

# DECISION MAKING UNIT (DMU) IN PURCHASING OF CAPITAL EQUIPMENT BY MANUFACTURING ORGANISATIONS IN NIGERIA.

Abiola, Richard Oladele

General Studies Department,  
Federal University of Technology,  
Akure, Nigeria.

## ABSTRACT

*The realisation of the fundamental role of an understanding of the organizational buying process to the development of appropriate industrial marketing strategy motivates the author to examine the key participants as regards capital equipment purchase decisions by manufacturing organisations in Nigeria.*

*The objective of the research was to identify the composition of the buying centre within the manufacturing organisations buying decision process. Four hundred useable questionnaires were analysed. The method of analyses used included: Cross tabulations, percentages, mean, variance, standard variation, Zee test and the concordance test.*

*It was found that many individuals who cut across various departments and who perform various roles take part in capital equipment purchase decisions. The groups that influence the decision on capital equipment purchase are: policy*

*makers/deciders, purchasers, users, technologists, influencers and gatekeepers.*

## 1. INTRODUCTION

An understanding of the organisational buying process is fundamental to the development of appropriate industrial marketing strategy. To be effective, marketers must address a number of key questions. One such question, which will form the research question for this study, is: who are the key participants in purchasing? This and other questions must be considered and answered if the industrial marketer is to be truly professional. The paper intends to address this.

The objective of this study is to generate useful managerial information on capital equipment buying practice of manufacturing organisations in Nigeria, identifying the composition of the buying centre within the manufacturing organisations buying decision process. In order to achieve the set objective of this study, one hypothesis was

subjected to investigation. The hypothesis is stated in derivative form as follows:

H<sub>0</sub>: Capital equipment buying decisions by manufacturing organisations in Nigeria are not determined by policy makers/deciders, purchasers, users, technologists, influencers and gate keepers.

This study is significant because experts, merchants, individuals, researchers, organizations and professional bodies have demonstrated that a lot of advantages emanate from proper understanding of buying behaviour. These benefits include increase in sales volume and profitability to the company, increase in output to the nation as well as improved standard of living to the individual.

The population for the study consists of 79 manufacturing organizations listed in the stock exchange market, from which the samples were randomly selected.

Manufacturing organizations listed in the stock exchange have been chosen because they are the organizations likely to have formal purchasing methodology.

Manufacturing organizations have been chosen because they produce goods and services with capital equipment and are therefore the organizations to be more frequently involved in capital equipment purchasing. Again manufacturing organizations listed in the stock exchange market are large organizations and as organizations' size increases the greater the number of buying influences. Additionally, one can generally expect a high degree of purchasing in large organizations.

The main limitation of this study is that it has not addressed the organizational buying behaviour of reseller and government markets. It is arguable however, whether results from a study of these organizations would differ in any significant way

from the findings of this research.

## 2. LITERATURE REVIEW

A lot has been written on organizational buying behaviour particularly in the 1960's and 1970's when research in this area was very intense. Thereafter, there seems little or nothing done again. Works of organizational buying behaviour related to Nigeria are quite few. This part of the thesis is devoted to a review of this literature. The aim here is not to include a complete list of all that has been written but rather includes mainly those sources that have been useful for this study.

A decision making unit (DMU) is an individual - a group of individuals who are participants in a decision making process, who share a common goal or goals which the decision will hopefully help them to achieve and who share the risk arising from the decision. Hill and Hillier (1977) say "The DMU consists of the individuals who actively participates in the decision when it is in the negative and zero states". Buckner (1967), in his study found that in Britain, the DMU for the purpose of plant equipment companies of the board, operating management and production engineers while the DMU for the purchase of materials and components consists of the buying department, design and development engineers and operating management.

Hambagda (1985) in his study titled buying: the decision-making process in Nigeria's public service found that the needing department or division has the autonomous authority to decide to purchase items of value not exceeding one thousand naira at a time. He added that such an autonomous discretionary buying power can be exercised only to the extent that the head of department obtains a minimum of three quotations, out of which he selects the one most advantageous to the government. Any purchase

in excess of one thousand naira must be presented to the Ministerial Tenders Committee whose membership cuts across ministerial barriers. Typically the ministerial tenders committee comprises the Commissioner for the Ministry sponsoring the project or Chairman, the Director General of the Ministry, an officer of the ministry acts as tenders secretary as part of his schedule; all heads of divisions in the Ministry; the Director General of works or his representative, a representative of the Ministry of Justice and the Director of Budget. In the case of Statutory Corporations the committee comprises the whole council/board; a representative of the Ministry of Finance; a representative of the Ministry of Works; the head of the corporation and some departmental heads, depending on the nature of corporation.

Many researchers have studied the various roles played by individuals comprising the DMU or the buying centre. Webster and Wind (1972) found that within the buying centre, five roles of actors were involved. He also found that several individuals may occupy the same role or one individual may occupy more than one role. These roles at the buying centre are:

- a. Users - those members of the organization who use the purchase products or services.
- b. Buyers - those with formal responsibility and authority to contract with suppliers.
- c. Influencers - those who influence the decision making process directly or indirectly by providing information and criteria for evaluating alternative buying actions.
- d. Deciders - those who choose among alternative buying actions, and,
- e. Gatekeepers - those who control the flow of information (and materials) into the buying centre.

On the other hand Klass (1961) classified the roles played by individuals in the buying centre into four classes. These are contributors,

participants, responsables and directors.

Finally 'Sales Management' classified these roles into five classes, namely, those who make the major buying decisions, those who make recommendations, those who must approve purchases, those who affect the conditions of use and those who conduct the buying negotiations.

However, it is only on very rare occasions that one person within the organization will make all the buying decisions for in most cases, a large number of individuals who fulfil a variety of roles are involved. It follows that as the nature of the decisions change, so will the participants. Therefore it is apparent that the individuals involved in decision making in the industrial buying process will vary considerably from one occasion to another.

The next task is to locate the position, in the organizational structure, of the individuals involved in each of the major decision areas. According to Hill and Hillier (1977), this position can be considered in terms of two coordinates, the lateral and vertical locations, and represent the managerial hierarchy of the individuals concerned.

Various studies have indicated occasions on which some functions become more important in the buying process than others. Buckner (1967) found that in the purchase of plants, design and development engineers tend to have dominant influences. He also found out that there is a tendency for groups of specialists to be involved at each stage in industrial buying process and that in the purchase of capital equipment, the buying department is usually not involved until later stages. Alexander, Cross and Hill (1961) found that it is the purchasing agent who invariably selects the suppliers as well as negotiates the terms of the contract. Finally, Weigard (1968) in his study found that there are some conflicts in the way in which management and engineering perceived each other's roles.

However, it is not sufficient to identify the

positions and roles played by individuals likely to be involved in the buying process but it is also necessary to obtain some indication of the behavioural characteristics of the participants, as all these things are likely to have an effect on the decisions made by the individuals concerned. Researchers have studied the characteristics of the individuals participating in the buying process. Two prominent characteristics of individuals are: rationality and personality.

### 3. RESEARCH DESIGN

#### Proposed Hypothetical Model of Organizational Buying Behaviour: Purchasing of Capital Equipment by Manufacturing Organizations in Nigeria

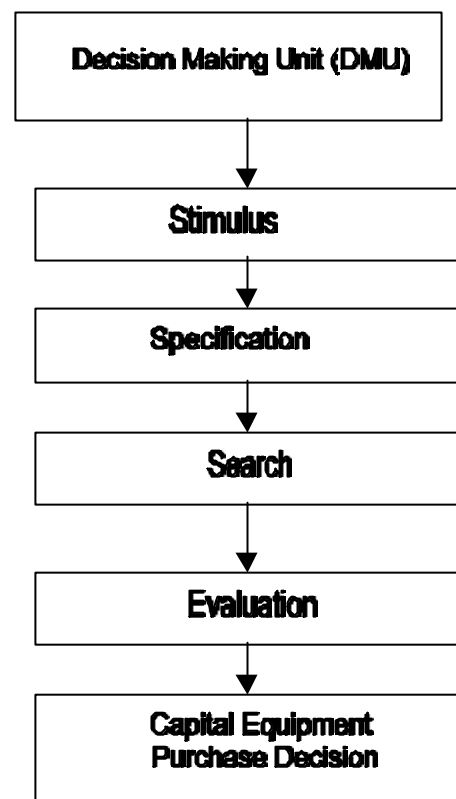
Using Webster and Wind's and Sheth's model of organizational buying behaviour as well as the knowledge gained from the review existing literature especially the work of Turnball (1987) as the main sources of information, a hypothetical model of organization buying behaviour is proposed for this research.

In designing the model, the following assumptions are made. These are:

- a. It is presumed that organizational buying is a joint decision making carried out by individuals, in interaction with other people; in the context of a formal organization. The organization, in turn, is influenced by a variety of forces in its environment. Therefore, there are three classes of variables determining organizational buying behaviour.
- b. The model assumed that organizational buying behaviour is a complex process, rather than a single, instantaneous act, and involves many persons (both inside and outside the buying organization),

multiple goals as well as potentially conflicting criteria. The process often takes place over an extended period of time, and it requires information from many sources. It also involves many inter-organisational relationships.

The proposed model is presented below:



## **Data Collection and Measuring Instruments**

Data were collected by means of questionnaires from 400 staff of sixty components quoted in the stock exchange. The companies operated in different lines of business: automobiles and tyres; breweries, building materials; chemical and paints; soap and toiletries; food/beverages and tobacco; footwear; industrial/ domestic products; packaging; petroleum marketing; pharmaceutical and animal feeds; textiles.

The spatial distribution of manufacturing industries in Nigeria shows a high concentration of these industries in a few administrative and urban centres, Lagos, Ibadan, Port-Harcourt, Kaduna, Zaria, Kano, Benin, Sapele, Warri, Onitsha, Enugu, Aba and Jos have emerged as the major industrial centres in Nigeria (Aboyade, 1968; Teriba et. al. 1981; Inegbenebor, 1990). This pattern of industrial development is due largely to the availability of infrastructural facilities in a few urban areas especially administrative headquarters and the comparatively high income and purchasing power in these areas (Onyemalukwe, 1974; Anusionwu, 1978; Inegbenebor, 1990).

There is also some clustering of industrial centres. Aboyade (1968) grouped the industrial centres of the country in what we called "the great industrial zones of Nigeria". These were the Lagos/Greater Lagos Zone, the Port-Harcourt/Aba zone, the Kaduna/Zaria/ Kano zone and Warri/Sapele zone. He did not specifically include the other industrial centres into any zone because according to him, that was not the focus of his study. Later analysts adopted Aboyade's core grouping but tended to use the

old regions as a basis for sorting industrial centres into any zones. Apart from the fact that this type of grouping tended to force outlying centres into a regional zone, such geo-political grouping may be no longer valid under present states structure.

The Aboyade grouping has been adopted for the study. The decision to adopt the Aboyade grouping is guided by a desire to choose an industrial zone with a high concentration of manufacturing organizations listed in the Stock Exchange. Consequently, the Aboyade zone is dominated by foreign, Federal, State and joint-venture enterprises, which are large enough, to have long history of successful business activities, qualifying them to pass the stringent measures adopted by the Stock Exchange for admitting companies into the capital market. It therefore follows that these companies are the ones likely to have properly laid down methodology for purchasing capital equipment. The zone was therefore considered to be likely to provide an appropriate setting for the testing of purchasing of capital equipment decisions by manufacturing organizations in Nigeria.

Analyses were done using percentages, average, mean, variance, standard deviation Zee-test and concordance test. These statistical techniques were used because sample size (400) is large and therefore obeys the law of large numbers and indeed the central limit theorem. To test the hypothesis, mean, variance, standard deviation, Zee-test and concordance test were used. The conclusion arrived at as a result of the calculation based on the Zee-test, were each corroborated with the concordance test calculation.

#### 4. RESULTS AND DISCUSSION OF FINDINGS

##### The key participants in purchasing using the Z Test

Table 1:

Observation (x)	Frequency (f)	Deviation $X-\bar{X}$	Deviation on squared $(X-\bar{X})^2$	Frequency Multiplied by Deviation square $F(X-\bar{X})^2$	Observation Multiplied by Frequency (FX)
4.00	21	0.97	0.94	19.74	84
3.80	21	0.78	0.61	12.81	79.80
3.70	21	0.67	0.45	9.45	77.70
3.50	53	0.47	0.22	11.66	185.50
3.30	32	0.27	0.07	2.24	105.60
3.20	21	0.17	0.03	0.63	67.2
3.00	63	0.03	0.0009	0.06	189.00
2.80	63	-0.23	0.05	3.15	176.40
2.70	21	-0.33	0.11	2.31	56.70
2.60	11	-0.43	0.18	1.98	28.60
2.50	21	-0.53	0.28	5.88	52.50
2.30	21	-0.73	0.53	11.13	48.30
2.00	21	-1.02	1.06	22.26	42.00
1.80	10	-1.23	1.51	15.10	18.00
Total	400			118.40	1211.30

### Testing Hypothesis

$Z_{table} = 1.64$  significant at 5%

$Z_{table} = 1.96$  significant at 1%

$Z_{calculated} = 19.27$

#### Decision

The decision rule is:

- If  $Z_{calculated} > Z_{table}$ , reject  $H_0$
- If  $Z_{calculated} > Z_{table}$ , accept  $H_0$

where  $H_0$  is the null hypothesis.

Since  $Z_{calculated}$  (19.27) is greater than  $Z_{table}$  values of 1.64 significant at 5% and 1.96 significant at 1%, the null hypothesis is therefore rejected and the alternative hypothesis is upheld.

### The key participants in purchasing, using the Concordance Test

Table 2

	Policy Makers/ Deciders	Purchasers	Users	Technologists	Influencers	Gate keepers
S	2,240	1,716	1,641	1,650	1,072	1,302
$\bar{S}$	1,400	1,400	1,400	1,400	1,400	1,400
$(S-\bar{S})$	849	316	241	250	-325	-98
$(S-\bar{S})^2$	720,801	99,856	85,081	62,500	107,584	9,604

### Testing Hypothesis

$F_{calculated} = 5.1995$

$F_{(1-)} = 2.21$  significant at 5%

$F_{(1-)} = 3.02$  highly significant at 1%.

### Decision Rule

Reject the null hypothesis if calculated F is greater than the value from the table at 5% or 1% level of significance. Since  $F_{\text{calculated}}$  is greater than  $F_{\text{table}}$ , we reject the null hypothesis and uphold the alternate hypothesis. Consequently capital equipment buying decisions by manufacturing organisations in Nigeria are determined by the following participants: Policy makers/ deciders, purchasers, users, technologists, influencers/gatekeepers.

## 5. CONCLUSION

This work has addressed the issue of decision making unit(s) that influence the purchase of capital equipment by manufacturing organisations in Nigeria. The following groups were identified by the study: policy makers/deciders, purchasers, users, technologists, influencers and gate keepers. It is believed that a proper understanding of the participation of these groups will greatly influence the marketing strategies of sellers of these equipment. Further study could be carried out to ascertain the levels of involvement of each of these groups in the decision making process relating to purchase of capital equipment by manufacturing organisations in Nigeria.

## REFERENCES

- Abayode, O. (1968), "Industrial Location and Development Policy: The Nigerian Case", *The Nigerian Journal of Economic and Social Studies*, Vol. 10, No. 3.
- Alexander, R.S., Gross, J.S. and Hill, R.M. (1961); *Industrial Marketing*, Illinois, Richard D. Irwin Inc.
- Anusionwu, E.C., (1978); "Management of Industrial Location through public Infrastructure Development" *The Nigerian Journal of Economic and Social Studies*. Vol. 20, No. 3.
- Buckner, H., (1967); *How British Industry Buys*; London, Hutchinson.
- Hambagba, O.A., (1985); "Buying: The Decision-making process in Nigeria's Public Sector - A preliminary investigation", *Managing Nigeria's Economic System*, Lagos, Heinemann Educational Books (Nig.) Ltd.
- Hill, R. and Hillier, F. (1977); *Organizational Buyer Behaviour*, Macmillan.
- Inegbenebor, A.U. (1990); *Organisational Practices and Performance of Private Nigeria Entrepreneurs in the Manufacturing Industry*, Benin City, Unpublished Ph.D. Thesis.
- Klass, B. (1961); *What factors influence Industrial Buying Decision*, Industrial Marketing, Vol. 14.
- Megeath, J.D. (1975); *How to Use Statistics*, New York, Canfield Press.
- Onyemalukwe, J.O.C (1974); "Industrial Location in Nigeria" in F.E. Ian Hamilton (ed), *Spatial Perspectives on Industrial*

*Organization and Decision Making*,  
London, John Wiley and Sons.

*Behaviour*, London, Heinemann, 1987.G  
Webster, F. and Wind, Y. (1972); *Organizational Buyer Behaviour*; Prentice-Hall.

Teriba, O., Edozien, E.C. (1981); *The Structure of Manufacturing in Nigeria*; Ibadan Press.

Weigard, R. (1968); "Why Studying the Purchasing Agent is not enough", *Journal of Marketing*, Vol. 32, NO. 1.

Turnball, P.W. (1987); *Organisational Buying*

---