reflected in table 4.25;

TABLE 4.25

THE FACTORS

Factor 1 will be made up of the following attributes;
- Financing terms
- Technical service offered
- Reliability of delivery date
- Technical specifications

Factor 2 will be made up of the following attributes;
- Overall reputation of the supplier
- Suppliers flexibility in adjusting to your needs.

Factor 3 will be made up of the following attributes;
- Preferences of principal user of the product.
- Convenience of placing the order

Factor 4 will be made up of the following attributes;
- Geographic location
- Production facilities
- Brand name
- Return provisions e.g. warranties.

Factor 5 will be made up of the following attributes;
- Price and price considerations;

Factor 6 will be made up of the following attribute;
- Confidence in the salesmen.

4.3.6 Comparison between industries in choice of supplier attributes with regard to LCS.

The analysis here focuses on the comparison between three industries. That is, food processing, engineering and chemicals. Table 4.26 in the next page shows the differences reflected between the industries through the use of ranking.

TABLE 4.26

ATTRIBUTE	PRODUCT TYPE AND INDUSTRY					
	LCS					
	Food		Engineering		Chemical	
	Mean	Rank	Mean	Rank	Mean	Rank
1 Reputation	3.79 (0.89)	7	3.93 (0.47)	8	3.25 (0.75)	5
2 Financing	2.07 (1.27	15	2.21 (1.31)	14	1.58 (0.51)	15
3 Flexibility	3.93 (0.47)	5	4.14 (0.86)	7	2.92 (0.51)	8
4 Past Experience	4.71 (0.47)	3	5.07 (0.27)	2	3.83 (0.39)	2
5 Technical Service	3.64 (0.93)	9	4.21 (0.57)	5	2.17 (0.57)	12
6 Confidence in Salesmen	2.36 (0.50)	14	1.93 (0.47)	15	1.42 (0.67)	16
7 Convenience in ordering	1.86 (0.77)	16	1.86 (1.36)	16	2.58 (0.51)	9
8 Reliability data	4.79 (0.43)	2	4.86 (0.36)	3	3.25 (0.45)	5
9 Price	5.71 (0.47)	1	5.79 (0.43)	1	5.75 (0.45)	1
10 Technical Specification	3.57 (1.08	10	4.21 (0.70)	5	2.5 (0.67)	10
11 Production facilities	3.28 (0.61)	12	2.93 (0.27)	10	1.83 (0.94)	14
12 Preferences of Users	2.43 (0.63)	13	2.43 (0.65	13	3.33 (0.65)	4
13 Reliable delivery date	4.0 (0.68)	4	4.29 (0.61)	4	3.83 (0.38)	2
14 Brand Name	3.71 (0.47)	8	2.93 (0.27)	10	3.08 (0.29)	7
15 Geographic Location	3.36 (0.63)	11	2.57 (0.76)	12	2.08 (0.51)	13
16 Return Provisions	3.86 (0.53)	6	3.71 (0.61)	9	2.33 (0.78)	11

The purchasing managers in all the three industries ranked price first. This is possibly due to the fact that consumable supplies are used up or consumed by the purchasing company in the operation of its business. Due to the constant need for these products and the fact that any type bought will probably do the job, then price is considered to be the most important attribute. Also, rated highly are reliability data for food processing and past experience for all the three industries. Once price is established then one observes the other attributes which are considered important coming into play. For example flexibility of suppliers and also technical service.

Preferences of users is still a serious consideration in the chemical industry. This could be as a result of a tradition in these firms due to their production processes to always take into account what the principal users prefer. This is due to the importance of the working environment, in that it can possibly affect health and the general safety of workers. Preferences of users ranked thirteenth in both food processing and engineering firms.

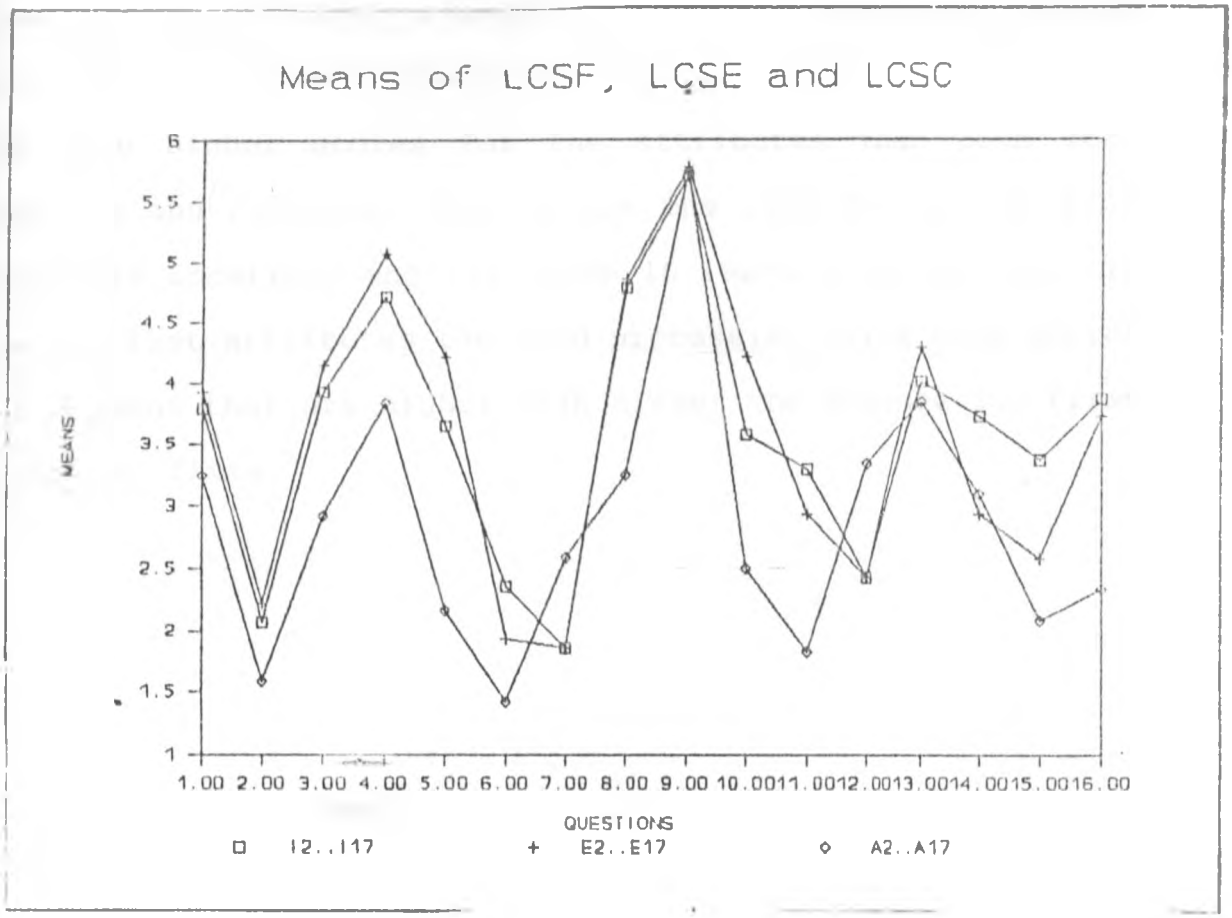
A reliable delivery date was also considered important. It ranked fourth in both food processing and engineering. In the case of chemical industries it was second. This could be explained by considering the nature of these products. Due to the fact that they are more or less standard in nature then other attributes like a reliable delivery date becomes very important. Also, due to their standard nature, production facilities are not ranked very highly. For engineering firms it seemed that

technical specification was important despite the standard nature of some of these products. Engineering firms therefore seem to take technical specification seriously regardless of the nature of the product.

Yet again, convenience in ordering and confidence in salesmen were among the last attributes in terms of rank. These attributes do not seem to be important particularly where one is dealing with a more or less standard item. There is no need for salesmen and the item can be acquired more or less from any supplier.

The trend in the choosing of the suppliers between the three industries is graphically shown in the next page:

Graph 4.3



Key:

- □ I2 ... I17: Food processing
- + E2.... E17: Engineering
- ◊ A2.... A17: Chemical

From Graph 4.3 it can be observed that the highest mean score is that of attribute 9(Price and price considerations) as ranked by the Engineering industry. The lowest score is that of attribute 2 (financing terms) as ranked by the chemical

industry.

The trend of the three industries seem to be similar but with different weights attached to the attributes. For example, between attribute 3 (Suppliers flexibility in adjusting to your needs) and attribute 5 (Technical Service offered) engineering firms have higher scores for the attributes than both food processing and chemical. This is not the case for attribute 15 (Geographic Location) and attribute 16 (Return provisions). In these two last attributes the food processing firms have scores for the means that are higher than either the engineering firms or chemical firms.

4.2.5 Factor analysis on ICS questionnaire.

Table 4.27 below shows the summary statistics relating to questions on ICS. It provides the averages, mode and standard deviation.

TABLE 4.27

THE SUMMARY STATISTICS OF QUESTIONNAIRE (ICS)

	AVERAGE	MODE	STANDARD DEVIATION
Q1	4.00	4	0.63
Q2	5.90	6	0.30
Q3	4.42	4	0.62
Q4	4.16	4	0.52
Q5	3.87	4	0.88
Q6	2.00	2	0.68
Q7	2.42	2	0.96
Q8	4.26	5	0.93
Q9	5.71	6	0.46
Q10	3.85	4	0.96
Q11	2.84	3	0.86
Q12	3.13	3	0.62
Q13	4.35	4	0.66
Q14	3.77	4	0.67
Q15	3.61	4	0.72
Q16	3.53	3	0.67

From the above table, a look at the means of the attributes shows that most of them will fall under important, since they lie between 3 and 4. These are attributes 5, 10, 12,

14, 15 and 16. Only two of the attributes fall between 5 and 6 which is considered most important. There is no attribute which falls below two and one can conclude that the rest fall under somewhat important. The highest modes are 6 for attributes 2 and 9 while the lowest mode is 2 for attributes 6 and 7. It is evident that different attributes will have different modes depending on the perceived level of importance.

The interrelationship between the sixteen variables allows for the generation of a correlation matrix which is then used in the factor analysis process.

Table 4.28

CORRELATION MATRIX (ICS)

	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16
a1	1.00	0.18	-0.17	0.00	0.00	-0.31	0.28	0.06	-0.23	0.11	0.17	0.18	0.00	0.16	0.16	0.15
a2		1.00	[illegible]	[illegible]	[illegible]	-0.32	0.15	-0.03	-0.21	-0.15	-0.47	0.19	-0.16	-0.28	-0.14	-0.18
a3			1.00	-0.32	0.10	0.16	-0.19	0.33	0.32	0.31	-0.15	-0.56	0.19	0.16	0.23	0.22
a4				1.00	-0.03	-0.09	-0.14	0.05	-0.08	0.21	0.21	0.14	0.13	0.02	0.39	0.26
a5					1.00	0.61	-0.05	0.33	0.48	0.52	0.52	-0.20	0.02	0.46	0.31	0.50
a6						1.00	-0.15	0.34	0.53	0.20	0.39	-0.17	0.00	0.36	0.15	0.34
a7							1.00	-0.31	-0.39	-0.24	-0.09	0.45	0.07	-0.42	0.10	-0.33
a8								1.00	0.65	0.46	0.17	-0.49	0.33	0.53	0.32	0.66
a9									1.00	0.32	0.25	-0.63	0.35	0.64	0.27	0.66
a10										1.00	0.32	-0.33	-0.07	0.47	0.26	0.48
a11											1.00	0.04	0.05	0.31	0.44	0.41
a12												1.00	-0.30	-0.47	0.11	0.42
a13													1.00	0.41	0.06	0.30
a14														0.00	0.28	0.78
a15															1.00	0.52
a16																1.00

From the correlation matrix in Table 4.28 The lowest correlation is between variables 1 and 4, variables 1 and 5, variables 1 and 13, variables 4 and 13, variables 5 and 13, and variable 6 and 13. Variables 14 and 16, variables 9 and 12, variables 9 and 16, variables 8 and 9, and variables 8 and 16 are highly positively correlated. The highest negative correlation is between variables 3 and 12 and variables 9 and 12.

Table 4.29

EIGEN VALUES (ICS)

FACTOR	EIGEN - VALUE	% VARIABLE	CUMULATIVE %
1	5.20305	32.5	32.5
2	2.39767	15.0	47.5
3	1.62968	10.2	57.7
4	1.30016	8.1	65.8
5	1.21511	7.6	73.4
6	0.93381	5.8	79.2
7	0.73258	4.6	83.8
8	0.55243	3.5	87.3
9	0.45572	2.8	90.1
10	0.37627	2.4	92.5
11	0.35835	2.2	94.7
12	0.27541	1.7	96.4
13	0.21880	1.4	97.8
14	0.15562	1.0	98.8
15	0.13071	0.8	99.6
16	0.06462	0.4	100.0

The above table provides the eigenvalues which are proportional to the variance accounted for by each of the sixteen factors. The responses to the statements are standardized and therefore the variance associated with the responses to any statement equals zero. Six factors with the highest eigenvalues are extracted for further analysis. The first factor accounts

for 32.5% of the variability while the first six factors account for 79.2% of the variability, These six factors are then used to develop the initial factor matrix which is made up of the principal factors.

Table 4.30

INITIAL FACTOR MATRIX (ICS)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1	0.05	-0.41	0.56	0.48	-0.10	0.36
2	0.38	0.19	0.49	0.22	-0.33	-0.52
3	-0.34	0.70	0.04	0.26	-0.16	0.12
4	0.14	-0.50	0.27	-0.64	-0.08	-0.03
5	-0.57	-0.02	-0.62	0.15	0.04	-0.28
6	-0.57	-0.02	-0.62	0.15	0.04	-0.28
7	0.45	0.32	0.04	0.59	0.32	-0.13
8	-0.74	0.14	0.31	0.09	-0.04	-0.25
9	-0.83	0.24	-0.05	0.00	0.16	-0.26
10	-0.62	-0.11	0.09	0.11	0.55	0.19
11	-0.49	-0.57	-0.03	0.12	0.05	0.17
12	0.61	-0.59	-0.11	0.08	0.00	-0.17
13	-0.34	0.18	0.34	0.04	0.77	0.08
14	-0.83	-0.05	0.23	-0.08	0.09	0.16
15	-0.41	-0.68	0.17	-0.04	0.07	-0.35
16	-0.86	-0.16	0.28	-0.02	-0.01	-0.07

Table 4.30 represents a matrix where the sum of the squares

of the values in each column add up to the associated eigenvalue. The first principal factor loads heavily on variables 5, 8, 9, 10, 12, 14 and 16. The second principal factor loads heavily on variables 3 and 15. For the third, fourth, fifth and sixth principal factors, they load heavily on variables 6, 4, 13 and 2 respectively. The initial factor matrix enables the generation of revised communalities.

Table 4.31

FACTOR ANALYSIS OUTPUT OF COMMUNALITY

(PLACED IN VARIABLE COMMUNALS) FOR ICS

VARIABLE	COMMUNALITY
1	0.85076
2	0.84579
3	0.72980
4	0.76195
5	0.78404
6	0.780650
7	0.76550
8	0.73760
9	0.84393
10	0.76038
11	0.74408
12	0.77192
13	0.86765
14	0.77557
15	0.79057
16	0.85344

Table 4.31 represents the factor analysis output of communality. Communality refers to the proportion of the variables variation to the total variation that is involved in the factors. In the above table 87.8% of variable 13 is involved in the factors and this is highest ranked. The lowest ranked is variable 3 with 72% of the variables involved in the factors.

The final varimax rotated factor matrix is developed through the use of communalities. This generation of the final varimax rotated factor matrix takes place with regard to a given number of maximum iterations.

TABLE 4.32

FINAL VARIMAX ROTATED FACTOR MATRIX (ICS)

FACTOR	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
1	0.04	-0.10	0.08	0.91	-0.03	-0.04
2	-0.06	-0.21	-0.04	0.14	-0.88	-0.09
3	0.47	0.00	-0.69	-0.06	-0.9	-0.07
4	0.18	-0.25	0.78	-0.06	0.15	-0.17
5	0.31	0.78	-0.01	0.11	0.21	-0.17
6	0.20	0.78	-0.07	-0.35	0.15	-0.01
7	-0.54	0.21	0.00	0.46	-0.23	0.41
8	0.80	0.24	0.04	0.03	-0.19	0.08
9	0.74	0.42	-0.06	-0.28	0.03	0.19
10	0.56	0.25	0.00	0.27	0.11	-0.54
11	0.12	0.54	0.27	0.24	0.44	-0.08
12	-0.73	0.07	0.41	0.20	-0.15	-0.03
13	0.43	-0.11	-0.04	0.07	0.17	0.80
14	0.79	0.16	0.14	0.11	0.29	0.07
15	0.24	0.40	0.72	0.18	-0.07	0.09
16	0.81	0.30	0.27	0.14	0.08	0.02

Table 4.32 the rotated factor matrix is an attempt to simplify the columns of the factor matrix by making all values

close to either 0 or 1. The matrix represents the terminal solution of the factors. In this final varimax rotated factor matrix variables 8(Q8), variable 9(Q9), variable 12(Q12) and variable 16(Q16) load heavily on factor 1, variables 5(Q5) and 6 (Q6) load heavily on factor 3. The variable loading heavily on factor 4 is variable 1(Q1). For factor 5 the variables loading heavily are 2(Q2) and 11(Q11) while for factor 6 its variable 10(Q10) and 13(Q13). These results are reflected in the table below:

Table 4.33

THE FACTORS

Factor 1 will be made up of the following attributes:
- Return provisions e.g. warranties
- Data on reliability of the product
- Brand name
- Price and price considerations e.g. trade and price discounts

Factor 2 will be made up of the following attributes:
- Preferences of principal user
- Technical service offered
- Confidence in the salesmen

Factor 3 will be made up of the following attributes:
- Experience with the suppliers in analogous situations
- Supplier flexibility in adjusting to your needs

Factor 4 will be made up of the following attribute:
- Overall reputation of the supplier

Factor 5 will be made up of the following attribute:
- Financing terms,

Factor 6 will be made up of the following attribute:
- Reliability of delivery date promised.

Comparison between industries in choice of supplier attributes with regard to ICS.,

The analysis here focuses on the comparison between three industries. That is, food processing, engineering and chemical. Table 4.34 in the next page shows the differences reflected between the industries through the use of ranking.

TABLE 4.34

ATIRIBUTES	PRODUCT TYPE AND INDUSTRY ICS					
	FOOD		Engineering		Chemical	
	Mean	Rank	Mean	Rank	Mean	Rank
Reputation	3.91 (0.54)	10	4.0 (0.47)	8	4.1 (0.88)	3
Financing	5.82 (0.40)	2	5.9 (0.32)	2	6.0 (0.00)	1
Flexibility	4.09 (0.54)	8	5.1 (0.32)	3	4.1 (0.32)	3
Past Experience	4.45 (0.52)	3	4.0 (0.47)	8	4.1 (0.57)	3
Technical service	4.36 (1.21)	6	4.0 (0.00)	8	3.2 (0.42)	9
Confidence in salesmen	2.36 (0.67)	15	2.1 (0.57)	14	1.5 (0.53)	16
Convenience in ordering	1.82 (0.66)	16	2.1 (0.57)	14	3.1 (0.42)	10
Reliability data	4.45 (0.69)	3	5.0 (0.47)	4	3.3 (0.67)	8
Price	5.91 (0.30)	1	6.0 (0.00)	1	5.1 (0.32)	2
Technical specifications	3.64 (0.92)	12	4.2 (0.63)	6	2.9 (0.88)	13
Production facilities	3.45 (0.52)	13	3.0 (o.47)	13	2.8 (0.63)	14
Preferences of users	2.9 (0.54)	14	2.0 (0.67)	16	3.6 (0.52)	7
Reliable delivery date	4.45 (0.93)	3	4.6 (0.52)	5	4.0 (0.00)	6
Brand Name	4.23 (0.40)	7	4.0 (0.47)	8	3.05 (0.47)	12
Geographic Location	3.73 (0.79)	11	3.3 (0.48)	12	3.1 (0.57)	10
Return Provisions	3.95 (0.45)	9	4.1 (0.32)	7	2.75 (0.42)	15

The firms involved in the purchase of ICS rank price very highly. In food processing and engineering firms, price was ranked first while the chemical industry ranked it second. Price is an important consideration because the purchase of consumable supplies is a frequent occurrence and firms are more concerned with how much value they are getting from each shilling. Consumable supplies are also more or less standard in nature and whatever is available in the market will probably do the job.

Financing terms is also ranked highly by the three industries. The chemical industry ranks it first while for the other two industries its only second to price. As previously stated in the case of IPM, financing is a serious concern in these days of foreign exchange shortage. Therefore suppliers who can make special arrangements with prospective purchasers will be highly regarded.

The engineering and chemical industries also consider supplier flexibility an important factor. In the two industries its ranked third. This may be explained by those firms varying needs for these product items. It is therefore important they choose a supplier who will be able to fulfill their varying requirements.

Technical specification while not ranked as highly for ICS as for the other products (for example, IPM) is still an important attribute for engineering firms. It is ranked sixth by engineering firms, while it is ranked twelfth by food processing and thirteenth by the chemical industry. Engineering firms

therefore seem to consider technical specification an important attribute regardless of the nature of the product.

Production facilities which was important in the case of the food processing industry in the purchase of processed materials drops in rank, whereas it was second in the case of IPM and fourth in the case of LPM it now drops to thirteenth. Engineering firms also rank production facilities thirteenth while for the chemical industry it is still further down at fourteenth. The production environment is therefore not a serious issue in the purchase of ICS. This may again be explained by the fact that these products are more or less standard in nature and any type bought will probably do the job effectively.

Preference of users is still an important attribute for the chemical industry. While the consumable supplies may not affect the working environment, these firms due to their constant attempt to take into account the employees preferences will still regard it as quite important. The employees preference is ranked seventh by the chemical industry and fourteenth and sixteenth for food processing and engineering industries respectively.

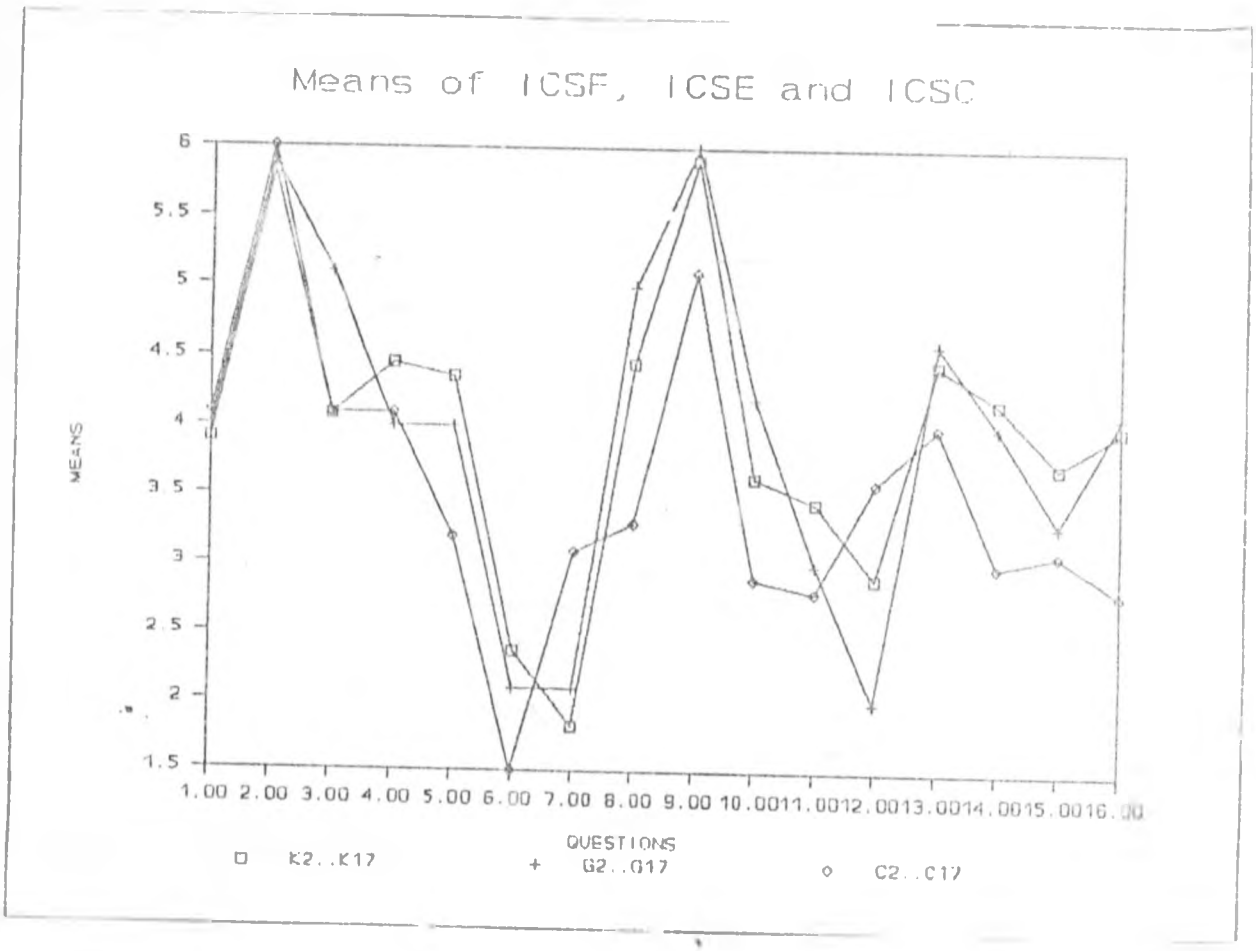
The three industries still consider confidence in the salesmen to be quite unimportant. In food processing it is ranked fifteenth, in engineering fourteenth while in the chemical industry its ranked last. Consumable supplies will most likely do the job for which they are bought and the salesman's presentation may thus not be an effective tool for marketing. Convenience in ordering is also still lowly ranked by the three

industries.

Most purchasing managers indicated that there were no major problems when it came to ordering from any of the prospective sellers.

The trend in the choosing of the supplier between the three Industries is graphically displayed below.

Graph 4.4



KEY:
- □ K2..K17:Food processing
- + G2..G17:Chemical
- ◊ C2..C17:Engineering

From Graph 4.4 the lowest mean score is that of attribute 6 (confidence in the salesmen). This is the score recorded for the chemical industry. The highest mean score is for attribute 9 (price and price considerations) as recorded by the Engineering industry. The trend for the three industries appears to be more or less similar for each of the attributes except for the weight attached to each of the attributes.

CHAPTER 5

DISCUSSION, CONCLUSIONS AND IMPLICATIONS OF RESEARCH FINDINGS

In this concluding chapter the findings of the study in relation to the objectives of the study are discussed and summarized. This last chapter also includes conclusions drawn from the study, recommendations, limitations of the study and suggestions for future research.

5.1 Discussion, conclusion and implications.

The findings reported in chapter four, that is, data analysis are discussed here. Each of the product types is discussed separately followed by a comparison between the various industries in relation to their ranking of the various attributes.

5.1.1 Ranking of IPM, LPM, LCS and ICS.

It was found that the attributes ranked highly in the case of IPM and LPM are similar. These are price, technical specifications, reliability data and past experience. The only major difference is in financing which is an important attribute when one considers imported products. This also applies to LCS and ICS where the major difference observed again is the issue of financing. Price was the major differentiating factor between consumable Supplies and processed materials. It was ranked higher for consumable supplies. (average) than for processed materials. In both processed materials and consumable supplies, convenience in ordering, confidence in salesmen and preferences of users were ranked lowly.

The implication for suppliers is that if they are to succeed in being chosen as suppliers of either IPM or ICS. Then they will have to take into account the financing aspect. Suitable arrangements in terms of financing should be made by potential suppliers which would be mutually beneficial.

At the same time it is important for potential suppliers to keep in mind the other important attributes. when they are sending their proposals. These include attributes like reliability data and technical specifications for processed materials and for consumable supplies.

5.1.2 Factor analysis on IPM questionnaire.

5.1.2.1 Summary statistics (IPM)

A look at the summary statistics will show that many of the attributes are considered most important. Attributes like overall reputation of the supplier, financing terms, supplier flexibility and price fall under this category. The attributes which are seen as being very important include technical service offered, production facilities and return provisions. Therefore twelve out of the sixteen attributes are considered as either most important or very important which is quite a substantial number of attributes.

5.1.2.2 Correlation matrix (IPM)

The correlation matrix, indicates a strong positive correlation between supplier flexibility and brand name, price and preferences of users, production facilities and geographic location. One will, for example, take into account aspects of

production facilities when they are considering geographic location.

Where the correlation is very low there is little association while where it is negative then there is negative association. For example, between technical specifications and reliability of delivery date. If one is to be very precise about a given delivery date then it may become difficult to meet the technical specifications.

5.1.2.3 Initial Factor Matrix (IPM)

The correlation matrix is the basis for the initial factor matrix. It is here that the factors are generated.

In this initial factor matrix, suppliers flexibility, technical specifications, production facilities, preferences of principal user, reliability of delivery date, brand name and return provisions heavily loaded factor 1.

Factor 2 loads heavily on past experience with suppliers, confidence in the salesmen and convenience of placing the order.

In the case of Factor 3, it is loaded heavily on technical service offered and confidence in the salesmen while for Factor 4 it is financing terms and data on reliability of the product.

5.1.2.4 Final Varimax Rotated Factor Matrix (IPM)

When the initial factor matrix is rotated it becomes the final varimax rotated factor matrix. The factors generated here are the ones that are relevant to the study.

The first important factor is return provisions, for example, warranties. Firms that are importing processed

materials need some kind of assurance that should there be any problem with the product being supplied there is some form of 'insurance'. That is, the firms purchasing products should have a way of seeking redress from the supplier.

The second important factor is technical specification. Here the firms involved will seek a supplier who is willing and able to provide products of acceptable standards. Technical specification is important since the firms involved in manufacturing need also to produce products of a certain set quality. Sometimes they are even forced by government regulations to adhere to certain standards.

A third important factor is the preferences of principal user of the product. When seeking suppliers firms involved in the importation of processed materials one takes into consideration the preferences of the principal user. This is done to ensure that the employees use materials which are not just technically appropriate but also suitable for their health and experience.

The fourth important factor is the financing terms. Where one is using imported materials then financing becomes an important issue to consider when choosing suppliers. The suppliers should be aware that the prospective purchasers consider financing important when making use of imported materials and suitable arrangements should be made between the two for business purposes.

A fifth important factor is data on reliability of the product. Firms rate highly this attribute because it also comes

into play when one is considering matters related to quality. If one is to maintain acceptable standards then a supplier with a good track record on reliability of product is more likely to succeed.

Therefore, the attributes considered important in the purchase of IPM are as follows:

Table 4.35

SUMMARY OF THE FACTORS
* Return provisions e.g. warranties
* Technical specifications.
* Preferences of principal user of the product
* Financing terms
* Data on reliability of the product.

5.1.3 Comparison between industries in choice of supplier attributes with regard to IPM.

In two of the industries, that is, engineering and chemical, reliability data and technical specifications were both ranked first. This could have been as a result of the importance attached to the quality of the items bought by these two industries where precision is important. Price was important in all the three types of industries. Also with a ranking of first was preference of users in the case of the chemical industry. In food processing, production facilities and geographic locations were also considered very important.

If one is to market IPM to the engineering and chemical industry, there is need to emphasize reliability data and the

ability to provide, products of the required technical specification. The chemical industry should also be provided with products that are user friendly. For example, suppliers may reduce toxicity levels of some of the products they produce.

Important attributes in the food processing industry include production facilities and geographic location. It is therefore important that interested suppliers market their production facilities and suitability of their geographical location to food processing firms.

The general trend can be said to be more or less similar for the first ten attributes. That is, those attributes between overall reputation of the supplier and technical specification. Thereafter each of the firms seem to attach a different level of importance to each of the attributes. For example, in the case of geographical location there is a significant difference in the weight attached between the three categories of industries and these are factors one should take into account when preparing a proposal.

5.1.4 Factors analysis as LPM questionnaire

5.1.4.1 Summary statistics (LPM)

A look at the summary statistics show that more than half of the attributes will fall under most important and very important. These include attributes like past experience with suppliers and geographic location. Therefore these attributes should be given serious consideration by potential suppliers due to the weight attached to them. The other attributes should also be looked at,

since they are also important, for example, an attribute like preferences of principal user of the product.

5.1.4.2 Correlation Matrix (LPM).

The correlation matrix, indicates a strong positive correlation between certain attributes. Production facilities and geographic location are highly correlated so are price and return provisions. Attributes which are highly negatively correlated are past experience with suppliers and price. These attributes will have a negative association. As price is rated lower, then past experience may be rated higher and higher.

5.1.4.3 Initial Factor Matrix (LPM).

The correlation matrix serves as the basis for the initial factor matrix. In this initial factor matrix, supplier flexibility, past experience with suppliers, price and price considerations, production facilities, brand name, geographic location and return provisions heavily loaded Factor 1.

Factor 2 loads heavily on financing terms and convenience of placing the order while Factor 3 loads heavily on reliability of the product and technical specifications.

In the case of Factor 4 the important attribute is technical service offered, for Factor 5 it is overall reputation of the supplier while for Factor 6 it is data on reliability of the product.

5.1.4.4 Final varimax rotated factor matrix (LPM).

When the initial factor matrix is rotated it becomes the final varimax rotated factor matrix. The factors generated here

are the ones that are relevant to the study.

The first important factor is Geographic location. It is important especially where the products are perishable or easily deteriorate. It is an attribute which can be considered especially important in a country like Kenya due to poor infrastructure in some parts of the country. It is therefore important that firms locations are taken into consideration when choosing suppliers therefore suppliers should be sensitive to this.

The second important factor is the suppliers flexibility in adjusting to ones needs. One is interested not only in a supplier who is in a suitable location but one who can also be flexible depending on ones needs. Therefore firms that are suitably located or have the necessary transport facilities and are flexible will have a better chance of being selected.

Convenience of placing the order is the third important factor. Firms need to be able to place their orders with ease without any administrative problems. This is especially important again when it comes to processed materials for food processing firms which can be highly perishable.

The fourth important factor is overall reputation of the supplier while the fifth is technical specifications. Suppliers with a good reputation will stand a better chance than others because they can be trusted while technical specification is important in ensuring product standards and therefore the firms reputation.

The sixth important factor is data on reliability of the

product. This is also an important consideration when it comes to choosing suppliers because of the necessity to maintain product quality.

Therefore the attributes considered important in the purchase of LPM are as follows:

Table 4.36

SUMMARY OF THE FACTORS(LPM)
* Geographic location
* Suppliers flexibility in adjusting to your needs.
* Convenience of placing the order.
* Overall reputation of the supplier
* Technical specifications.
* Data on reliability of the product.

5.1.5 Comparison between industries in choice of supplier attributes with regards to LPM.

In the chemical and engineering industries reliability data is ranked first. This is a question of firms being able to provide quality products over a consistently long period of time. Therefore the potential consumers address the question of historical data. Technical specification was also highly ranked by both the engineering and chemical industries.

Firms interested in supplying LPM to engineering and chemical firms should ensure that their products have both a good track record and that they are capable of achieving the required technical specifications. These two attributes will also be important in the food processing industry but here price and

production facilities will also come into play. Food processing firms seem to be more sensitive to prices of LPM and the nature of the firms production facilities.

The trend in the three categories of industries show a general similarity but in some of the attributes there is quite a big difference to the weights attached.

In the food processing industry the mean declines in the case of the attributes, confidence in the salesmen and convenience of placing the order while it rises in the case of the other two industries. A similar trend is observed for price and technical specifications.

To ensure effective marketing then one should address the question of the different weights. Where the attribute has a lower weight, for example, confidence in the salesmen then it should receive less attention relatively.

5.1.6 Factor analysis on LCS questionnaire

5.1.6.1 Summary statistics (LCS).

The summary statistics for LCS show that in this case most of the attributes are considered as important. These include attributes like supplier flexibility, technical service offered and technical specifications. The only attribute considered most important is price.

5.1.6.2 Correlation Matrix (LCS)

The correlation matrix, indicates a strong positive correlation between the following attributes. There is a high degree of association between technical service offered and

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technical specification, and also between technical service offered and data on reliability of the product. These attributes reinforce each other, in that, for example, one would expect where certain technical specification are required then this is backed up with a strong technical service.

A high negative degree of association is observed between data on reliability of the product and preferences of principal user of the product. This may mean that the more one takes into account the preferences of the user, the more difficult it is to take into account data on reliability of the product.

5.1.6.3 Initial factor matrix (LCS)

The correlation matrix is used to generate the initial factor matrix.

In this initial factor matrix, supplier flexibility, past experience with suppliers, technical service offered, data on reliability of the product, technical specifications, production facilities and return provisions heavily loaded Factor 1.

Factor 2 loads heavily on four attributes. These are financing terms, convenience of placing the order, preferences of principal user and reliability of delivery date promised.

In the case of the Factor 3, there is heavy loading on price and brand name. For Factor 4, 5 and 6 loading is heavily on the attributes geographic location, preferences of the principal user and confidence on the salesmen respectively.

5.1.6.4 Final Varimax rotated factor matrix (LCS)

On rotation of the initial factor matrix it becomes the

final varimax rotated factor matrix. The factors generated here are the one that are relevant to the study.

The first important factor is financing terms. This is an attribute which is more relevant to imported products but also considered important in the purchase of LCS. It is an attribute that considers issues like financing arrangements made between the supplier and the purchaser.

The second important factor is overall reputation of the supplier. This is a factor that one would expect to come into play in the purchase of any product. Suppliers with good reputation always find it easier to sell their products than those with poor reputations.

Preferences of principal user of the product is the third important factor. Here, one takes into account what the people who use the product think about it. Where possible firms should always try and take into account what their employees feel since they are a company's most essential resource.

The fourth important factor is geographic location. Where suppliers are suitably located then they may be preferred to those who are not as easily accessible.

Price and price considerations is the fifth factor. One would expect price to be a serious consideration due to the constant purchase of consumable supplies.

The sixth factor is confidence in the salesmen. Where the firms have faith in the salesmen then they may easily purchase consumable supplies from the firms they represent. Since these are products that are frequently bought then salesmen may have an

important role to play in terms of convincing prospective purchasers.

Therefore the attributes considered important in the purchase of LCS are as follows:

Table 4.37

SUMMARY OF THE FACTORS(LCS)
* Financing terms
* Overall reputation of the supplier.
* Preferences of principal user of the product.
* Geographic location
* Price and price considerations.
* Confidence in the salesmen.

5.1.7 Comparison between industries in choice of supplier attributes with regard to LCS.

In all the three industries price was ranked first. As previously stated this is possibly due to the fact that consumable supplies are used up or consumed by the purchasing company in the operation of its business. If firms are to be successful then they have to price their products competitively.

If the prices are competitive then certain unique expectations of the various categories of industries will have to be taken into account. For example, reliability data is a more important attribute when one is supplying to food processing than to either engineering or chemical. Preferences of users is a serious consideration when one wants to supply to the chemical

industry.

The trend in the three categories of industries can be said to be similar in terms of relative importance of each of the attributes.

5.1.8 Factor analysis on ICS questionnaire

5.1.8.1 Summary statistics for ICS

The summary statistics for ICS show that most of them fall under important. Attributes such as technical service offered, technical specifications, and preferences of users fall under this category. Financing terms and price are considered most important. There are no attributes that are considered least important.

5.1.8.2 Correlation matrix (ICS)

The correlation matrix generated for ICS shows the degree of association between the attributes. The highest degree of association is between brand name and return provisions. One would expect where the brand name is rated highly then an allowance will be made for return provisions. That is, there will also be high expectations in terms of, for example warranties.

The highest negative association is observed between price and preference of principal user of the product where the rating of price is going up then one will expect the rating of preferences of users to be going down. This means that if one considers price to be very important then they will be ready to sacrifice preferences of principal user of the product.

5.1.8.3 Initial factor matrix (ICS)

The initial factor matrix is generated from the correlation matrix. In this initial factor matrix, technical service offered, data on reliability of the product, price and price considerations, technical specifications, preferences of principal user, brand name and return provisions heavily loaded Factor 1.

Factor 2 loads heavily on supplier flexibility and geographic location. For Factors 3, 4, 5, and 6 they load heavily on confidence in the salesmen, past experience with suppliers, reliability of delivery date and financing terms respectively.

5.1.8.4 Final varimax rotated factor matrix (ICS)

On rotation of the ICS initial factor matrix it becomes the final varimax rotated factor matrix. The factors generated here are the ones that are relevant to the study.

The first important factor is return provisions. Firms would prefer suppliers who can provide them with warranties as opposed to those who have no such provisions. The warranties serve as protection in case the product is defective.

Technical service offered is the second important factor. This is an attribute that can be considered generally important by all the manufacturing firms. It may be especially relevant where complex or expensive machinery is bought.

The third important factor is experience with suppliers in analagous situations. Firms rate past experience queit highly.

If firms are to be effective suppliers then they should always ensure that they do a good job which will serve as a future reference.

Overall reputation of the supplier is the fourth important factor. When one is importing products then it may be less risky to deal with firms that have a good overall reputation. In order to maintain their reputation such firms strive to maintain certain standards and these standards serve as a marketing tool for such firms. Therefore firms can be able to market their products more effectively where their reputation preceeds them.

The fifth important factor is financing terms. As was the case with IPM, financing is an especially important attribute where firms are involved in importation. Making international payments is quite a complex activity and firms which can succeed in making the transactions smoother are more likely to succeed.

Reliability of delivery date promised is the sixth important factor. International transactions usually involve a longer time duration in terms of ordering and acquiring of the product. It is important that ICS be delivered in good time so as not to interfere with firms day to day operations.

Firms interested in supplying ICS should operate on predictable schedules. They should be able to deliver products as soon as they are required and on the date agreed upon. If they are to succeed.

Therefore, the attributes considered important in the purchase of ICS are as follows:

Table 4.38

SUMMARY OF THE FACTORS (ICS)
* Return provisions e.g. warranties
* Experience with suppliers in analogous situations.
* Overall reputation of the supplier
* Financing terms.
* Reliability of delivery date.

5.1.9 Comparison between industries in choice of supplier attributes with regard to ICS.

Price is yet again ranked very highly in the purchase of ICS just as was the case with LCS. In food processing and engineering firms, price is ranked first while the chemical industry ranked it second. Price is important because the purchase of consumables is a frequent occurrence and firms are more concerned with how much value they are getting out of each shilling.

Financing terms is also important in all the three industries. The chemical industry ranks it first while for the other two industries its only second to price. It is again the question of being able to provide an appropriate arrangement for ordering and receiving imported products.

The engineering and chemical industries also consider supplier flexibility an important factor. In the two industries it is ranked third while in the food processing industry it is ranked eighth. The chemical industry still rates preferences of users as an important attribute while for the other two industries it is ranked almost last.

It is evident that there are some attributes which will be considered important by all the three categories of industries, for example, financing and price while others will be specific types of industries. The specific types will include, for example a generally high rating of preference. Therefore firms marketing ICS need to address both the generally important attributes and also the industry specific ones if they are to succeed.

A look at the trend of the three industrial categories reveals some kind of similarity in the relative importance attached to each of the attributes by each category of industries. Where there are differences, then marketers should address such attributes for example preferences of users.

5.1.10 General conclusion.

One can observe from the factor analysis, ranking and graphs that there will be certain similarities and certain differences between the products and between the three industrial categories.

Looking at IPM and ICS some of the attributes are common to both groups of products. Financing terms is an important attribute since both IPM and ICS involve international payments. The other important attributes common to both IPM and ICS include return provisions, technical specifications and data on reliability of the product.

LCS and LPM share some common attributes. These are overall reputation of supplier and geographic location. Firms within a country should be able to judge the overall reputation of local

suppliers easily and thus may consider it a very important attribute. The local conditions may also give firms leeway in terms of Geographic location. So that it becomes an attribute that is taken seriously.

In the purchase of either IPM or LPM technical specifications and data on reliability of the product are considered important. Technical specifications and data on reliability of the product have an implication on the quality and standards of production. Therefore firms that are quality conscious will rank the the two attributes highly.

Users of either LCS or ICS find certain attributes which are important to both types of products. These are financing terms and overall reputation of the supplier. While financing terms is an important consideration in the case of imported products it is queit surprising that it was also considered important in the purchase of LCS.

While the mentioned products share some attributes which are considered important in all the four groups there are also attributes that will be considered important to only a unique type of product. Confidence in salesman is only considered important in the purchase of LCS while preferences of users is only important in the purchase of IPM.

The differences observed were not only in the products but also between industries. The different categories of industries found different attributes to be important in the purchase of the various products. For example, engineering firms were found to place a high ranking on technical specifications most of the

times. The chemical industry considered user preference queit an important attribute when compared with the other categories while in food processing production facilities is in general regarded highly.

5.2 Limitations of the study.

This study was constrained by a number of factors. The major limiting factor was time. The time provided for the study was not sufficient to collect all the questionnaires thus affecting the scope and depth of the study. Where the questionnaires were collected, there was also a problem of non response in some of the cases.

In the actual analysis there was a problem of computer capacity. The computer could only analyse six factors at a time to come up with a factor matrix. This limited the number of factors that could be generated for the final analysis.

5.3 Recommendations.

Marketers or industrial suppliers will have to design different marketing strategies depending on the nature of the product and industrial category if they are to succeed. For example, if one is interested in supplying imported products then financing will be an important attribute. Where one is interested in marketing or supplying to a category of industry then what the industry considers important should be emphasized.

5.4 Direction for future research.

Future research could be directed at considering what attributes are considered important in the purchase of other products, for example capital goods. Also there is a need to conduct a research to try and establish whether the attributes considered important will vary depending on the origin of the firm. For example, is there a difference in the attributes considered important between locally owned and foreign owned companies.

Chapter 1 FOOTNOTES

1. Kotler P and Armstrong G. Principles of Marketing New Delhi 11001 Prentice-Hall of India, 1991 PP. 214 - 218.
2. Weingard R.E. Why studying the purchasing agent is not enough Journal of Marketing, Vol 32 (Jan 1968) PP. 41 - 45.
3. Aljian G.W. and Farell P.V; Aljians Purchasing Handbook, New York McGraw-Hill Book Company 1982 PP. 1 - 3.
4. Webster F.E. and Wind Y. Organisational Buying Behaviour, Englewood cliffs, New Jersey, Prentice-Hall PP.6.
5. Dwyer F.R., Schurr P.H. and o.h s; Developing Buyer - Seller Relationships Journal of Marketing, Vol 51, No.2 PP.15.
6. Jackson D.W., Keith J.E. and Burdick R.K.; Purchasing Agents Perception of Industrial Buying Center Influence; A situational Approach: Journal of Marketing Vol. 48, No.4, Fall 1984, PP. 75 - 79.
7. Dalrymple D.S. and Parson L.S.; Marketing Management: Strategy and Cases: New York, John Wiely and Sons, 1983, PP. 279 - 183.
8. Dempsey W.A.; Vender Selection and Buying process, Industrial Marketing Management. Vol VII (1978), PP. 257 - 267.
9. Lehman D.E. and O'shaugnessy; Difference in Attribute Importance for Difference Industrial Products; Journal of Marketing Vol. 38 (April 1974) PP. 36 - 42.

Chapter 2

1. Webster F.E and Wind Y; Organisational Buying Behaviour. Englewood Cliffs, New Jersey, Prentice-Hall PP.2.
2. Hutt M.D. and Speh J.W. ; Industrial Marketing Management: A Strategic View of Business Markets: New York NY 10017 The Dryden Press 1984 PP.6.
3. Haas R.W.; Industrial Marketing Management. Boston Massachusetts, Kent Publishing Company, 1982 PP. 35 - 50.
4. Cox W.E.; Industrial Marketing Research New York John Wiley and Sons, 1979, PP. 4.
5. Aubrey Wilson; The Assessment of Industrial Markets London: Hutchinson and Co., 1968, Chapter I.
6. Webster F.E Industrial Marketing Strategy John Wiley and Sons, Inc, 1984. PP.17.
7. Dalrymple D.J. and Parson L.S.; Marketing Management : Strategy and Cases: New York, John Wiley and Sons 1983, PP. 179 - 183.
8. Scott J. Warshaw M.E. and Taylor S.R.; Introduction to Marketing Management: Text and Cases Homewood, Illinois 60430, Richard D. Irwin Inc, 1985. PP.
9. Ferell D.L.; Fundamental of Marketing, Boston, Houghton Mifflin Company, 1982 PP. 436 - 441.
10. Baily P. and Farmer D; Purchasing Principles and Management 128 Long Acre London Wc2EGAT1, Pitman Publishing 1990, PP. 69 - 133.
11. Webster F.E, and Wind Y.; Op cit PP. 53 - 106.
12. Ibid

13. Ibid

14. Ibid

15. McCabe D.L; Buying Group Structure Constriction at the top, Journal of Marketing, Vol 51, No. 4, Oct 1987, PP. 8.

16. Jackson D.W.; Keith J.E. and Burdick R.K. Purchasing Agents Perceptions of Industrial Buying Center Influence; A Situational Approach, Journal of Marketing, Vol 48, No. 4 Fall 1984, Pp. 75 - 79.

17. Scott J. Warshaw M.E. and Taylor J.E. Op.Cit.

18. Howard J. and Seth J.N.; The Theory Buyer Behaviour New York, John Wiley and Sons 1969 Chapter 2.

19. Ibid

20. Hoordewier T.G., John G. and Nevin J.C. Performance Outcomes of Purchasing Arrangements in Industrial Marketers Interdisciplinary Role Journal of Marketing Vol. 48, No.4 Fall 1984 PP. 53.

21. Kotler P. Marketing Management: Analysis, Planning, Implementation and Control Englewood Cliffs, New Jersey 07632, Prentice Hall International Inc, 1988, PP. 450 - 451.

22. Lehman D.E. and O'Shaugnessy; Difference in Attribute Importance for Different Industrial Products: Journal of Marketing Vol. 38 (April 1974) PP. 36 - 42.

23. Stanton W.J. ; Fundamentals of Marketing, McGraw-Hill International, PP. 195 - 197.

24. Webster F.E. ; Industrial Marketing Strategy, John Wiley and Sons Inc, 1984 PP. 5.

25. Haas R.W. Op Cit PP. 13 - 18.

26. Robinson P.J., Farris C.W. and Wind Y. Industrial Buying and Creative Marketing (Boston : Allyn and Bacon Inc and the Marketing Science Institute, 1967) PP. 13 - 18.

27. Ibid

28. Baily P. and Farmer D. Op Cit PP. 120.

29. Aljians G.W. and Farell P.V; Aljians Purchasing Handbook New York, McGraw-Hill Book Company 1982 PP. 1 - 5.

30. Haas Op Cit PP. 98 - 100.

31. Lehman and O'Shaugnessy; Decision Criteria used in Buying Different Categories of Products; Journal of Purchasing and Material Management Vol 18. Spring 1982, P. 10.

32. Webster F.; Industrial Marketing Strategy John Wiley and Sons, Inc, 1984. PP.45.

33. Jackson D.W., Keith J.E. and Burdick Op Cit.

34. Dempsey W.A.; Vender Selection and the Buying Process Industrial Marketing Management Vol VII (1978) PP. 257 - 267.

35. Aljian G.W. and Farell P.V. Op Cit PP. 6 - 13 and 6 - 17.

36. ---------- What Buyers Really Want Sales and Marketing Management Oct 1989, P. 30.

37. Baily P and Farmer D. Op Cit PP. 127 - 133.

38. Lehman D.E. and O'Shaugnessy Op Cit.

39. Rockely L.E. ; Finance for the Purchasing Executive, 24 Highbury Crescent, London N5. Business Books Ltd, PP. 22.

40. Levitt J.; Communication and Industrial Selling, Journal of Marketing, Vol. 31, No.2, April 1967, PP.15.

41. Hoordewier T.G. John G. and Nevin J.C. Op cit.

42. McCabe Op Cit.

43. Leigh T.W. and Rethan A.J.; A Script Theoretic Analysis of Industrial Purchasing Behaviour, Journal of Marketing. Vol 48, No.4, Fall 1984, PP. 2230.

44. Hutt M.D. and Speh J.W.; Industrial Marketing Management: A Strategic View of Business Markets. New York NY 10017, The Dryden Press, 1984, PP. 81.

45. Hoordewier J.G., John G. and Nevin J.C. Op Cit.

CHAPTER 3

1. Central Bureau of Statistics.

2. Churchill G.A.**Marketing Research; Methodoligical** Foundations: New York, NY 10017, The Dryden Press, 1987 PP.453.

3. Intenational Standard Industrial Classification.

4. Churchill G.A and Peter J.P. "Research Design. Effects on the reliability of rating scales: A Meta-Analysis," Journal of Marketing cited in Churchill G.A Market Research:Methodoligical Foundations, 1987 PP.344

5. Ibid.

6. Aljian G.W. and Farell P.V: **Aljian's Purchasing** Handbook,New York,McGraw-Hill Book Company, 1982 PP.1-10.

7. Nie N.H et al:**Statistical Package for the Social Sciences** (2nd Edition), New York, McGraw-Hill Book Company, 1975, PP469.

Dear Sir/Madam,

PROPOSED LETTER TO THE RESPONDENT

I am a graduate student in the Faculty of Commerce, University of Nairobi. I am currently engaged in a study investigating the attributes considered important in the purchase of different industrial products. This study is in partial fulfilment of the degree Masters in Business and Administration.

I therefore request you to kindly complete the attached questionnaire which will assist me in my study.

Any information provided will be used only for academic purposes and will be treated as strictly confidential.

A copy of the research findings will be made available to you upon request.

Your co-operation will be highly appreciated.

Thanking you in advance.

Yours faithfully,

Ouko F. O.
MBA II Student

DEFINITION OF PRODUCTS

CONSUMABLE SUPPLIES

These are products that are used up or consumed by the Purchasing company in the operation of its business. Such Products include cleaning compounds, business forms, soaps, cutting fluids and small tools such as welding rods, drill bits and so forth.

PROCESSED MATERIALS

These include all types of processed materials not considered component parts. Typical of the products in this classification are steel plates, chemicals, glass, coke, sheet metals, plastics leather, asphalt and others.

PROPOSED QUESTIONNAIRE FOR THE MANUFACTURING FIRMS

In which industry does your firm belong?

	Tick as appropriate
Food Processing	( )
Engineering	( )
Chemical	( )

Do you make use of local consumable supplies? Yes ( ) No ( )

If yes

Please rate the importance of the following supplier attributes in the purchase of local consumable supplies.

	Most important					Least important
1. Overall reputation of the supplier	( )	( )	( )	( )	( )	( )
2. Financing term	( )	( )	( )	( )	( )	( )

3.	Suppliers flexibility in adjusting to your needs	( )	( )	( )	( )	( )	( )
4.	Experience with suppliers in analogous situations	( )	( )	( )	( )	( )	( )
5.	Technical service offered	( )	( )	( )	( )	( )	( )
6.	Confidence of placing the order	( )	( )	( )	( )	( )	( )
7.	Convenience of placing the order	( )	( )	( )	( )	( )	( )
8.	Data on reliability of the product	( )	( )	( )	( )	( )	( )
9.	Price and price considerations e.g. trade and price discounts	( )	( )	( )	( )	( )	( )
10.	Technical specifications	( )	( )	( )	( )	( )	( )
11.	Ease of operation	( )	( )	( )	( )	( )	( )
12.	Preferences of principal user of the product	( )	( )	( )	( )	( )	( )
13.	Reliability of deliverty date promised	( )	( )	( )	( )	( )	( )
14.	Brand Name	( )	( )	( )	( )	( )	( )
15.	Geographic Location	( )	( )	( )	( )	( )	( )
16.	Return provisions e.g. warranties	( )	( )	( )	( )	( )	( )

Please write out any other supplier attributes which you consider important that might have been left out.

Do you make use of local processed materials? Yes ( ) No ( )
If Yes

Please rate the importance of the following supplier attribute(s) in the purchase of local processed material.

		Most important					Least important
1.	Overall repucation of the supplier	( )	( )	( )	( )	( )	( )
2.	Financing terms	( )	( )	( )	( )	( )	( )
3.	Suppliers flexibility in adjusting to your needs	( )	( )	( )	( )	( )	( )
4.	Experience with suppliers in analogous situations	( )	( )	( )	( )	( )	( )
5.	Technical service offered	( )	( )	( )	( )	( )	( )
6.	Confidence in the salesmen	( )	( )	( )	( )	( )	( )
7.	Convenience of placing the order	( )	( )	( )	( )	( )	( )
8.	Data on reliability of the product	( )	( )	( )	( )	( )	( )
9.	Price and price considerations e.g trade and price discounts	( )	( )	( )	( )	( )	( )
10.	Technical specifications	( )	( )	( )	( )	( )	( )
11.	Ease of operation	( )	( )	( )	( )	( )	( )
12.	Preferences of principal user of the product	( )	( )	( )	( )	( )	( )
13.	Reliability of deliverty date promised	( )	( )	( )	( )	( )	( )
14.	Brand name	( )	( )	( )	( )	( )	( )
15.	Geographic location	( )	( )	( )	( )	( )	( )
16.	Return provisions e.g. warranties	( )	( )	( )	( )	( )	( )

Please write out any other supplier attribute(s) which you consider important that might have been left out.

Do you make use of imported consumable supplies? Yes ( ) No ( ) If Yet

Please rate the importance of the following supplier attributes purchased of important consumable suppliers.

		Most Important					Least Important
1.	Overall reputation of the supplier	( )	( )	( )	( )	( )	( )
2.	Financing terms	( )	( )	( )	( )	( )	( )
3.	Suppliers flexibility in adjusting to your needs	( )	( )	( )	( )	( )	( )
4.	Experience with suppliers in analogous situations	( )	( )	( )	( )	( )	( )
5.	Technical service offered	( )	( )	( )	( )	( )	( )
6.	Confidence in the salesmen	( )	( )	( )	( )	( )	( )
7.	Convenience of placing the order	( )	( )	( )	( )	( )	( )
8.	Data on reliability of the product	( )	( )	( )	( )	( )	( )
9.	Price and price considerations e.g. trade and price discounts	( )	( )	( )	( )	( )	( )
10.	Technical specifications	( )	( )	( )	( )	( )	( )
11.	Ease of operation	( )	( )	( )	( )	( )	( )
12.	Preferences of principal user of the product.	( )	( )	( )	( )	( )	( )

13.	Reliability of deliverty date promised	( )	( )	( )	( )	( )	( )
14.	Brand name	( )	( )	( )	( )	( )	( )
15.	Geographic location	( )	( )	( )	( )	( )	( )
16.	Return provisions e.g. warranties	( )	( )	( )	( )	( )	( )

Please write out any other supplier attribute(s) which you consider important that might have been left out.

Do you make use of imported processed materials? Yes ( ) No ( )
If Yes

Please rate the importance of the following supplier attributes purchase of imported processed materials.

		Most Important					Least Important
1.	Overall reputation of the supplier	( )	( )	( )	( )	( )	( )
2.	Financing terms	( )	( )	( )	( )	( )	( )
3.	Suppliers flexibility in adjusting to your needs	( )	( )	( )	( )	( )	( )
4.	Experience with suppliers in analogous situations	( )	( )	( )	( )	( )	( )
5.	Technical service offered	( )	( )	( )	( )	( )	( )
6.	Confidence in the salesmen						
7.	Convenience of placing the order	( )	( )	( )	( )	( )	( )
8.	Data on reliability of the product	( )	( )	( )	( )	( )	( )

9.	Price and price considerations e.g. trade and price discounts	( )	( )	( )	( )	( )	( )
10.	Technical specifications	( )	( )	( )	( )	( )	( )
11.	Ease of operation	( )	( )	( )	( )	( )	( )
12.	Preferences of principal user of the product	( )	( )	( )	( )	( )	( )
13.	Reliability of delivery date promised	( )	( )	( )	( )	( )	( )
14.	Brand name	( )	( )	( )	( )	( )	( )
15.	Geographic location	( )	( )	( )	( )	( )	( )
16.	Return provisions e.g. warranties	( )	( )	( )	( )	( )	( )

Please write out any other supplier attribute(s) which you consider important that might have been left out.

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BIBLIOGRAPHY

Aljians G.W, and Farell P.V; Aljians Purchasing Handbook, New-York, McGraw-Hill Book Company, 1982 PP.6-13-6-17.

Baily P, and Farmer D.;Purchasing principles and management 128 long Acre, London WCZEGATI, Pitman Publishing,1990.

Bishop W.S., Graham J.L, and Jones M.H." Volatility of Derived Demand in Industrial Markets and its Management Implication", Journal of Marketing Vol. 48, No. 4, Fall 1984, PP. 95 - 96.

Blasko, V.S and Paffi C.H.:" The Advertising Budgeting practices of Industrial Marketers Journal of Marketing Vol. 48, No 4, Fall 1984, PP. 104.

Churchill G.A . Marketing Research: Methodological Foundations; New York, NY 10017. The Dryden Press.1987

Churchill G.A and Peter J.P. "Research Design Effects on the reliability of rating scales: A Meta-Analysis" Journal of marketing cited in Churchill G.A Market Research: Methodological Foundations.1987

Cox W.E; Industrial Marketing Research New York John Wiley and Sons, 1979.

Dalrymple D.J, and Parson L.J. :Marketing Management: Strategy and Cases:, New-York, John Wiley and Sons, 1983, PP. 179 - 183.

Day G.S.and Wensley R." Assessing advantage: A framework for Diagnosing competitive superiority", Journal of Marketing Vol. 52, No. 2, April 1988, PP 1.

Dempsey W.A. :" Vendor selection and the Buying Process, Industrial Marketing Management, Vol VII (1978), PP. 257 - 67.

Dwyer, F.R. Schurr P.H. and Oh S; Developing." Buyer - Seller Relationships "Journal of Marketing, Vol 51, No. 2 PP. 15.

Ferell O.C. Fundamentals of Marketing, Boston, Houghton-Mifflin Company, 1982 PP. 436 - 441.

Frey T.D."Forecasting prices for Industrial Commodity markets" Journal of Marketing, Vol 34, No. 2, April 1970.

Groenveld L.:"A New Theory of Consumer Buying Intent, Journal of Marketing", Vol. 28, No. 3 (July 1964) PP. 23.

Haas R.W. Industrial Marketing Management Boston, Massachusetts.Kent Publishing Company, 1982.

Hoordewier T.G., John G., Nevin J.C," Performance outcomes of purchasing arrangements in Industrial Buyer Vendor Relationships,Journal of Marketing. Vol. 48, No. 4 Fall 1984, PP 53.

Hutt M.D. and Speh T.W.; The Marketing Strategy Center: Diagnosing the industrial marketers interdisciplinary Role Journal of Marketing Vol. 48, No.4 Fall 1984, PP. 53.

Hutt M.D. and Spenh T.W.; Industrial Marketing Management: A Strategic View of Business Markets, New York, NY 10017 The Dryden Press, 1984.

Jackson D.W., Keitner J.E. and Burdick R.K.:"Purchasing Agents Perceptions of Industrial Buying Center Influence; A situational approach"ournal of Marketing, Vol. 48, No. 4, Fall 1984, PP. 75 - 79.

Jackson R. and Aaker D.A.;" The strategic Role of Product Quality Journal of Marketing Vol. 51, No. 4, Oct 1987, PP.31.

Kotler P and Armstrong G.Principles of Marketing, New-Delhi 11001 Prentice-Hall of India, 1991, PP. 214 -218.

Lehman D.E and O'shaughnessy;" Difference in Attribute Importance for Different Industrial Products": Journal of Marketing Vol.38 (April 1974) PP. 36 - 42.

Leigh T.W. and Rethan A.J.;"A Script Theoretic Analysis of Industrial Purchasing Behaviour", Journal of Marketing Vol. 48, No. 4, Fall 1984,pp. 22 - 30.

Legenders M.C., Improving Purchasing Effectiveness Through Supplier Development, Boston, Division of Research, Harvard Business School 1965

Lilien G.L. et al:" Industrial Advertising Effectiveness and Budgeting Practices, Journal of Marketing No.1 April 1967 pp.15.

Lotshaw E.P. " Industrial Marketing Trends and Challenges", Journal of Marketing, No, 1. Jan, 1970 pp. 22.

McCabe D.I. :"Buying Group Structure Constriction at the Top", Journal of Marketing, Vol. 51, No. 4 Oct, 1987 pp. 8.

Michael R.F. et al :" Role stress among Industrial Buyers", Journal of Marketing, Vo. 51, No.2 April 1987.

Nie N.H et al:Statistical Package for the Social Sciences(2nd Edition) New York , McGraw-Hill Book Company,1975.

Perrueault W.D. and Russ F.A:" Physical Distribution Service In Industrial Purchase Decisions Journal of Marketing, Vol40, No. 2 April 1976, pp. 3 - 5

Robinson P.J., Faris C.W. and Wind Y. Industrial Buying and Creative Marketing, Boston, Allyn and Bacon Inc and The marketing Science Institute, 1967, pp. 13-18

Schurr P.H and Calder B.J :" Psychological Effects of restaurant Meetings on Industrial Buyers Journal of Marketing Vol. 50. No 1., Jan 1986, pp 87.

Scott D.J. Warshaw M.E. and Taylor J.R. Introduction to Marketing Management: Text and Cases Homewood, Illinois 60430, Richard D Irwin, 1985

Stewart D. W: " The Application and Misapplication of Factor Analysis in Marketing Research Journal of Marketing Research XVIII, February 1981.

Webster F.W. and Wind Y., : Organisational Buying Behaviour Englewood Cliffs, New Jersey, Prentice Inc, 1972, pp 2.

Weingard R.E " Why studying the purchasing agent is not enough" ournal Of Marketing Vol. 32 (Jan 1968)pp41-45

[illegible] P and Gundiff F.W. :" Assessing the quality of Industrial Product": Journal of Marketing Vol. 42, No. 1, Jan 1978, pp. 80

Woodside A.G. Sheth J.N. and Bernet P.D. Consumer and Indstrial Buying Behaviour, New York, 10017, Elsevier North Holland Inc,1977.