AN INVESTIGATION INTO THE PRINCIPLES OF PURCHASING AND MATERIALS MANAGEMENT OF METAL BOX IN THE DURBAN AREA, WITH SPECIAL REFERENCE TO PRACTICE AND TECHNIQUES OF PURCHASING AND MATERIALS MANAGEMENT

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D.A. Naidoo

C-O-N-T-E-N-T-S

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CHAPTER ONE

INTRODUCTION

1.1 OBJECTIVE OF STUDY

Management of Purchasing and Materials constitute an ever increasing aspect of the manufacturing concern since the post war period because of management's increasing awareness of costs, particularly with regard to materials provision. If the company wants to stay competitive and earn satisfactory profits, it must procure materials at the lowest cost consistent with quality, and service requirements. At the same time, it must keep the administrative cost of buying and the cost of material inventories at an economic level. Henderson et al (1984: 7) stated that the objective of the firm is to maximize the value of the firm.[1] Therefore, Purchasing and Materials Management play an important role in the quest for optimum efficiency in that it must be able to provide goods and/or services at the lowest cost per unit, thus obtaining the most favourable input/output ratio.

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1. See p. 4, 15, 16, 22, 28, 35, 75, 99.

"For the establishment efficiency[2] optimization (or the quest for optimum efficiency) is most important. This means that it must be the aim of the establishment to provide goods and/or services at the lowest cost per unit. Consequently, the most favourable input:output ratio[3] must be obtained, where input refers to the total cost of all the resources used and the expenses incurred in providing goods and/or services, and output refers to the total proceeds, i.e. the quantity and value of the goods and/or services derived from that input." (Marx & van Aswegen 1984: 7).

In doing this the objective of the firm will be attained, viz., maximization of the value of the firm. As investors take cognizance of this, the value of the shares should increase. The increased share price will then eventually lead to the maximization of shareholders' wealth.

It is also imperative to mention that the modern firm should have a social objective. In this respect Uliana et al (1987: 5) state that social responsibility and shareholder wealth maximization cannot be separated. The reason being that consumer boycotts and strikes are prevalent in companies perceived to be neglecting social responsibility. This has resulted in having a negative effect on the share price and shareholder wealth. Therefore, it must be emphasized that maximizing shareholder wealth is considered to be integrally linked with social responsibility.

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2. efficiency refers to an objective that can be attained.

3. See p. 6, 16.

In this study an effort will be made to ascertain whether Metal Box is achieving this objective, viz., shareholder wealth maximization.

1.2 DEFINITION AND EXPLANATION OF "KEY" CONCEPTS

In order to properly comprehend the meaning of the title of this dissertation, it is imperative that certain concepts be properly defined and their interrelationships clarified.

1.2.1 THE PURCHASING FUNCTION

Marx & Van Aswegen (1984: 192) indicate that the purchasing function can be defined, from a Business Economics' point of view, "as that group of activities which are mainly concerned with supplying goods and services to the enterprise in such a manner that the continuity of supply is maintained and the highest value for the enterprise is negotiated throughout." The purchasing function is currently regarded as a management responsibility. (Marx & Van Aswegen 1984: 192). In view of the above definition purchasing management can consequently be described as a function that incorporates the planning, organization and co-ordination, as well as the direction and control of all the activities relating to the purchasing of goods and materials from an external source. (Marx & Van Aswegen 1984: 192).

1.2.1.1 THE IMPORTANCE OF THE PURCHASING FUNCTION

Fearon (1975: 6) identifies five criteria for evaluating the importance of the purchasing function to the enterprise.

(a) MONEY INVESTED

The purchasing function in many enterprises is responsible for the

expenditure on raw materials, components and services of more than 50% of the income derived from sales. This means that the purchasing function is probably the largest single controlling area in the expenditure of a manufacturing enterprise. Even if a specific enterprise spends less than 50% of its income on purchases (goods and services) in the long term, this represents large amounts of money. The management of the enterprise should therefore take cognizance of the key position of the purchasing function.

(b) PROFIT-LEVERAGE EFFECT

Efficient purchasing brings about savings which contribute directly to the profit of the enterprise.[4] In contrast, increased sales do not yield a comparable contribution to profit because such an increase is in most cases coupled with increased expenditure.

It can be proved that through effective purchasing, the enterprise can reduce costs and consequently increase its profit.

Suppose sales amount to R100, purchasing to 50% of sales (R50), and net profit to 5% (R5). In this case a 10% decrease in purchasing costs (R5) will double the profit (R10). In other words:

(a) sales must be doubled; or

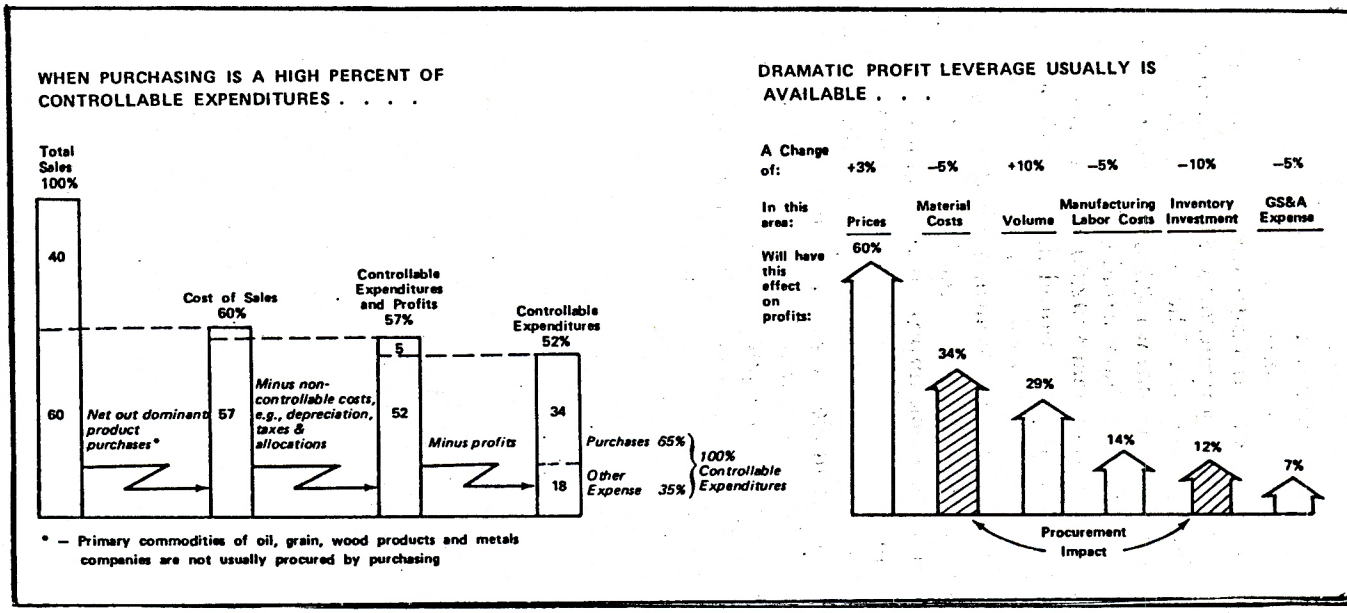
(b) prices increased by 5%; or

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4. See p. 1, 15, 28, 75.

(c) running costs decreased by 11% to achieve the same effect as a 10% improvement in purchasing costs.

Figure 1.1



SENSITIVITY ANALYSIS DEMONSTRATES THAT THE POTENTIAL IN IMPROVED PURCHASING MAY OUTSTRIP POTENTIAL GAINS IN OTHER AREAS.

Source: Heinritz & Farrell (1981: 8)

The Rand amounts involved in purchasing are substantial. They demand prudent, skilful administration. By purchasing efficiently, opportunities are available for making important savings and avoiding serious waste and loss. A prominent management consultant has suggested a way to estimate purchasing's potential economic impact. He recommended that management should set a reasonable improvement goal for each broad parameter of a company's profitability (e.g. sales volume, gross profit margins, labour costs, etc.) and then set one for purchasing, for example, a reduction of 5 per cent in materials cost. A profit analysis,

such as shown in Figure 1.1, may reveal that the profit potential in improved purchasing easily outstrips the potential for gains in those other areas that normally are more closely scrutinized by top management. (Heinritz & Farrell 1981 : 7).

(c) EFFECT ON EFFICIENCY

Efficient purchasing ensures continuity in the activities of the enterprise and prevents losses due to interruptions in production, low-quality goods and inability to execute orders.

(d) INFLUENCE ON THE COMPETITIVE POSITION

Inefficient buying may contribute directly to the insolvency of the enterprise whereas efficient purchasing may give a particular enterprise an advantage over competitors through bargaining for lower prices and greater availability of purchased goods.

(e) EXTERNAL RELATIONS

The way in which the purchasing department deals with suppliers and does business has a great influence on the external relations of the enterprise. Good relations with suppliers are important. Basically, the importance of an efficient purchasing function points to savings, which is tantamount to a favourable input/output ratio.[5]

1.2.2 MATERIALS MANAGEMENT

Some companies which buy large quantities of materials have

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5. See p. 2

created a materials management job in order to co-ordinate everything having to do with materials. Purchasing is among these activities. So are the operation of storage and warehouse facilities and the control of inventory. While these activities are closely associated with purchasing, they are usually under the direction of a purchasing agent. They would, however, become part of the assignment of a materials manager, as would the traffic department. (Hendrich & Moore 1981 : 130).

1.2.3 PURCHASING MANAGEMENT VERSUS MATERIALS MANAGEMENT

Materials Management is therefore an organisational concept according to which all the traditional tasks of procurement are integrated in one management activity.

In essence Materials Management is therefore not an organisational structure for the Purchasing function, but an umbrella organisational structure for all activities (including purchasing) involved in the supply of materials to the enterprise.

Evidently, the Materials Management organisational structure will influence the status of the Purchasing function, but this structure can also lead to increased efficiency in performing purchasing activities. (Marx & van Aswegen 1984 : 200)

A further point to take cognizance of is the fact that beside buying materials, the Purchasing department also buys, inter alia, energy, capital equipment, office supplies, repair parts and services.

Materials Management only relates to raw materials and related materials utilized in producing the final product.

Materials Management will also include purchasing manufactured parts.

How these two departments interrelate will depend on the nature of the work itself and the availability and capabilities of the personnel involved. (England 1962 : 49).

1.2.4 THE INTERRELATIONSHIP BETWEEN PURCHASING MANAGEMENT AND MATERIALS MANAGEMENT IN METAL BOX.

Although all the practices and techniques usually performed in a Materials Management department (see p. 40) are prevalent in the Purchasing department of Metal Box, it is not performed formally by a Materials Management department. It constitutes some of the many purchasing functions performed by Purchasing Management.

1.3 RESEARCH METHODOLOGY

1.3.1 IDENTIFICATION OF BUSINESS INVOLVED

Metal Box South Africa, Durban area - Divpac and Beverage Can Divisions.

1.3.2 Analysis of available literature on Purchasing and Materials Management.

1.3.3 Interviews were conducted with management executives of Metal Box for each aspect of Purchasing and Materials Management with view to:

1.3.3.1 Planning and Forecasting

1.3.3.2 Organisation

1.3.3.3 Directing and Co-ordination

1.3.3.4 Control

1.3.3.5 Quality

1.3.3.6 Supplier Selection

1.3.3.7 Pricing

1.3.3.8 Negotiation

1.3.3.9 Purchase Timing

1.3.3.10 Inventory Control

1.3.3.11 International Purchasing

1.3.4 Arranging interview results to indicate problem areas and their relationships to accepted principles of Purchasing and Materials Management.

1.3.5 A comparative study has been made of current practice at Metal Box with currently researched literature to ascertain whether a favourable input:output ratio is being achieved.

1.3.6 Conclusion.

1.3.7 Recommendations.

1.4 PRESENTATION

In this study, the management principles pertaining to Purchasing Management will be discussed only with regard to its buying function relating to:

(a) CRITICAL MATERIALS - tinplate, aluminium, inks and coatings.

(b) NON-CRITICAL MATERIALS - pallets, cardboard, consumables, stationery and maintenance materials.

1.5 BRIEF OUTLINE OF THE STUDY

1.5.1 BACKGROUND MATERIAL OF THE RESEARCHED COMPANY, VIZ. METAL BOX SOUTH AFRICA LIMITED

Metal Box South Africa Limited is quoted on the Johannesburg Stock Exchange and was formed in 1933. The Group was restructured in 1983 in order to provide for the diverse market needs of primary packaging. Primary packaging is the first package that goes around the consumable product.

Originally, United Kingdom held 51% shareholding in Metal Box South Africa Limited. Thereafter, United Kingdom sold Metal Box South Africa Limited to Nampak Limited. In terms of the restructuring, Metal Box South Africa is a subsidiary of Nampak Limited. Nampak Limited is part of the Barlow Rand Limited Group Organisation. Metal Box South Africa maintains close links with Metal Box in the United Kingdom because it (Metal Box United Kingdom) has vast knowledge of technology in primary packaging. Metal Box South Africa has seven operating divisions, provides employment for over 10 000 employees, operates 39 plants countrywide and has sales over R700 million.

As an important and major supplier, Metal Box South Africa is at the forefront of technological developments in primary packaging.

The seven divisions[6] are:

I. Food Can Division

II. Beverage Can Division

III. Divpac Division

IV. Liquid Packaging Division

V. Flexible Packaging Division

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6. See Figure 1.2

VI. Glass Division

VII. Plastics Division

The Company is involved in Industrial Relations, Manpower Training and Development, and Technology. It has a Research and Development Department, which provides a scientific service to the Group and its customers.

Two plants of Metal Box South Africa Limited are being investigated in this study, namely, Divpac and Beverage Can Divisions. The Divpac Division is regarded as the largest in the country with 1150 employees.

The Beverage Can Division serves one hundred percent of the Natal Market, with 226 employees.

The Divpac Division offers customers a comprehensive range of primary packaging in tinplate, aluminium and paper including cans for paint, coffee and oil, collapsible and rigid aluminium containers, aerosols including valves, cosmetic containers, paper wound cores and tubes, and recycles tinplate.

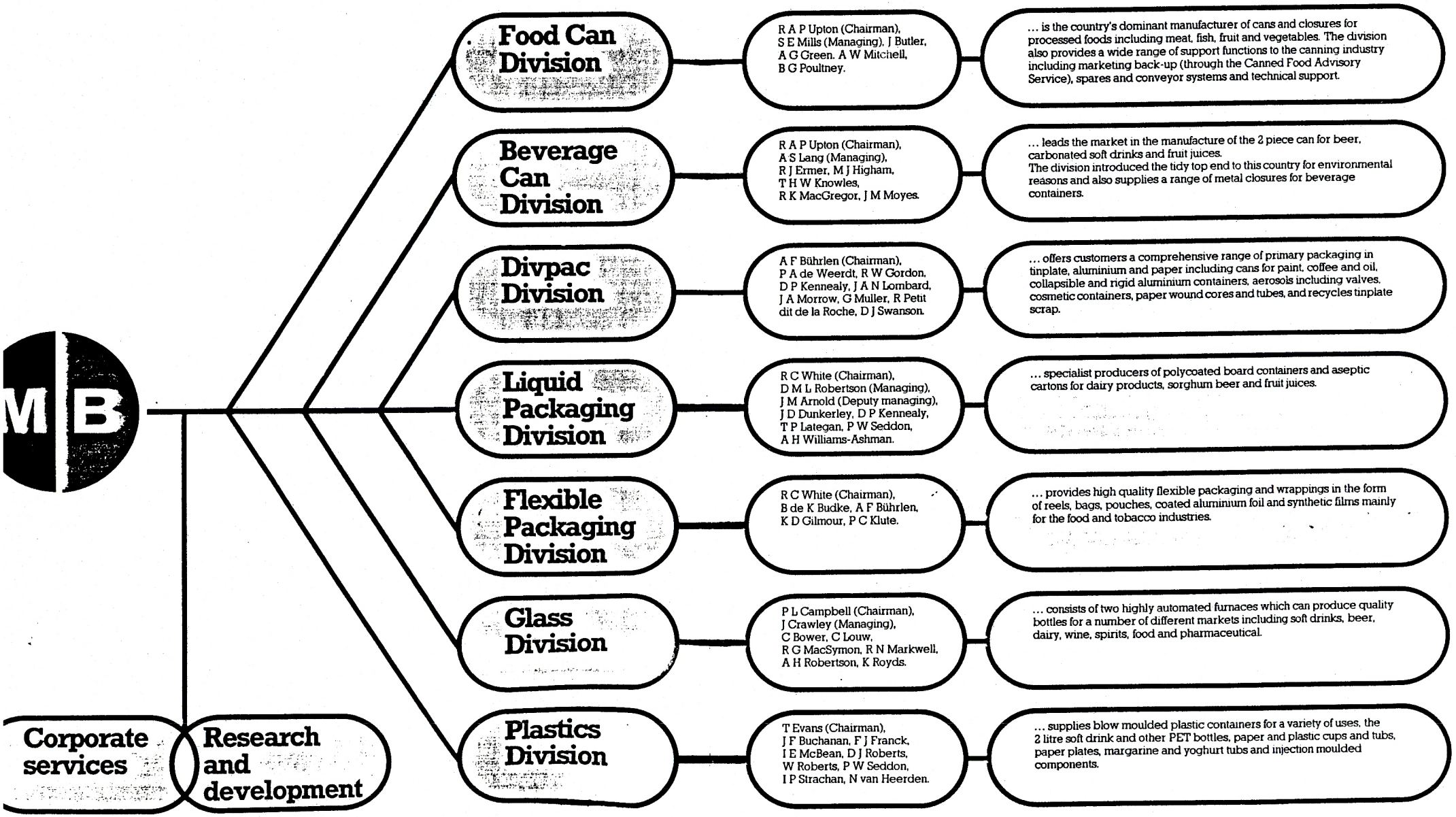
The Beverage Can Division leads the market in the manufacture of the two piece can for beer, carbonated soft drinks and fruit juices. The Division introduced the tidy top end[7] to this country

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7. Tidy top end refers to the aluminium tab found on top of beverage cans, which has a feature that is operational by means of a ring. Once the ring is pulled, one can consume the contents of the can.

Metal Box at a glance

FIGURE 1.2



SOURCE: METAL Box S.A. Ltd. 1986

for environmental reasons and also supplies a range of metal closures for beverage containers.

In order to fully appreciate the background of the said Company, it is imperative to take a bird's eye view of the objectives of the Company.

The following set of objectives reflect company policy over a wide spectrum of operations. These objectives should all contribute to the objective of the firm, viz., maximization of shareholders' wealth. It is interesting to note that the third objective reflects social responsibility.

The objectives of the Company are:

- [] achieve superior quality and service in all areas of endeavour and to maintain its position at the forefront of technological developments
- [] have available a full range of packaging services including scientific research, product development, technical facilities, marketing skills and quality assurance for the support of customers
- [] maintain a commitment to the community including the support and participation in a number of organisations which are striving to achieve a litter-free environment
- [] provide training and development at all levels so that employees can progress to the maximum of their individual capabilities
- [] provide a satisfactory long-term return for investors and

secure financial resources to meet the growth needs of the business

[] maintain growth in earnings per share which over a period of time should be at least equal to the annual inflation rate growth in gross domestic product

[] pay dividends which are covered approximately 2,5 times by earnings

[] limit the percentage of borrowings to shareholders' funds to 50% and limit total liabilities so that these do not exceed shareholders' funds

1.5.2 GENERAL

The purchasing function was defined from a Business Economics' point of view and is currently regarded as a management responsibility. Five criteria were identified in indicating the importance of the purchasing function. It was shown that Materials Management was not an organisational structure for the Purchasing function, but an umbrella organisational structure for all activities (including Purchasing) involved in the supply of materials to the enterprise.

1.5.3 THE TASK OF PURCHASING MANAGEMENT

Purchasing management comprises the planning, organisation, co-ordination, direction and control of all activities associated with the purchasing of materials, services and/or manufactured parts from an outside source, and aimed at maintaining and

increasing the profitability and efficiency of the enterprise[8]. It must be remembered that purchasing management is just one of the functions of corporate management and must be seen as an integral part of it. This aspect is discussed in Chapters 2 to 5.

1.5.4 PURCHASING ACTIVITIES

The practices and techniques of purchasing with reference to Materials Management are viz., quality determination, supplier selection, pricing, negotiation, purchase timing, inventory control and international purchasing, although directly linked, are dealt with separately in Chapters 6 to 12. Supplier selection is the key activity of the purchasing function, and must be selected in a manner that will ensure that the enterprise secures the best value from its supply of goods and services. Value is a combination of price, quality and service over a certain period in time. Determination of the right quantity, also has a bearing both on the price paid for goods and services and on the purchase timing. Therefore, all the activities involved in the purchasing function are interdependent and cannot be performed independently. Purchase planning, one of the four elements of Purchasing Management, will be discussed in the next chapter, inter alia, the necessity for purchase planning, the hierarchy of purchasing planning in the decision-making process, planning purchasing policy and strategy, planning procedure in purchasing policy and strategy, and finally, aids to purchase planning.

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8. See p. 1, 4, 28, 75.

CHAPTER 2

PLANNING AND FORECASTING

2.1 INTRODUCTION

Marx & van Aswegen (1984: 60) demonstrated that planning is a management task aimed at determining the future objectives of the enterprise, the means and activities involved, the problems likely to be encountered, and the most suitable plan of action for achieving these predetermined objectives.

Planning precedes all other elements of Purchasing and Materials Management. Since planning is related to the future effect of current decisions, it is also the single element of management that can bridge the gap between the present position of the enterprise and the positioning which management would like to see it in the future. Although purchasing planning is primarily concerned with achieving the objectives of the purchasing function, it also plays a role in realizing the goals of the enterprise as a whole such as an increase in market share and social responsibility.[1] These objectives must be revised and adjusted continually, because the enterprise (and the environment in which it functions) is dynamic.

Farmer & Taylor (1975: 5) pointed out that planning for the enterprise can be regarded as the planning of all business resources in order to realise clearly defined objectives within a

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1. See p. 1, 2.

predetermined period. It is obvious that purchase planning, which basically amounts to planning sources of supply, cannot take place independently of business planning. Purchase planning is a sub-division of planning that cannot be neglected in business planning, because of the importance of purchased goods and services to the welfare of the enterprise.

2.2 NECESSITY OF PURCHASE PLANNING[2]

Corey (1978: 7) pointed out that the growing disparity worldwide between wage demands and the supply and productivity of labour, and increasing government interference for socio-economic reasons, have caused a great deal of uncertainty about the availability and prices of raw materials that have to be purchased.

Farmer & Taylor (1975: 23 - 32) generalised that the following 5 factors gave rise to the crisis in sources of supply and thus made purchasing planning even more essential:

2.2.1 FLUCTUATING EXCHANGE RATES

Since South Africa is dependent on foreign markets for purchasing certain capital goods and consumer goods, instability of foreign markets, and fluctuating exchange rates in particular, can make the purchasing of essential goods extremely risky unless there is effective planning. According to The Natal Mercury, Business Section (1987-11-13: 22), the First National Exchange Rate was $1,00 = 200 cents, whereas in December 1978 the exchange rate was R1,00 to $1,00 approximately.

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2. See p. 20, 22.

2.2.2 INFLATION

Since high inflation rates are characteristic of many industrial countries, buyers find it extremely difficult to function within fixed materials budgets. Therefore, planning which provides for price rises is essential. In South Africa, the inflation rate according to the Financial Mail (1987-11-13: 106) was 15.5% for September 1987.

2.2.3 SHORTAGES OF SEMI-MANUFACTURED GOODS

This factor gave rise to interruptions in production and also effected the ruin of many manufacturers, thus resulting in a worldwide shortage of partly manufactured goods such as castings.

2.2.4 THE ENERGY CRISIS

The prices of a large range of industrial and consumer goods are unstable and difficult to forecast because of the progressive rise in the prices of crude oil and other energy sources.

2.2.5 THE RUSH FOR COMMODITIES

There was a rush for commodities since 1973, as experienced by food and raw materials supply markets. Farmer & Taylor (1975: 25) showed that the Reuters commodity index in London doubled over a period of one year.

2.3 HIERARCHY OF PURCHASING PLANNING

2.3.1 INTRODUCTION

Pistorius (1975: 8) showed that purchasing planning is a decision-making process and, like management decisions, can be divided into 3 levels:

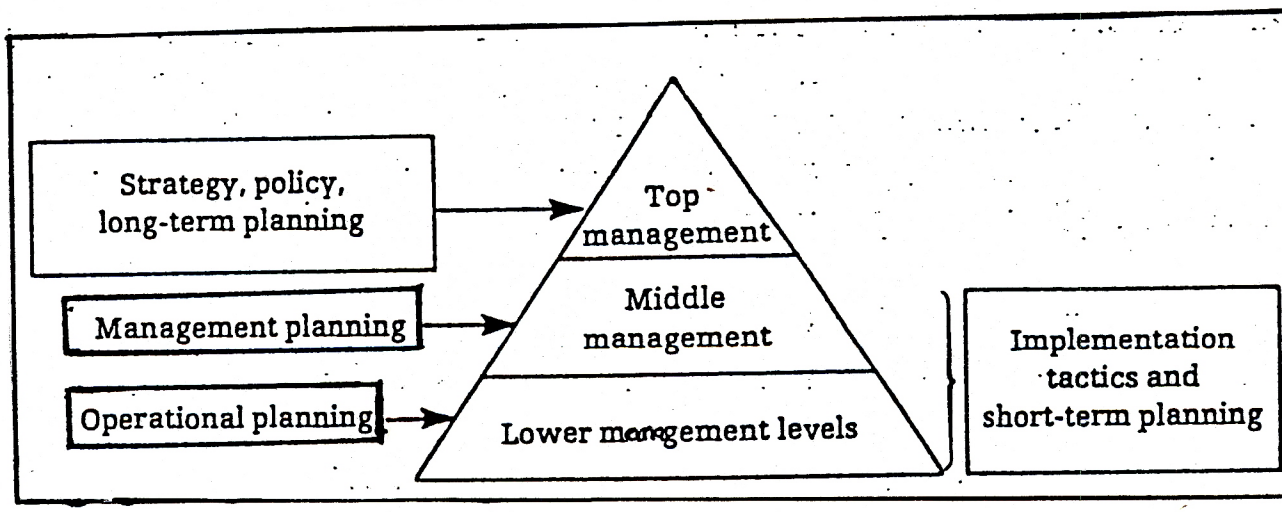
(a) strategic planning

(b) management planning

(c) operational planning

This relationship between these three levels can be seen in figure 2.1.

FIGURE 2.1



THE RELATIONSHIP BETWEEN PLANNING HIERARCHIES MANAGEMENT LEVELS AND THE TIME HORIZON OF PLANNING. (ADAPTED)

Source: Haimann & Scott (1974: 98)

2.3.2 STRATEGIC PLANNING

According to Corey (1978: 2) a strategy is a plan of action which involves allocating the resources of an enterprise in order to attain prescribed objectives, to make the enterprise more competitive and to utilize business opportunities while keeping the risk at an acceptable level.

Purchasing strategy is directed by applying the available resources in such a way that the objectives of the purchasing function and those of the enterprise are realised by making the best possible use of purchasing opportunities, maintaining the competitive position of the enterprise, ensuring the availability of materials and by keeping risks peculiar to the supply market at an acceptable level.[3]

2.3.3 MANAGEMENT PLANNING

Haimann & Scott (1974: 74) pointed out that the implementation of the strategy prescribed by top management is planning at management level. Middle management is responsible for setting specific objectives and developing plans in respect of all the main categories of purchasing activities, such as administrative planning, planning of the purchasing task itself, research planning and special project planning.

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3. See p. 17, 22.

Purchasing Management establishes objectives, and plans a suitable purchasing system for implementing the policy and strategy laid down by top management.

In Metal Box South Africa Limited, purchasing management resides with top management.

2.3.4 OPERATIONAL PLANNING

Van Rooyen & Hugo (1983: 34) indicated that strategy and management planning are processed in more concrete terms at the operational level (lower management level). Plans are drawn up in terms of budgets and time schedules, involving the demarcation, definition and grouping of activities in such a way that they can be performed logically and effectively.

Purchasing planning at the operational level includes determining inventory levels, planning purchasing sections for specific groups of commodities, compiling a purchasing budget and procedures for requisitioning and buying requirements, and developing criteria for measuring the effectiveness of individuals and sub-sections.

2.4 PLANNING PURCHASING POLICY AND STRATEGY

2.4.1 INTRODUCTION

Van Rooyen & Hugo (1983: 35) stated that the purchasing policy include aspects such as organizational structure[4], supplier

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4. See p. 34.

relations[5], ethical code for buyers[6], and behaviour towards other departments of the enterprise[7]. Purchasing strategy is a plan of action which must aim to achieve the goals of the purchasing function and relates to the application of the available resources of the enterprise in a manner that will enable it to take the best advantage of purchasing opportunities and to keep risks which are typical of the supplier market at an acceptable level.[8]

A purchasing policy and strategy must be developed in accordance with business objectives.

2.4.2 PLANNING PROCEDURE IN PURCHASING POLICY AND STRATEGY

Van Rooyen & Hugo (1983: 37) demonstrated that the aim and objectives[9] of the enterprise and other functional areas must be

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5. Supplier relationship is concerned with customer goodwill and future continuing relationship. For more information see Lee, Dobler & Burt (1984: 95). See also p. 27 & 99.
6. The buyer has ethical obligations to three groups of people, viz., employers, sellers and colleagues in the profession. For more information, see Lee, Dobler & Burt (1984: 483-486). See also p. 108.
7. See p. 57, 60, 75.
8. See p. 17, 20.
9. See p. 1.

the primary point of departure in the planning of purchasing policy and strategy. This ensures that all corporate functions are aimed at achieving its objectives.

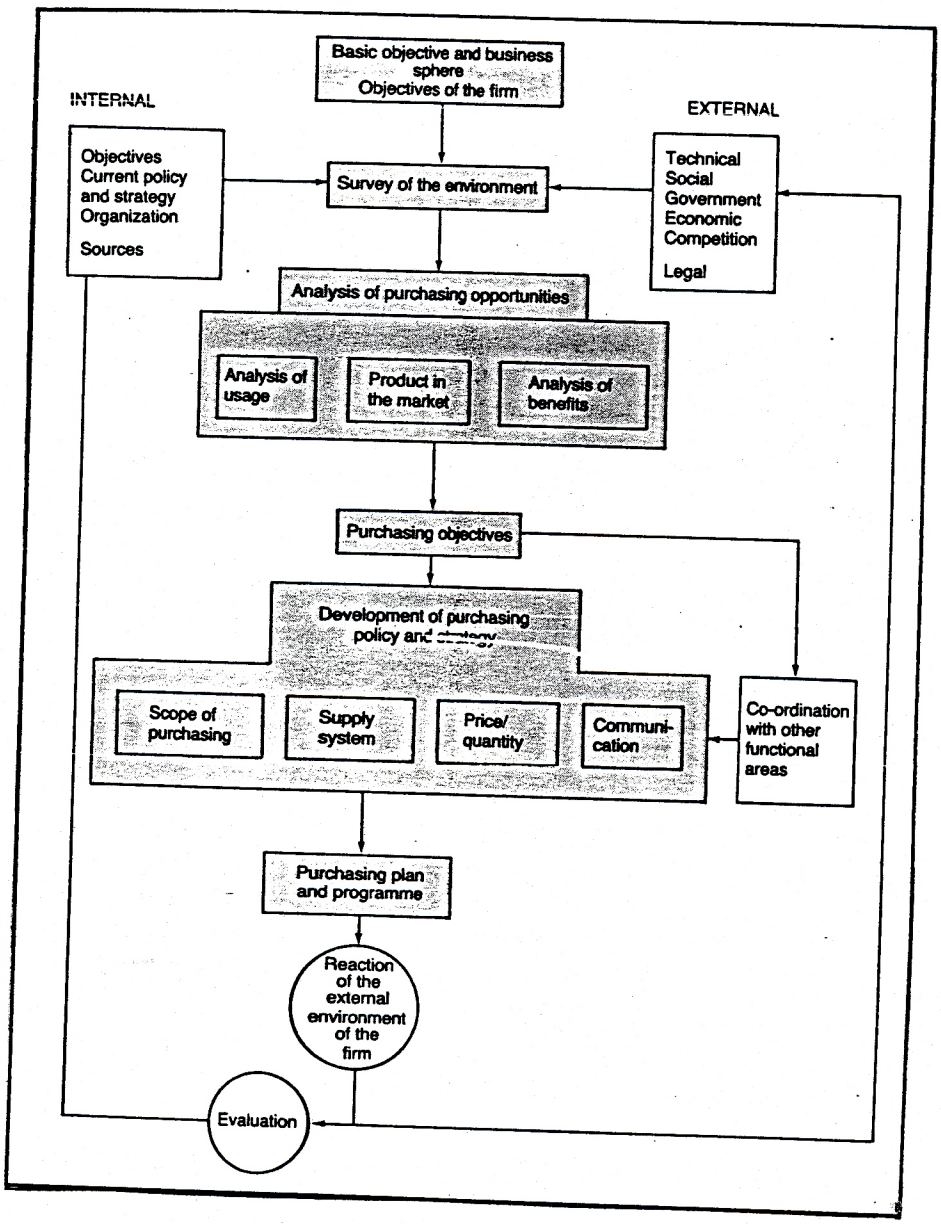
This objective is consistent with Metal Box.[10]

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10. Interviews held with J.M.V. de Gouveia, Production Manager of Divpac and Mr D. Mckeaveney, Plant Manager of Beverage Can Division on 02.09.1986 and 03.09.1986.

Figure 2.2 indicates the planning procedure for purchasing policy and strategy.

Figure 2.2



PLANNING PROCEDURE FOR PURCHASING POLICY AND STRATEGY

Source: Van Rooyen & Hugo (1983: 36)

Lee, Dobler & Burt (1984: 452 - 454) demonstrated that the following steps should be undertaken in developing a purchasing policy and strategy:

(a) In order to develop an effective plan, the first step is to gather information about the problem. Environmental factors must be taken into account in the process of gathering information on the purchasing environment. Factors such as technological development, government interference, economic fluctuations and the activities of competitors have influence when developing a policy and strategy. The internal environment, existing policy, strategy and objective of the purchasing function must be researched in the light of the future task of the purchasing function. Another factor that must be taken into account is whether the existing organisational structure is still effective enough to take advantage of future purchasing situations and opportunities. Existing resources such as management efficiency, financial resources and the available purchasing expertise are important in order to carry out the purchasing function in the projected purchasing environment.

(b) The second step is to identify, analyse and evaluate purchasing opportunities on the basis of information gained through environmental research. Purchasing opportunities must be considered by way of specific needs of the enterprise, alternative products available in different

markets and the total benefits package by a specific purchasing opportunity.

(c) The third step is to determine purchasing objectives which must be developed after the information gained from the two preceding steps has been carefully analysed, thus ensuring that the objectives are realistic and attainable. The objectives of the purchasing function according to Lee, Dobler & Burt (1984: 15 - 16), may be summarized as follows:

- [] Uninterrupted supply of raw materials to the firm.
- [] Maintenance of adequate quality standards.
- [] Maintenance of the competitive position of the enterprise.
- [] Maintenance of sound external and internal relations.
- [] Training and developing competent personnel.
- [] Keeping investment losses to a practical minimum.

(d) The fourth step is to achieve set objectives when the purchasing policy and strategy is developed. The choice of the most suitable policy and strategy is complex when targets differ widely. Objectives are attainable by means of a number of alternative policies and strategies. The choice between these alternatives depends on the specific combination of cost, the time involved and the resources required for their implementation.

Corey (1978: 24) pointed out that the most suitable purchasing policy and strategy will combine the following four elements:

(1) Purchasing Scope

The scope of purchasing is concerned with what must be purchased and the extent of reciprocal business agreement entered into with the supplier. Factors to be considered are the nature of contracts, quantity limitations and time periods involved.

(2) Supply System

This involves selection of the number and kinds of suppliers, evaluating individual suppliers in the total system. Decision-making on the supplier system involves aspects such as competition in specific raw materials markets, relations with suppliers,[11] supplier development,[12] direct buying from supplier sources and supplier performance-evaluation.[13]

(3) Price/Quantity Combination

Price/quantity combination is concerned with price determination depending on external factors such as market fluctuations and by requirements of internal departments such as production and maintenance. The purchasing manager,

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11. See p. 22, 99.

12. See p. 105.

13. See p. 114.

therefore, depends on the support of the internal departments of the enterprise for information to carry out such planning and also on his own research concerning cost/price analyses,[14] economic tendencies, profit-margin analyses[15] and risk estimates.

(4) Purchasing Communication

Purchasing communication is important because it permits the flow of information between the purchasing department and the user departments of the enterprise. This is critically important for the development of the purchasing policy and strategy.

(e) The fifth step is the formulation of a purchasing plan and programme. The purchasing plan and programme are actually the strategy in its written form, indicating how the various elements of the purchasing strategy are mobilised - complete with a time-scale for implementation. It makes provision for the purchasing department's objectives to be pursued in a manner that assures the enterprise of a strategic advantage over competitors. If the plan and programme are based on an effective policy and strategy, the purchasing department's

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14. See p. 127, 140.

15. See p. 1, 4, 15, 75.

objectives will be realised optimally. Due to the changes occurring in the corporate environment and more specifically in the supplier system itself, and because of the way in which the supplier system responds to specific demands, changes in the purchasing policy and strategy will have to be made continually.

2.5 AIDS TO PURCHASING PLANNING

2.5.1 PURCHASING BUDGET

The purchasing budget has two components:

2.5.1.1 THE ADMINISTRATIVE BUDGET

The administrative budget sets quantitative objectives for purchasing personnel and other administrative cost items such as travel expenses and allowances, telephone and stationery requirements. This budget is not the chief component, but forms part of the planning of resources essential to the performance of the purchasing function.

2.5.1.2 THE MATERIALS BUDGET

The materials budget is the most important and makes provision for the estimated quantities of raw materials required by the production department in accordance with the sales prognosis of the marketing department. The materials budget gives particulars of the physical quantities of the different products to be purchased, the stock levels to be maintained, the prices to be paid and the purchase timing.

Divpac Division uses materials budget as an aid to purchase planning. The budget is drawn up, based on a survey conducted by the sales people, and history of past sales.

The combination of these two data indicates the market growth. Beverage Can Division draws up its budget in May in order to meet its requirements at the beginning of the financial year in October, until the end of September of the following year. This budget is reviewed from October 1 continually at the beginning of each month working for the next twelve months in succession. The forecasting data is based on each month's sales figures. In both the Divisions, the variance[16] is approximately 3%.[17] This practice is consistent with the theory of Purchasing and Materials Management because a variance below 5% is considered to be normal by Metal Box management. There is no evidence indicated in current literature.

2.5.2 PURCHASING RESEARCH

Purchasing research is the most important aid to purchasing management. It proves its value in the first step of planning, which is information gathering. Purchasing research is carried out to obtain information on materials and products to be

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16. Variance is the difference between forecasted and actual data.

17. Interviews held with Mr J.M.V. de Gouveia, Production Manager of Divpac Division, and with Mr D. McKeaveney, Plant Manager of Beverage Can Division, held on 10.09.1986 and 03.09.1986 respectively.

purchased, on price tendencies, on trends in the general economy, on the supply market, on the purchasing system itself, and on special projects undertaken by the enterprise. The more dynamic the corporate environment in which the purchasing function operates, the greater will be the demands made on purchasing research to provide purchasing management with reliable and up-to-date information.

2.5.3 NETWORK TECHNIQUES[18]

Programme Evaluation and Review Technique (PERT) and Critical Path Method (CPM) are the most important network techniques used by purchasing management. Both techniques are basically scheduling techniques that arrange the various activities required to complete a specific task in a logical sequence together with a time schedule for each activity. The main advantage of these techniques is that they indicate which series of activities cannot be delayed without delaying the completion date of the project. The use of network techniques enables the purchasing manager to schedule exactly when orders must be placed and to predetermine the date on which material must be available on site.

EVALUATION

In Metal Box South Africa Limited, purchasing management resides with top management. Top management plans a suitable purchasing system for implementing purchasing policy and strategy. The

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18. For more information on network techniques, see Lee, Dobler & Burt (1984, p. 462 - 467).

Divpac Division uses materials budget as an aid to purchase planning. This budget is based on a survey conducted by the sales people, and history of past sales. The combination of these two data indicates the market growth. The Beverage Can Division uses materials budget based on each month's sales figures. In this manner, Metal Box endeavours to use effective planning in order to lower unit costs and improve the input/output ratio.

SUMMARY

The function of the planning task of purchasing and materials management is to ensure that all members of a group know what they will be expected to accomplish in order to reach the group's goal. Purchase planning became even more essential due to the growing disparity worldwide between wage demands, supply and productivity of labour, and increasing government interference for socio-economic reasons, thus causing uncertainty about availability and prices of raw materials and materials that have to be purchased. Purchasing planning can be arranged in a hierarchy, viz., strategic, management and operational planning. A purchasing policy and strategy must be developed in accordance with business objectives. Purchasing policy include aspects such as supplier relationships, ethical code for buyers, and behaviour towards other departments of the enterprise. Purchasing strategy determines the purpose and the kind of operation to achieve the goals of the purchasing function and of the enterprise as a whole. Planning procedures outline the chronological sequences of required actions.

It was found that Metal Box uses materials budget as an aid to purchase planning. The Divpac Division draws up its budget based on a survey conducted by the sales people, and history of past sales. The combination of these two data indicates the market growth. The Beverage Can Division draws up its budget based on each month's sales figures.

Finally, the purchasing budget, purchasing research and network techniques (PERT and CPM) are aids to purchase planning.

It will be shown, in the next chapter, how the purchasing department is designed to fit in the total organisational structure of the enterprise in order to accomplish the goals of the purchasing function and that of the enterprise as a whole.

CHAPTER 3

ORGANISATION

3.1 INTRODUCTION

According to Koontz, O'Donnell & Weihrich (1982: 182), organisation may be defined as the grouping of activities to ensure that authority and responsibility are clearly demarcated, managerial ability is effectively utilized and that the enterprise can function as a co-ordinated entity.

Fearon & Hamilton (1980: 47) demonstrated that six concepts are central to the organising function:

(a) Authority - the right of an individual to make decisions which will be carried out by others.

(b) Responsibility - the individual is obliged to perform tasks assigned to him.

(c) Accountability - the individual is obliged to keep records on job performance and inform his superior of these results.

(d) Organisational Structure[1] - Top management determines the relationships in terms of authority and responsibility among individuals in the organisation.

(e) Organisation Chart - indicates the positions held by individuals, indicating lines of communication in the organisation.

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1. See p. 21.

(f) Formal versus informal organisational structure - formal organisational structure is determined by top management whereas informal organisational structure arises within a group.

It seems logical to state that the Purchasing function must be organised in such a way as to comply with the above-mentioned requisites in order to attain the objectives of the enterprise,[2] i.e. to maximize the value of the firm. Metal Box does comply with the above-mentioned requisites.[3]

Purchasing and Materials Management play an important role in the quest for optimum efficiency in that it must be able to provide goods and/or services at the lowest cost per unit, thus obtaining the most favourable input/output ratio.

The organisation of the purchasing function is concerned with the following four aspects:

(a) Internal organisation

(b) The degree of centralisation and decentralisation of purchasing

(c) The place of purchasing in the corporate organisational structure

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2. See p. 1.

3. Interview held with Mr L.A. Hass, Plant Manager of Metal Box, Divpac Division, on 09.09.1986.

(d) Materials Management and Logistics Management[4]

3.2 INTERNAL ORGANISATION

From general knowledge, the internal organisational structure of almost every enterprise differs from that of others as it must fulfil its own particular needs and demands.

> In my opinion, I feel that no matter what structure is adopted, authority and responsibility must be clearly demarcated because the leader has the power to act in order to carry out his task, to give instructions to other people and to demand their obedience, so that specific goals may be achieved, whereas responsibility rests on a person to carry out the task allocated to him to the best of his ability, to use the authority assigned to him in the most efficient manner and to answer to the person from whom he received his instructions.

The type of work to be done in the purchasing department determines the method according to which the purchasing department is internally organised. Lee, Dobler & Burt (1984: 522) distinguish 5 different categories of work to be done:

3.2.1 ADMINISTRATIVE

This includes the administration of the purchasing department and all other administrative activities necessary for co-ordination with other departments of the enterprise.

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4. See p. 51.

3.2.2 BUYING

This involves all duties and supportive activities required for effective purchasing.

3.2.3 FOLLOWING UP AND EXPEDITING

This includes those activities that ensure that purchased goods are received on time and that sound relations are maintained with suppliers.

3.2.4 CLERICAL WORK

This involves the department's paperwork such as placing orders, drawing up indices of suppliers, catalogues, reports on commodities and prices.

3.2.5 SPECIAL TASKS

Aspects such as special value-analysis programmes, cost analyses and economic studies, special seller investigations and special cost studies, require specialised knowledge.

Internal specialisation in the purchasing department is possible in large enterprises with sufficient purchasing personnel. In this type of organisational structure, specialists are responsible for each of the following activities according to Leenders et al (1980: 42):

(a) establishment of policies, procedures and control

(b) recruiting and training of personnel

(c) auditing purchasing performance

The following are examples of an organisational structure for the purchasing department: Figure 3.1 shows Metal Box, Divpac Division,[5] Plant organisational structure. In Figure 3.1, the purchasing manager is called the supplies manager. Figure 3.2 shows Metal Box, Divpac Division, organisational structure for the buying department at the Durban Plant. Figure 3.3 shows Metal Box, Beverage Can Division,[6] organisational structure. Metal Box, Divpac Division's Purchasing Department is a line function whereas Beverage Can Division's Purchasing Department is a staff function.[7]

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5. Interview held with Mr L.A. Hass, Plant Manager of Metal Box, Divpac Division, on 09.09.1986. He considers his Plant to be a large enterprise with 1 150 employees.

6. Interview held with Mr D. McKeaveney, Plant Manger of Metal Box, Beverage Can Division, on 04.09.1986. He considers his Plant to be a medium-sized enterprise with 226 employees.

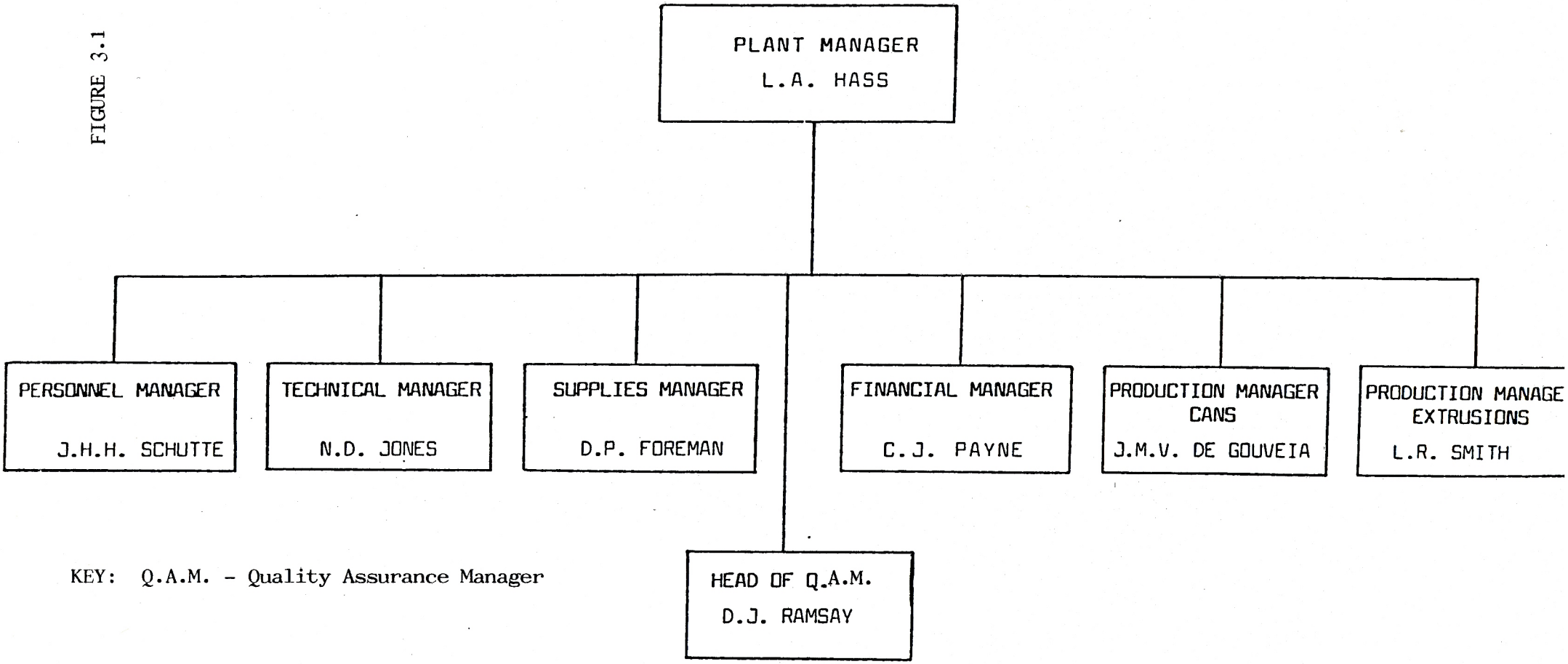
7. In a line organisation, each line official is solely in charge of his division whereas a staff official gives advice only to line officials but does not issue instructions. (Marx & van Aswegen 1984 : 69). See also p. 47.

METAL BOX SOUTH AFRICA LIMITED

DIVPAC DIVISION

DURBAN PLANT ORGANISATION

FIGURE 3.1



KEY: Q.A.M. - Quality Assurance Manager

SOURCE: METAL BOX S.A. LTD.

OCTOBER 1986

METAL BOX SOUTH AFRICA LIMITED

DIVPAC DIVISION

DURBAN PLANT

ORGANISATION CHART - BUYING DEPARTMENT

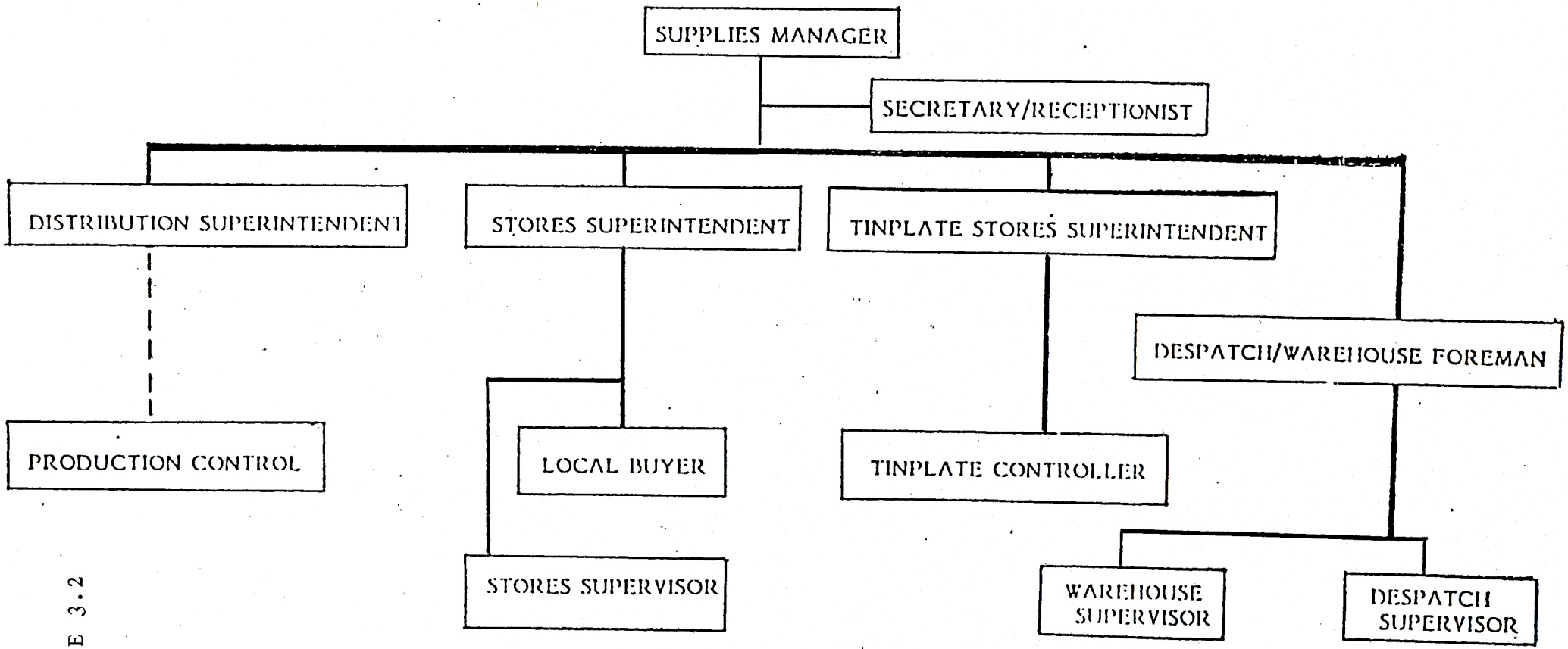
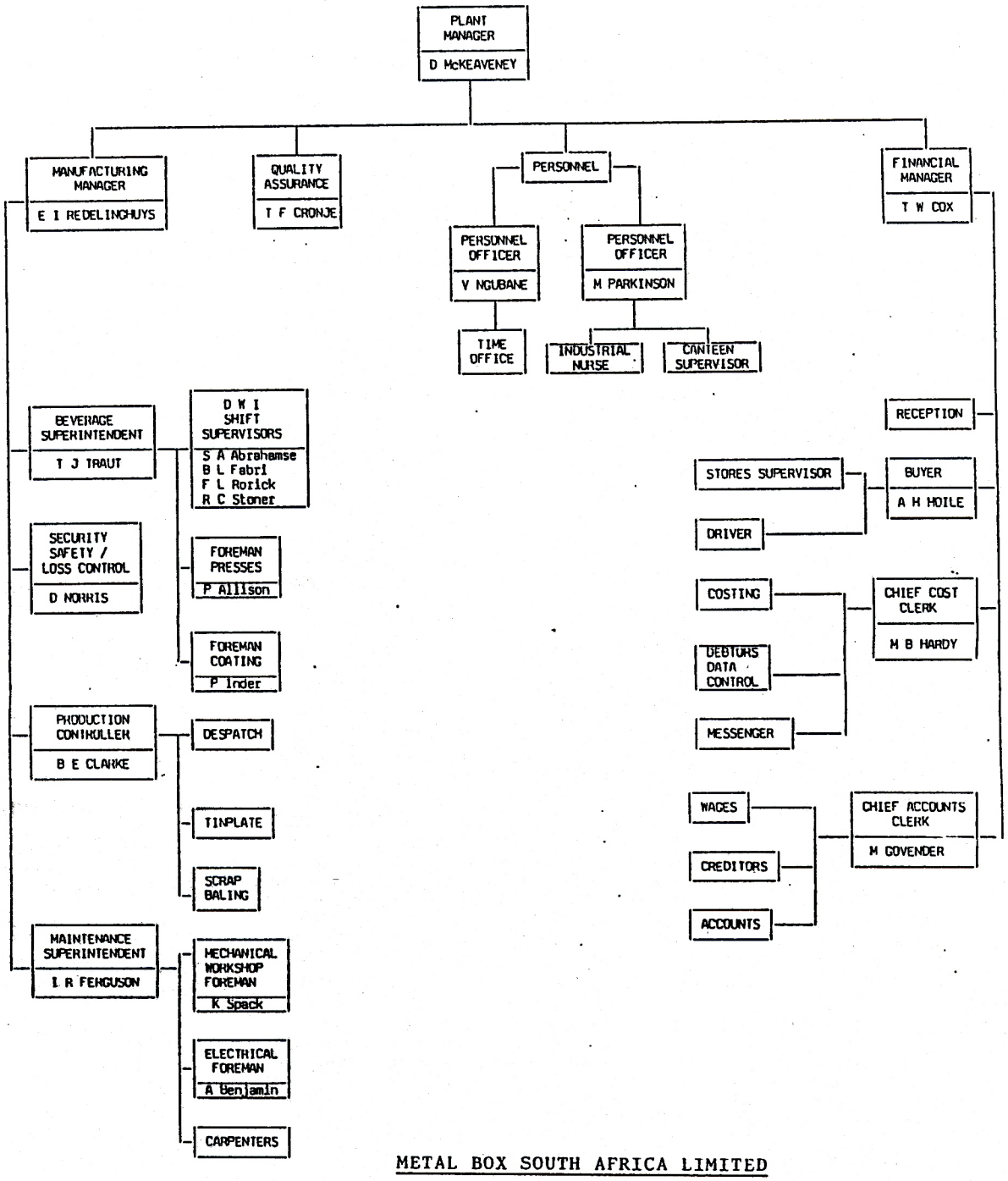


FIGURE 3.2

SOURCE: METAL BOX S.A. LTD. OCTOBER 1986

FIGURE 3.3



METAL BOX SOUTH AFRICA LIMITED

BEVERAGE CAN DIVISION

DURBAN PLANT ORGANISATION

SOURCE: METAL BOX S.A. LTD. OCTOBER 1986

UNIVERSITY OF DURBAN

3.3 CENTRALISATION AND DECENTRALISATION OF PURCHASING

3.3.1 INTRODUCTION

The problem of centralisation or decentralisation is more pertinent to enterprises having more than one production plant, as is the situation of Metal Box.[8] Many factors have to be considered, the most important being:

(a) The geographical location of the plants.

(b) The nature of the production process, e.g. whether or not the plants use the same raw materials or semi-finished goods.

(c) The organisation of, and purchasing procedures related to the buying markets, e.g. centralisation will be the more efficient procedure if the goods have been graded and standardised and buying contracts may have been entered into.

3.3.2 CENTRALISATION

Aljian (1982: 1 - 20) indicated that one person is responsible for the entire purchasing function of the enterprise. He is held accountable to top management for all spheres of the purchasing function.

3.3.2.1 ADVANTAGES OF CENTRALISED PURCHASING

(a) The benefits of bulk-buying can be utilised more effectively.

(b) Materials provision to the enterprise can be co-ordinated.

(c) Buyers have the opportunity to specialise.

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8. See p. 69.

(d) Purchasing procedures and uniform standards, such as quality of materials, can be standardised for the enterprise as a whole.

(e) It presents better opportunities for purchasing research, cost analysis and the development of new suppliers.

3.3.2.2 DISADVANTAGES OF CENTRALISED PURCHASING

(a) It is generally found that markets are unstable for industries using natural products as raw materials, such as wool, tobacco, and harvests. These raw materials cause the prices of such products to fluctuate. These products are purchased by experts who are authorities regarding particular local and decentralised markets.

(b) Technically oriented enterprises spend large amounts of money and, therefore, the specialised knowledge of a specific researcher is necessary for the purchase of equipment or raw materials.

This applies to Metal Box because the engineering people are used to purchase high technology equipment and technologists are used to purchase raw materials.

3.3.3 DECENTRALISATION OF PURCHASING

Heinritz & Farrell (1981: 76) said that decentralised purchasing may be defined as purchasing by separate purchasing departments for each plant, with a considerable degree of autonomy for each of the purchasing departments.

In multiplant organisations, decentralisation can be very

efficient. The following are the most important conditions for decentralisation:

(a) The different plants must be completely separate and independent units, and their production processes unrelated, such as the textile industry: spinning, weaving and finishing.

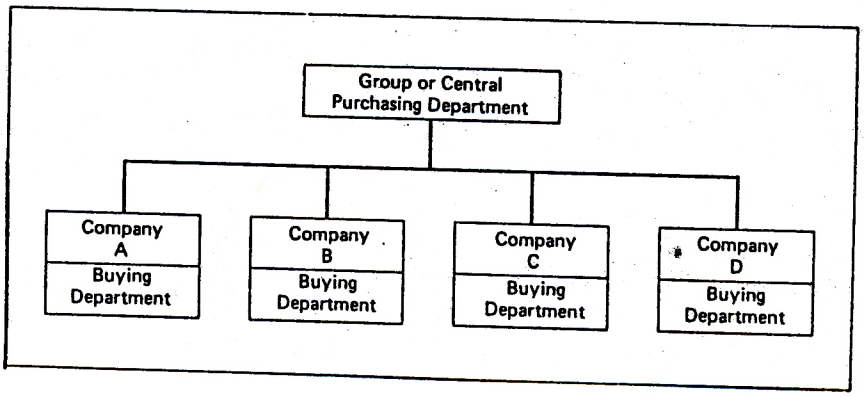
(b) The plants, or some of them, must have reached optimum production capacity. Thus the production unit will have attained a capacity where it will be more efficient to organise and operate it as an independent entity.

(c) The site of the production unit must be in the vicinity of the sources of the unit's requirements, e.g., a textile spinning works should be situated in a cotton-producing region.

3.3.4 THE MIXED SYSTEM

Figure 3.4 depicts a centralised/decentralised structure - a mixed system:

Figure 3.4



A "CENTRALISED/DECENTRALISED" STRUCTURE

Source: Baily & Farmer (1977: 16)

Heinritz & Farrell (1981: 79 - 80) indicated that due to the advantages of centralisation and increasing interest in decentralisation as a result of the rise and growth of multiplant organisations, many enterprises have adopted a partially-centralised and partially-decentralised system, irrespective of the fact that their constituent plants rank as independent units. Some of the features of a mixed system are:

(a) The prescription of uniform forms and procedures in a purchasing manual.

(b) Central purchasing department to exercise continuous control over the purchases of the branch purchasing departments. Periodically the various branches submit to headquarters reports on the purchases of the central purchasing department, which in turn, collates them and returns them to the branch general summaries together with its recommendations and details of goods that will have to be bought in the near future. The central purchasing department performs the function of gathering information, correlating it, and making the details available to the decentralised purchasing department.

(c) The branch purchasing departments must first secure the approval of the central purchasing department for purchases above a stipulated amount. Generally, such approval would cover expensive plant, equipment etc., or the conclusion of contracts, involving large capital sums.

(d) Goods used by all the production units are purchased by the central purchasing department, for example, maintenance material, office requirements, packing material etc.

An important advantage of the "mixed" system is that it makes possible the appointment of commodity specialists and market research specialists to the central purchasing department to advise the various branch offices, whereas separate appointments to each of the branches would not be warranted.

Metal Box, Durban, Divpac and Beverage Can Divisions decentralise their purchasing function only for non-critical items, inter alia, such as maintenance materials and consumables. Metal Box, Johannesburg (Head Office) practices centralised purchasing for critical components, inter alia, such as aluminium, tinplate and inks and coatings. The main reason for Metal Box (Head Office) to practice centralised purchasing is because of the limited number of suppliers. Iscor is the only supplier of tinplate and Hulletts-Aluminium is the only supplier of aluminium. Decentralised purchasing of non-critical items is practised because non-critical items are considered to be of minor importance. Metal Box South Africa is the second largest buyer of tinplate and aluminium in the country, the largest being the South African Railways.[9]

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9. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia, on 04.09.1986 and 01.09.1986 respectively.

3.4 THE PLACE OF THE PURCHASING DEPARTMENT IN THE ORGANISATIONAL STRUCTURE OF THE ENTERPRISE

Heinritz & Farrell (1981: 74) pointed that most centralised purchasing departments report directly to the general manager, chief executives or vice-president of the enterprise. There are no guidelines that can be provided to indicate the place of the purchasing function in the organisational structure of all enterprises. The purchasing function can be either a line or a staff function.[10]

The purchasing department of Divpac Division is a line function, whereas the purchasing department of the Beverage Can Division is a staff function. The reason for this difference is because of the following:

(i) different technologies are involved in both the Divisions - the production process is slow in the Divpac Division whereas the production process is relatively fast in the Beverage Can Division.

(ii) each Division is responsible for the bottom line, i.e. profit.

(iii) the executive committee decides whether the purchasing function should be a line or staff function.[11]

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10. See p. 38.

11. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia, on 04.09.1986 and 01.09.1986 respectively.

The place of the purchasing department in the organisational structure of the enterprise is determined by 3 factors, according to Lee, Dobler & Burt (1984: 520):[12]

3.4.1 TOTAL MONEY VALUE OF PURCHASES

Purchasing management would probably report directly to top management[13] if an enterprise spends a large amount of money on materials, thus the purchasing function could contribute significantly to profits.

In Metal Box, the purchasing manager of Divpac Division reports directly to top management, whereas the buyer of the Beverage Can Division reports to the financial manager, who in turn reports to top management.[14]

3.4.2 PERCENTAGE OF PRODUCT COST REPRESENTED BY PURCHASED MATERIALS

The higher the purchased value of the final products, the more important is the purchasing function to the enterprise.

In Metal Box, the Divpac spends 35% of its resources on materials and 45% on labour, whereas the Beverage Can

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12. See p. 56.

13. Top management consists of a controlling body such as the board of directors, the chief executive such as the managing director or general manager, which may exist at that level. (Marx & van Aswegen 1984 : 58)

14. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia, on 04.09.1986 and 11.09.1986 respectively.

Division spends 55% of its resources on materials and 25% on labour. The reason for this difference is because of the of the technology and equipment used in the manufacturing process. The above-mentioned percentage is considered to be relatively normal when compared to other related industries.[15]

3.4.3 TYPES OF MATERIAL PURCHASED

A wide range of materials increases the potential for cost reduction and lower material costs. Control over material costs is essential, and requires the services of a top-notch purchasing department operating at the highest management level.

> Metal Box's head office in Johannesburg purchases major critical items such as tinplate from ISCOR, aluminium from Hulletts- Aluminium, inks and coatings for AECI, Plascon-Evans, Coates and Inmont. Divpac and Beverage Can Divisions purchase non-critical items such as consumables and maintenance materials.[15]

3.4.4 AVAILABILITY OF MATERIALS

Are major materials used by the firm readily available in a competitive market? If there are shortages and price instability, analytical purchasing professionals are required.

Metal Box does not experience shortages of raw materials because its suppliers are large producers, e.g. ISCOR is a government

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15. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 04.09.1986 and 11.09.1986 respectively.

concern and is the only producer of steel used for tinplate, in the country. Hulletts Aluminium is the only producer of aluminium in the country.[16]

3.5 MATERIALS MANAGEMENT AND LOGISTICS MANAGEMENT

3.5.1 MATERIALS MANAGEMENT

Lee, Dobler & Burt (1984: 27) define materials management as to include primary responsibilities of the purchasing department's major procurement activities, including production control and scheduling, materials handling, warehousing, traffic[17], surplus and salvage.

Materials management attempts to solve all problems associated with the flow and provision of materials from the enterprise's view point.

As pointed out in Chapter 1, Metal Box's organisation structure is of such nature that its purchasing department, in absence of a formal materials management, performs all the practices and techniques usually performed by the latter.

3.5.2 LOGISTICS MANAGEMENT

According to Bowersox (1978: 3) modern logistics can be defined as "the process of strategically managing the movement and storage of materials, parts, and finished inventory from suppliers, between enterprise facilities, and to customers."

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16. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 04.09.1986 and 11.09.1986 respectively.

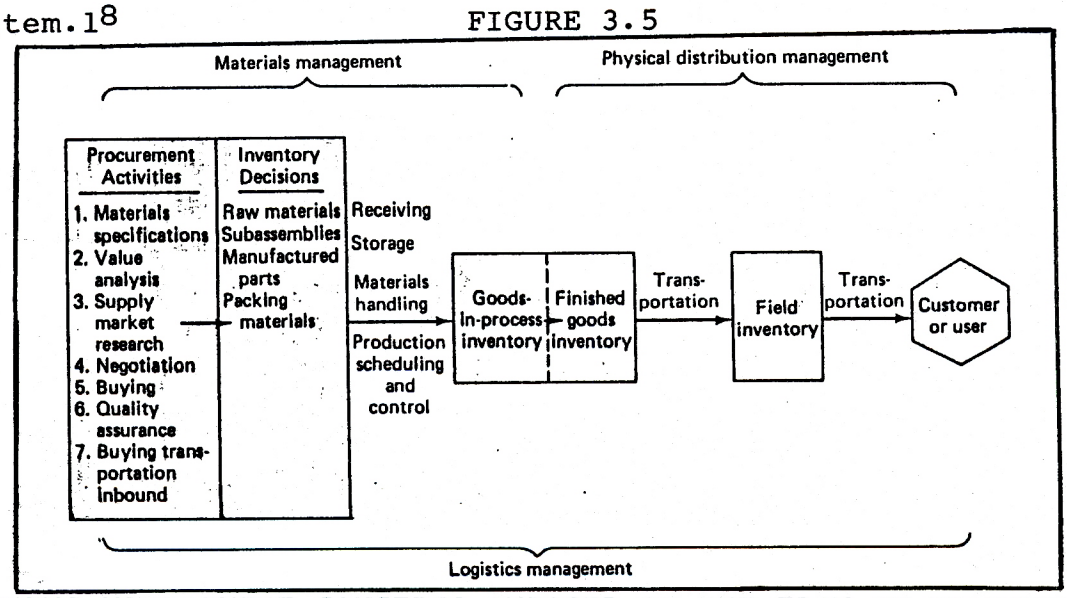
17. Traffic refers to transport, especially inbound transport.

Logistical performance provides time and place utility because such utility represents an important aspect of business operations.

Logistics management seeks to minimize total costs from the receipt of raw materials to the final delivery of finished goods to clients.

Figure 3.5 is an illustration of logistics management (materials management and physical distribution management) showing the flow of materials and related activities in a firm's materials system.[18]

FIGURE 3.5



SYSTEMS MANAGEMENT CONCEPTS IMPOSED ON THE FLOW OF MATERIALS AND RELATED ACTIVITIES IN A FIRM'S SYSTEM.

Source: Lee, Dobler & Burt (1984: 33)

In Metal Box, physical distribution management is also performed

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18. See p. 36.

by the Purchasing Department.[19]

EVALUATION

Since Metal Box is the second largest buyer of tinplate and aluminium, centralised purchasing proves to be the correct procedure in order to obtain the best price, quality and service for the large volume of raw materials purchased. Metal Box, Durban - both Divpac and Beverage Can Divisions practice decentralised purchasing only for non-critical items, inter alia, such as maintenance materials and consumables. The non-critical items are considered to be of relatively less importance than critical items. Metal Box, Johannesburg (Head Office) practises centralised purchasing for critical components, inter alia, such as aluminium, tinplate, inks and coatings. The Purchasing Manager of Divpac Division reports directly to top management, whereas the buyer of the Beverage Can Division reports to the Financial Manager, who in turn reports to top management. Since Metal Box is a technically oriented enterprise, they use skilful buyers in purchasing equipment and raw materials, viz., engineers are used to purchase high technology equipment and technologists are used to purchase raw materials. By following this practice of effective organisation, Metal Box ensures that Purchasing and Materials Management plays an important role in its quest for optimum efficiency, thereby

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19. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 04.09.1986 and 11.09.1986 respectively.

achieving the most favourable input/output ratio.

SUMMARY

The purchasing department must be organised to integrate effectively into the enterprise as a whole in order to ensure that authority and responsibility are clearly demarcated, and managerial ability is effectively utilised. The organisation of the purchasing function is concerned with the internal organisation, the degree of centralisation/decentralisation or both, the place of purchasing in the corporate organisational structure and logistics management.

It was found that the purchasing department of Metal Box, Durban, viz., Divpac Division is a line function whereas the Beverage Can Division is a staff function. Both Divpac and Beverage Can Divisions practise decentralised purchasing for non-critical items. Metal Box, Johannesburg (Head Office) practises centralised purchasing for critical items. By following this practice, Metal Box ensures that Purchasing plays an important role in its quest for optimum efficiency in that it must be able to provide goods and/or services at the lowest cost per unit, obtaining the most favourable input/output ratio, thus achieving the objective of the firm, viz., increasing shareholders' wealth. Directing and co-ordination are discussed in the following chapter. The directing task of purchasing management is concerned with leadership, communication, motivation and morale. The co-ordination task of the purchasing function has continuing relationships with all the other departments of the enterprise,

inter alia, such as purchasing and engineering, purchasing and finance, as well as with the enterprise's suppliers.

CHAPTER 4

DIRECTING AND CO-ORDINATION

4.1 INTRODUCTION

Radel & Reynders (1980: 251) define directing as that element of the task of management comprising the stimulation, motivation and vitalisation of the enterprise as a whole so that all the individuals in the enterprise will perform their duties enthusiastically, in the right team spirit and will unanimously work towards the objectives of the enterprise. To understand the directing tasks of management, the following three major elements will be discussed because of its specific relevance to purchasing management: leadership, communication, motivation and morale.

4.2 DIRECTING

4.2.1 LEADERSHIP IN THE PURCHASING FUNCTION

Koontz, O'Donnell & Weihrich (1982: 423) define leadership as influence, the art or process of influencing people so that they will strive willingly and enthusiastically toward the achievement of organisational goals.

Koontz, O'Donnell & Weihrich (1982: 423) identify 3 major ingredients of leadership skills:

(a) the ability to comprehend that human beings have different motivating forces at different time and situations.

(b) the ability to inspire

(c) the ability to develop a climate conducive to responding to and arousing motivations.

The scope of leadership is linked to the various levels of management. Leadership as a feature of purchasing management depends on the level in the organisation structure at which the purchasing function is performed. If the purchasing function is performed at top management level, the purchasing manager must take critical decisions for the future and view the enterprise on an overall basis.

Flippo & Munsinger (1975: 323) stated that if the purchasing function is performed at middle or lower management levels, the purchasing manager will be responsible for executing policy and supervise those who do the actual purchasing. It was already stated that the Divpac Division purchasing function is a line function whereas the Beverage Can purchasing function is a staff function.[1]

4.2.2 COMMUNICATION

The leader uses communication as the medium for influencing his followers so as to make them prepared to move in the direction of a specific objective.

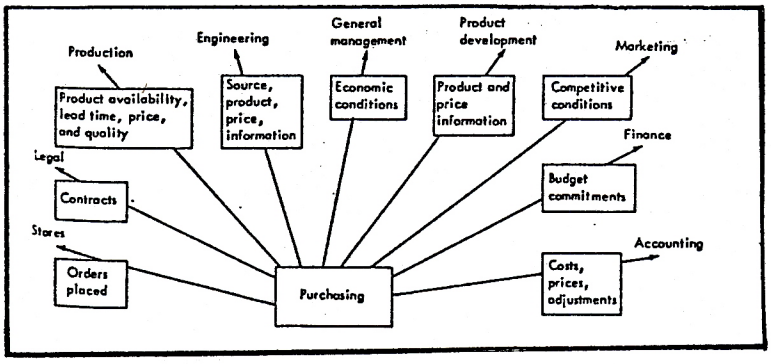
Leenders et al (1980: 90 - 94) identify information flow to and information flow from purchasing to the various functions of the enterprise. The flow of information to the purchasing function

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1. See p. 48.

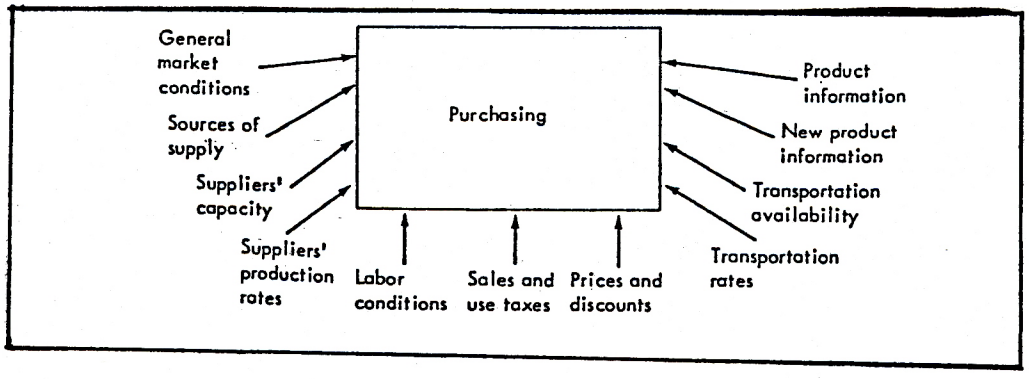
includes flow of materials, market information, technical information and financial information for effective purchasing decisions. The flow of information from the purchasing function to the various functions and divisions of the enterprise is shown in figures 4.1 and 4.2 below:[2]

Figure 4.1



INTERNAL INFORMATION FLOWS FROM PURCHASING

Figure 4.2



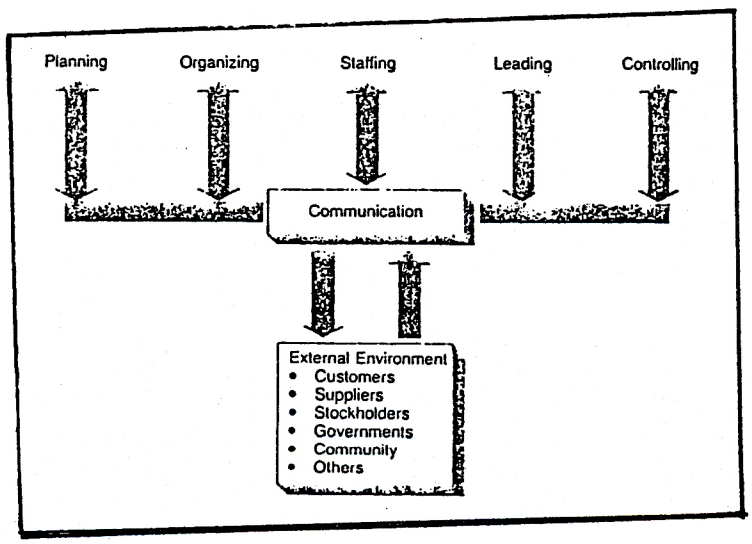
EXTERNAL INFORMATION FLOWS TO PURCHASING

Source: Leenders et al (1980: 92 - 93)

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2. See p. 22, 60, 75.

Organisational leaders have a major responsibility to set the right tone for effective communication, and every individual in the organisation shares this responsibility. Superiors must communicate with subordinates and vice-versa. Communication is a two-way process in which an individual is both an originator and a receiver of communication. Information flows vertically, horizontally and diagonally at various organisational levels. Figure 4.3 indicates the purpose and function of communication:



THE PURPOSE AND FUNCTION OF COMMUNICATION

Source: Koontz, O'Donnell & Weihrich (1982: 442)

The "Briefing System" is used in Metal Box as a means of communication. The managing director puts his message in writing and telexes the message to the various plant managers. The plant manager, in turn, calls all the line managers. The plant manager discusses the contents of the memorandum with the line managers. Thereafter, the plant manager hands out copies of the memorandum to the line managers. The line managers, in turn, hold meetings with

their supervisors/foremen and hand out copies of the memorandum. The supervisors/foremen hold meetings with their juniors and hand out copies of the memorandum. The purpose of the message in writing is to overcome any distortion of the message.[3]

4.2.3 MOTIVATION AND MORALE

According to Koontz, O'Donnell & Weihrich (1982: 397) motivation may be defined as a general term applying to the entire class of drives, desires, needs, wishes and similar forces. To say that managers motivate their subordinates is to say that they do those things which they hope will satisfy those drives and desires and induce the subordinates to act in a desired manner. Leadership style affects motivation and morale of the staff. Positive motivation promotes co-operation and unity amongst subordinates in striving towards the goals of the enterprise. Democratic leadership style and positive motivation is essential in the negotiating situation.

In Metal Box, management motivates employees by way of:[3]

(a) financial reward for recognition of good work

(b) financial reward for improvement in safety, i.e. safe working conditions

(c) promotion

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3. Interviews held with Mr J.M.V. de Gouveia, Production Manager of Divpac Division, and Mr D. McKeaveney, Plant Manager of Beverage Can Division, on 16.09.1986 and 12.09.1986.

(d) payment of fees for theoretical studies for self-advancement

4.3 CO-ORDINATION[4]

Leenders et al (1980: 27) describe co-ordination as the synchronisation of work to be done by subordinates in such a way that the goals of the enterprise will be achieved.

The overall objectives of the purchasing function is to purchase the right materials, in the right quantity, for delivery at the right time and right place, with the right service and at the right price. The purchasing manager has to synchronise all these purchasing variables in order that the ultimate purchase will be to the best advantage to the enterprise.

The purchasing department has continuing relationships with all other departments in the enterprise as well as with the enterprise's suppliers. Co-ordination is important to the internal and external levels. In the internal level co-ordination is important in the purchasing department and within the enterprise as a whole. Co-ordination with the other departments include:

4.3.1 PURCHASING AND ENGINEERING

The engineering department is responsible for designing the products of the enterprise, and to exercise this activity responsibly, it needs the help of the purchasing department, inter alia, in the form of availability of materials and prices. There

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4. See p. 22, 57, 75.

must be co-ordination between the purchasing department and the engineering department in order to avoid conflicts. (Leenders et al 1980: 27).

> In Metal Box, for example, the engineer may need an electronic part. The engineer describes the part on the requisition form, but the space on the form is insufficient to describe the part adequately. He, in turn, works with the purchasing department to acquire the electronic part or alternatively, he may give a sample to the purchasing department.[5]

4.3.2 PURCHASING AND PRODUCTION

Co-ordination between purchasing and production is rewarded in many ways. The purchasing department may purchase a more expensive alternative material that will reduce costs in the form of manufacturing and assembling costs. In order to avoid production stoppages, the production managers demand larger stocks; the purchasing department wishes to maintain low investment in inventories. Co-ordination is essential between the two departments so that agreement is reached between level of inventory and production interruptions. (Leenders et al 1980 : 27).

> In Metal Box, the production manager gives instruction to the purchasing manager to buy a particular raw material with specified instructions as regards quality in order to

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5. Interview held with Mr J.M.V. de Gouveia, Production Manager of Divpac Division, on 16.09.1986.

withstand the production performance. The purchasing manager will buy the required material, but not necessarily the cheapest material. Negligence on the part of the purchasing manager will disturb the input/output ratio due to stoppages and drops in the level of inventories.[6]

4.3.3 PURCHASING AND MARKETING

The sales forecast is the basis for the production schedule, which in turn is the basis for the purchasing schedule. Any changes in sales forecast must be communicated to the production and purchasing departments, in order to change schedules at the lowest cost possible. Such course of action is only possible through co-ordination. Leenders et al 1980: 27).

In Metal Box, the sales people draw up a budget during March/April and hand copies to the factory manager, to the production manager and to the financial manager. The production manager in turn will draw up the materials requirement budget, and hands it to the factory manager for approval. Once approved, the factory manager will instruct the purchasing manager to acquire the necessary materials. If there is an increase in sales, the production manager will liaise with the personnel manager for more employees in order to utilize more machines, work double shifts, overtime, and may change layout for new machines. If there is a drop in

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6. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney of Metal Box on 16.09.1986 and 12.09.1986.

sales, the production manager may use the following alternatives:

(a) Use alternative outlets such as manufacturing small cans instead of large cans where there is a demand for small cans.

(b) Distribute raw materials to branch factories.

(c) Review and revise future orders.

(d) Retrench staff.[7]

4.5.4 PURCHASING AND FINANCE

If the purchasing department places orders to take advantage of low prices without the finance department's consent, then conflict will arise by making funds available needed for other purposes. Co-ordination between purchasing and finance is important when the enterprise experiences liquidity problems.

The larger the undertaking and the larger the degree of division of tasks, the greater the necessity for co-ordination.

However in Metal Box, the Purchasing department does not have the Finance department's consent for buying because each department operates within an approved budget. The Finance department only learns about the purchase for the first time when it has to pay the account.[7]

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7. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 12.09.1986 and 16.09.1986 respectively.

In Metal Box, requisitions are made by Departmental Heads who sign for it. The requisitions are then sent to the Production Manager who approves or disapproves of them. If approved, the requisition is sent to the Buying Department, where an official order is made.

Once the goods are received, the invoice is forwarded to the Finance Department for payment.[8]

EVALUATION

The managing director of Metal Box uses the "Briefing System" as a means of communication in influencing his followers so as to make them prepared to move in the direction of a specific objective. By putting his message in writing, the managing director ensures that his followers will not be misled in interpreting his message. Metal Box motivates its employees by financial rewards, promotion and payment of fees for theoretical studies. This practice is an indication of positive motivation. It was shown how the purchasing manager of Metal Box has to synchronise activities with other departments in order that the ultimate purchase will be of the best advantage to the enterprise, thereby creating a favourable input/output ratio and thus increasing shareholders' wealth.

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8. See p. 70.

SUMMARY

Directing is concerned with influencing people to strive towards the objectives of the enterprise. Three major elements of the directing tasks of purchasing management were considered, viz., leadership, communication, motivation and morale. Leadership depends on the level in the organisation structure at which the purchasing function is performed. The leader uses communication as the medium for influencing his followers so as to make them prepared to move in the direction of a specific objective. Leadership style affects motivation and morale of the staff. Positive motivation promotes co-operation and unity amongst subordinates in striving towards the goals of the enterprise. It was demonstrated how people are motivated in Metal Box.

The purchasing department has continuing relationships with all the other departments (finance, production, marketing etc.) in the enterprise as well as with enterprise's suppliers. The purchasing manager has to co-ordinate the activities of the purchasing department with the activities of other departments in the enterprise in order that the ultimate purchase will be to the best advantage of the enterprise.

In Metal Box, it was shown how the purchasing manager has to synchronise activities with other departments in order that the ultimate purchase will be to the best advantage to the enterprise, thereby creating a favourable input/output ratio and thus achieving the objective of the firm, i.e. increasing shareholders' wealth.

The control task of purchasing management indicating the basic approach to purchasing control, controlling purchasing proficiency and control of purchasing efficiency will be discussed in the next chapter. Control involves the measurement and correction of activities of subordinates to ensure that the objectives of the enterprise are achieved.

CHAPTER 5

CONTROL

5.1 INTRODUCTION

Koontz, O'Donnell & Weihrich (1982: 463) define control as the measurement and correction of performance in order to make sure that enterprise objectives and the plans devised to attain them are being accomplished.

Control is an essential managerial function at every level, although the scope of control varies among managers, those at all levels have responsibility for the execution of plans.

The basic control process of purchasing management involves 3 steps:

(a) establishment of standards

(b) measuring performance against these standards

(c) correction of deviations from standards and plans

One of the major features of purchasing control is the feedback system, which enables management to obtain information on deviations from set objectives and the adjustment of these objectives to provide for changes in the environment of the enterprise.

5.2 BASIC APPROACH TO PURCHASING CONTROL

Enterprises have adopted a relatively broad approach to the evaluation and control of their purchasing activities because of the difficulties experienced in the developing of precise

purchasing control systems. Lee, Dobler & Burt (1984: 566 - 578) identify an approach to purchasing control with 3 distinctive characteristics:

5.2.1 MANAGEMENT RESPONSIBILITY

In order to appraise managerial effort, the following aspects should be considered:

5.2.1.1 SCOPE OF THE PURCHASING FUNCTION

One should determine the purchasing activity in the enterprise's total operation, the level of participation in the formulation of purchasing policy and strategy.

Top management determines the purchasing policy and strategy for Metal Box.[1]

5.2.1.2 EVALUATION OF PURCHASING MANAGEMENT PERSONNEL

Purchasing management personnel should be adequately qualified in dealing with the enterprise's and industry's requirements.

The qualifications required for a Purchasing Manager in Metal Box are:[1]

(a) National Diploma in Purchasing Management. This can be studied for, on a part-time basis at the Natal Technikon. Neither Durban-Westville or Natal Universities offer such degree/diploma.

(b) Besides having the above diploma, it is essential that the incumbent possesses a thorough knowledge and

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1. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 18.09.1986 respectively.

background of the Division's products, product capabilities and methods.

5.2.1.3 ORGANISATION

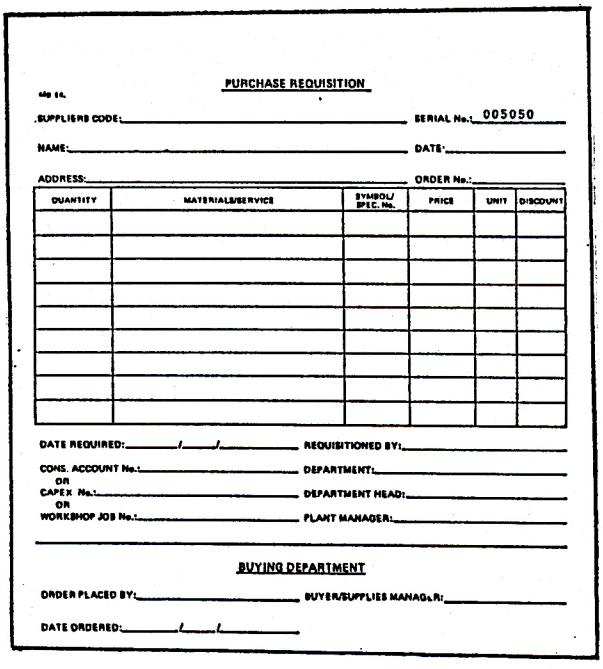
Purchasing activity should be centralised/decentralised in the organisational structure with clear demarcation of authority and responsibility.[2]

5.2.1.4 POLICY, PROCEDURES, RECORDS AND REPORTS

There should be an efficient and adequate policy, well mechanised and automated procedures, proper maintenance of records to facilitate effective purchasing.

In Metal Box, the person requiring goods makes a purchasing requisition (see Figure 5.1) for items not in stock. If the items are kept in stock, then the person makes a material

Figure 5.1



PURCHASE REQUISITION

SUPPLIERS CODE: _____ SERIAL No.: 005050

NAME: _____ DATE: _____

ADDRESS: _____ ORDER No.: _____

QUANTITY	MATERIALS/SERVICE	SYMBOL/ SPEC. No.	PRICE	UNIT	DISCOUNT

DATE REQUIRED: __/__/__ REQUISITIONED BY: _____

CONS. ACCOUNT No.: _____ DEPARTMENT: _____

OR

CAPEX No.: _____ DEPARTMENT HEAD: _____

OR

WORKSHOP JOB No.: _____ PLANT MANAGER: _____

BUYING DEPARTMENT

ORDER PLACED BY: _____ BUYER/SUPPLIES MANAGER: _____

DATE ORDERED: __/__/__

PURCHASE REQUISITION FORM OF METAL BOX

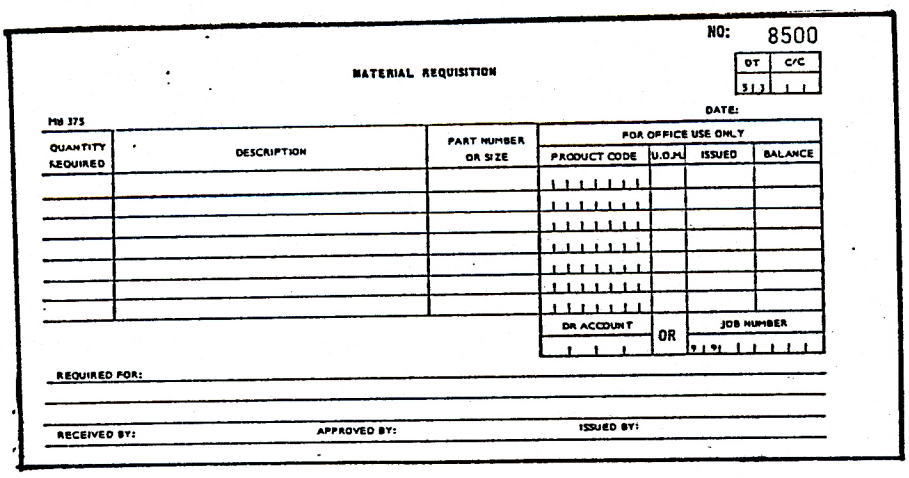
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2. See p. 42.

requisition as shown in Figure 5.2.[3]

On the purchasing requisition form, he fills in the description of the goods, quantity required, and supply dates to be specified. The purchasing requisitioning form is thereafter given to the Head of Department, who will question the validity of the requisition. If the Head of Department agrees to the purchasing requisition, he then signs the requisition form and forwards it to management for approval. Once management approves of the requisition, he then forwards the requisition to the Purchasing Department. The Purchasing Department makes out an official purchasing order and forwards it to the supplier. (See figure 5.3).

Figure 5.2



MATERIAL REQUISITION FORM OF METAL BOX

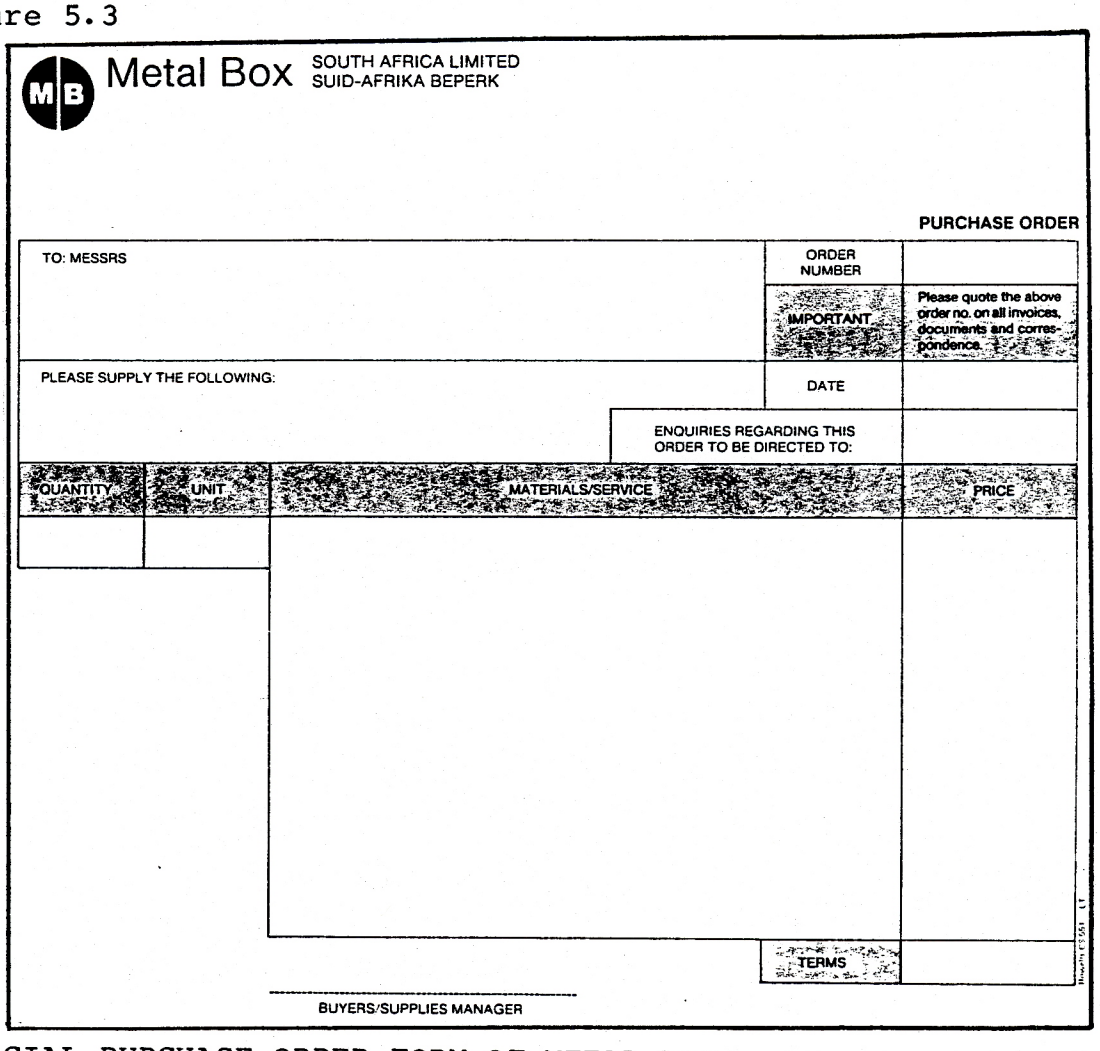
When the supplier sends the goods, a delivery note and a copy

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3. See p. 64.

of the order are attached. The goods are delivered to the Purchasing Department where the delivery note is compared with the purchasing order and the goods are checked to determine compliance of specified requirements. Thereafter, the Purchasing Department sends an advice note together with the delivery note and a copy of the requisition to the Head

Figure 5.3



OFFICIAL PURCHASE ORDER FORM OF METAL BOX

of Department. The Head of Department examines the information to determine the required specified quantity and description of the goods and determines if the price is

appropriate. If the Head of Department is satisfied with the information, he signs the advice note and returns it to the Purchasing Department. The Purchasing Department, in turn, sends the documents to the Finance Department. The Finance Department pays the supplier as arranged, which may be either 30, 60 or 90 days.[4]

5.2.2 CONTROLLING PURCHASING PROFICIENCY[5]

There are seven performance factors that can be measured to provide a basis for appraising and controlling purchasing proficiency. (Lee, Dobler & Burt 1984: 566 - 578).

5.2.2.1 CONTROL OF THE TIME FACTOR

The most important factors to be considered are late orders, inventory shortages, and late deliveries and its effect on production interruptions.

The control of the time factor is an important objective of Metal Box. This information is evident under the following headings:

5.2.2.2 CONTROL OF QUANTITY AND INVENTORY INVESTMENT

In this regard, one should consider inventory shortages and production interruptions due to poor purchasing policy, (by purchasing in small quantities) maintenance of target and

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4. Interview held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 18.09.1986 respectively.

5. Proficiency refers to skills related to the creative activities of the purchasing task.

inventory levels, obsolete stock in stores due to over-purchasing, and supplier inventory-holding thus resulting in inventory savings.

Two of the major objectives of Metal Box are:

(a) The materials must comply to specifications stipulated.

(b) The required quantity of material must meet the stock level.[6]

5.2.2.3 CONTROL OF MATERIAL PRICES

This can be controlled by the aid of standard prices, materials budget, price indexes, and the level of savings on materials cost.

Metal Box, Head Office in Johannesburg, negotiates prices for critical items, such as tinplate, aluminium, inks and coatings. The Divpac and Beverage Can Divisions negotiate prices for non-critical items, such as consumables.

5.2.2.4 CONTROL OF MATERIAL QUALITY

Inspection of incoming materials and work-in-process can be carried out by standards and specifications.

The supplier sends, before delivery, a sample of the critical items from a certain batch number to Metal Box for testing. If the critical items pass the test (for material quality and specification), the supplier is requested to supply that specific batch number. If the critical items do not pass the test, then that particular batch number is rejected.[7]

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6. For more information, see Chapter 11.

7. For more information, see Chapter 6.

5.2.2.5 CONTROL OF SOURCE RELIABILITY

Determining supplier reliability, one has to measure the number of late deliveries, percentage of incorrect materials and quantities of materials, as well as the quality of transport services.

It is alleged that Metal Box does have problems in regard to the above-mentioned factors with ISCOR. Since ISCOR is a government concern and is the only source of supply, complaints by Metal Box are ignored. Metal Box cannot import its raw material (tinplate) because it is restricted by government regulations. Because of the present South African political scenario, Metal Box functions within severe constraints imposed by government regulations. If constraints were relaxed, then the possibility exists that the value of the firm could be greatly maximized.

5.2.2.6 CONTROL OF SUPPLIER RELATIONSHIP

In order to determine suppliers' attitudes towards the enterprise, one could either interview them personally or ask them to complete a questionnaire.

Metal Box does visit the suppliers to determine the following:

(a) The type of facilities the supplier possesses.

(b) Hold meetings to discuss problems with materials.

(c) The possibility of developing new materials.

(d) To create a liaison with the supplier.[8]

5.2.2.7 CONTROL OF CO-ORDINATION[9]

The success of inter-departmental co-ordination can be measured by checking to what extent departments follow published policies and procedures, and by completion of questionnaires by departments.

5.2.3 CONTROL OF PURCHASING EFFICIENCY

Purchasing efficiency refers to the application of minimum resources in order to obtain maximum returns.[10] The control of purchasing efficiency is difficult, according to Lee, Dobler & Burt (1984: 574). But few standards are established by comparing trends of efficiency measurements with trends of proficiency measurements, thereby determining the optimum combination that yields maximum returns. Lee, Dobler & Burt (1984: 575 - 578) identify the following three factors:

5.2.3.1 BUYING EFFICIENCY

Statistics can be recorded for number or orders per period, Rand value per order, number of rushed and changed orders, purchasing processing time report and departmental operating cost report. (Lee, Dobler & Burt 1984 : 575 - 578).

Metal Box uses the above procedures except for Rand value per

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8. Information from numbers 5.2.2.1 to 5.2.2.6 were obtained from interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 18.09.1986 respectively.

9. See p. 22, 57, 60.

10. See p. 1, 4, 15, 28.

order because it uses sales figures to determine value of orders.[11] These statistical data are useful for control purposes over a period of time.

5.2.3.2 PERSONNEL EFFICIENCY

Control can be exercised in the form of establishing performance standards for clerical jobs, study of time utilisation for non-repetitive jobs, computing number of employees per group, attendance, punctuality of employees, and employee turnover rate.

In Metal Box there are three types of clerks:

(a) Trainee clerk - learning of clerical tasks.

(b) Factory clerk - works in different sections of the factory.

(c) Senior clerk - does a specific job with responsibility in the factory, e.g. feeding information into the computer.

The production manager determines the number of employees per production line. For attendance and punctuality, the Time Office (part of the personnel department) sends reports to the Head of Departments, who examines the report to exercise control and determines the remuneration. The personnel department sends monthly reports on labour turnover rate to Head of Departments in order to determine why employees are

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11. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 18.09.1987 respectively.

leaving. Employees leaving the firm are required to fill in forms, giving reasons as to why they are leaving. Meetings are held in order to avoid repetition of such cases.[12]

5.2.3.3 RECEIVING AND STORES

The efficiency of receiving and stores department can be evaluated by means of the average number of receipts, the time involved to receive and process receipts, the number of stores requisitions processed, report on stores' losses, obsolescence and damage, and periodic inspection of stores.

Metal Box practices the above procedures in order to prevent suppliers from over-deliveries because management does not want to invest capital over and above the required level of stock. If there is a loss in stock, due to lost requisitions and pilferages, the receiving and stores department will have to reconcile stock by physical stock-taking and computer print-outs.[13]

5.3 REPORTS TO MANAGEMENT[14]

The authors mention that Purchasing Management will be able to evaluate and control purchasing activities by using the aforementioned measurements.

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12. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 18.09.1986 respectively.
13. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 18.09.1986 respectively.
14. See p. 118.

Reports should be summarized by the purchasing manager to enable top management to control the enterprise's operations and plan future activities; and for top management to evaluate the purchasing
department's contribution to the enterprise as a whole.
The purchasing management's reports to top management can take 2 forms:

(a) The first report should contain a summary of general business conditions, specific price increases or decreases, trends in lead time requirements for major materials and a list of materials that are in short supply.

(b) The second report informs top management of purchasing performance and administrative programmes such as how well the purchasing department has performed, selected physical statistics of the number of orders, employees and total Rand value of purchases, discussion of the department's status and problems, and future plans.

Metal Box, both Divpac and Beverage Can Divisions, send the following reports to their Head Office in Johannesburg:

(i) Daily Reports - regarding stock levels and value of stock, which is specified. Head Office checks to determine unused stock which can be used elsewhere in its branches.

(ii) Monthly Reports - regarding spares for equipment, when and where the spares used and what spares are

in stock. Head Office checks to see why and what types of spares are being constantly used.

(iii) Annual Reports - this report is a reconciliation of daily and monthly reports. Head Office checks the information to exercise extra control.[15]

EVALUATION

In their quest for optimum efficiency, Metal Box strives to apply the function of purchasing control optimally. This is done as follows:

Metal Box requires the purchasing management personnel to possess certain qualifications, such as National Diploma in Purchasing Management. In addition to the diploma, the incumbent must possess a thorough knowledge and background of the Division's products, product capabilities and methods. In the control of material prices, critical items are negotiated by Metal Box Head Office, whereas non-critical items are negotiated by the Divisions. The material quality passes through a stringent series of tests.

In spite of the fact that Metal Box operates under conditions of severe government constraints, its application of the function of purchasing control enables it to depress the unit cost of goods

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15. Interviews held with Mr J.M.V. de Gouveia, Production Manager of Divpac Division, and Mr D. McKeaveney, Plant Manager of Beverage Can Division, on 23.09.1986 and 18.09.1986.

and services, within limits, thus improving the input/output ratio.

SUMMARY

Control involves the measurement and correction of activities of subordinates to ensure that the enterprise's objectives are achieved according to stated plans. The approach to control has three distinctive characteristics, viz., management responsibility, controlling purchasing proficiency and the control of purchasing efficiency. Managerial responsibility involves scope of purchasing function, evaluation of purchasing personnel, organisation policy, procedures, records and reports. Controlling purchasing proficiency involves aspects such as late deliveries, outstanding orders, quality requirements, prices of raw materials and supplier relationships. Evaluating purchasing efficiency involves quantitative appraisal of efficiency in buying goods and services such as value of order etc.

In their quest for optimum efficiency, Metal Box strives to apply the function of purchasing control optimally. Metal Box requires Purchasing management personnel to possess certain qualifications, such as National Diploma in Purchasing Management. In spite of the fact that Metal Box operates under conditions of severe government constraints, its application of the function of purchasing control enables it to depress the unit cost of goods and services to a certain extent.

In the remaining chapters, the practice and techniques of Purchasing and Materials Management will be discussed. Quality

assurance showing quality determination, how quality is described to suppliers and methods used in maintaining the right quality will be discussed in the next chapter.

THE PRACTICE AND TECHNIQUES OF PURCHASING AND MATERIALS MANAGEMENT

CHAPTER 6

QUALITY

6.1 INTRODUCTION

Heinritz & Farrell (1981: 125) indicated that every purchasing decision is governed by 3 major factors:

(a) quality of the item purchased

(b) service provided by the supplier

(c) price paid by the purchaser

The acquisition of materials, services, components and goods are the basic objectives of purchasing management. This is followed by a decision on the quality of the material and the control and measurement of this quality.

To satisfy a specific requirement, purchasers are of the opinion that quality is of first importance, followed by service and thereafter price.

Quality may be defined in different ways, according to Heinritz & Farrell (1981: 126), to include the following:

(1) complete and detailed specification

(2) reference to established market grades or brand names that includes a certain combination of qualities

(3) the actual sample (own definition of quality desired)

Lee, Dobler & Burt (1984: 40) maintain that quality is related to suitability, cost and availability.

6.2 RESPONSIBILITY FOR QUALITY DETERMINATION

Heinritz & Farrell (1981: 132) demonstrated that the department that is using the purchased item is responsible for the factor of suitability in its quality definition for product quality and performance. The following parties share responsibility for quality determination:

(a) The purchasing department which knows just what is required after consultation with the engineering and production department.

(b) The supplier who is informed of the buyer's quality requirements and he may suggest alternative materials.

6.3 METHODS USED TO DESCRIBE QUALITY

Lee, Dobler & Burt (1984: 47) pointed out that quality descriptions perform three major purposes:

(a) to enable buyers to describe the items required on purchase orders

(b) to inform the supplier of buyer's requirements

(c) to ensure that goods delivered in conformance with quality requirements are inspected after delivery.

The following 8 methods are used to describe quality according to Lee, Dobler & Burt (1984:47 - 55):

6.3.1 BRAND OR TRADE NAMES

The manufacturer uses a brand name to distinguish his product from other products. By branding a product, the manufacturer ensures reliance of the product, thus providing consistent quality and

brand names is to obtain repeat sales, to distinguish the product from substitutes, to maintain price stability, and to improve sales promotion.

Brand name products have the advantages of simplicity in ordering, saving purchase time and reducing purchase expenses, elimination of elaborate inspection and tests because quality implications are inherent in the brand name and usually commands a higher price. The greatest disadvantage of purchasing by brand names is that it eliminates competition thus limiting the buyer to a single source of supply. The second disadvantage is that brand named products carry a higher price, thus inducing the buyer to seek unbranded products/substitutes.

6.3.2 MARKET GRADES

This method is used mainly for raw materials, inter alia, such as cotton, steel, tobacco, hides. It indicates relative purity, lack of defects or difference in quality of a certain class of material. The value of grades depends upon accuracy, confidence in the ability of those responsible for grading, and the ease with which one can detect the difference in grade by inspection. These are important factors in determining the suitability of purchasing description.

6.3.3 COMMERCIAL STANDARDS

A commercial standard is a complete quality description of the item standardised. The quality of materials and the quality of workmanship used in manufacturing is described. Popularly known in South Africa is the South African Bureau of Standards

(S.A.B.S.). Nuts and bolts are made to standard specification, irrespective of who manufactures them. Commercial standard items contribute to simplicity of design, cost reduction, inventory management and purchasing procedures.

6.3.4 SAMPLES

The purchaser may submit a sample of the item desired when other methods of description are not possible. Difficulty is experienced to determine by inspection that the item delivered is a replica of the sample. The quality of the item supplied is subjective. Samples should be used mainly for colour, printing and grading.

> In Metal Box, samples are used for electronic parts used in machinery because it is difficult to describe the components used in the electronic part. Samples are used for critical items, such as inks and coatings used for packaging items.[1]

6.3.5 PHYSICAL OR CHEMICAL SPECIFICATIONS

Since not all items and materials are covered by standard specifications or brands, many firms prepare their own specifications. Risk is involved in physical or chemical specifications, for example, if a buyer decides on the chemical composition for a particular paint, and the manufacturer complies with the buyer's specification, the performance of the paint is the buyer's responsibility, should the paint fade.

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1. Interview held with Mr J.M.V. de Gouveia on 23.09.1986.

In Metal Box, the Research and Development Department is responsible for physical or chemical specifications.[2]

6.3.6 BLUE PRINTS OR ENGINEERING DRAWINGS

Blue prints are used mainly for construction projects, and for special mechanical parts and components. In using drawings for description, this method holds the following advantages:

(a) Drawings are accurate and precise

(b) It is the most practical way of describing mechanical items requiring close tolerances.

(c) It permits wide competition.

(d) It clearly establishes the standards for inspection.

The main disadvantage of engineering drawings is that it is expensive in designing and drafting work, and these costs must be absorbed by the relatively few purchases.

In Metal Box, the engineering department is responsible for engineering drawings. For example if a crank shaft is needed for use in a plant, the engineer makes a drawing with specifications.[2]

6.3.7 QUALIFIED PRODUCTS[3]

In this method, one must know beforehand (prepurchase) whether the

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2. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 02.10.1986.

3. Qualified products refer to products that will meet performance specifications beforehand.

product will meet the required specifications. This is so because a post-purchase situation does not permit inspections and tests. As a result of this, stringent tests are carried out on the supplies.

Products of approved suppliers are listed after qualification.

In Metal Box, the quality assurance department determines the qualified products.[4]

6.3.8 COMBINATION OF METHODS

Where a single method of description is not possible, a combination of methods is used. For example, commercial standards or brand names may be used to describe electrical or mechanical hardware.

6.4 SPECIFICATION AND STANDARDISATION

Baily & Farmer (1977: 82) define specifications as a definite description of what is wanted. The object of internal specifications is to ensure that the purchase department knows just what to buy; the object of external specifications is to ensure that the supplier knows just what to supply.

Lee, Dobler & Burt (1984: 60) states that one should consider the following aspects when preparing material specifications:

(a) design requirements

(b) marketing factors

(c) production considerations

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4. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 02.10.1986.

(d) purchasing considerations

The following advantages are attained by using specifications as a means to describe quality, according to Leenders et al (1980: 126):

(a) It permits fair competition between suppliers.

(b) It ensures uniformity of quality when using a number of suppliers.

(c) The buyer can specify performance, thus supplier is held responsible.

(d) It provides the need for which material is required.

(e) It constitutes a standard for measuring and checking materials supplied, thus delay and wastage are prevented through incorrect materials.

> In Metal Box, materials are specified to meet standards. For example, the cardboard must be fluted because of packaging. Another factor to be considered is humidity. If the cardboard is too dry, then it breaks up easily. If the products are exported, then a decision has to be made whether to wax the cardboard or not because of moisture.[5]

6.5 INSPECTION METHODS USED IN MAINTAINING THE RIGHT QUALITY

The following methods of inspection may be used:

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5. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 02.10.1986.

6.5.1 CERTIFIED QUALITY CONTROL

Zenz (1981: 169) stated that the supplier issues a statement to certify that the goods purchased conform to the specifications as detailed in the purchase agreement. The objective is to reduce duplication of quality control procedures, and inspection costs, while quality level remains high. Only periodic inspection is made to prevent any mishap in quality.

> In Metal Box certified quality control is called quality assurance and is practised by suppliers when delivering critical items to Metal Box.[6]

6.5.2 ACCEPTANCE SAMPLING

Zenz (1981: 170) pointed out that with this method of inspection, a sample is taken from an order, inspection or testing is carried out, and a decision is made whether to accept the shipment or reject the shipment. If the decision is made to reject the shipment, then the quality control department must decide as to whether to send the entire shipment back to the supplier or to send only the defective items to the supplier.

Sampling inspection tables indicate the size of the sample for various lot sizes, which enables the purchaser to limit his risks.

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6. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 23.09.1986 and 02.10.1986.

6.5.3 ACCEPTANCE SAMPLING USING THE OPERATING CHARACTERISTIC CURVE (OC)

The working of the OC Curve (as used in Metal Box)[7] will be illustrated by the following example:

(a) Assume an incoming order which comprises of 5000 units of a certain specific item. (N = 5000)

(b) A random sample[8] of 200 units drawn. (n = 200)

(c) The order is accepted if there is a maximum of 10 defective units, and the order is rejected if there are more than 10 units in the sample. (C = 10)

The standard operating curve (OC) can be determined by using the above data where N = 5 000

n = 200

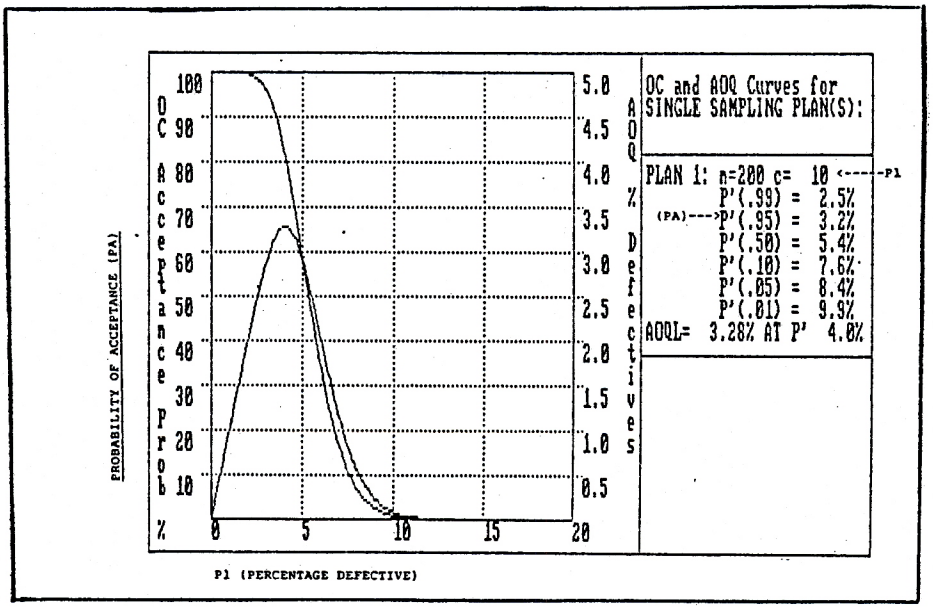
C = 10

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7. Interview held with Mr D. Ramsay, Quality Assurance Manager of Divpac Division held on 06.10.1986.

8. A random sample is a representative of a lot or batch.

Figure 6.1



ACCEPTANCE SAMPLING CURVE USING THE OPERATING CHARACTERISTIC CURVE

Source: Mr D. Ramsay, Quality Assurance Manager, Divpac Division of Metal Box.

The above figure indicates that if 5 % defective units are detected, the incoming order has a probability of +-58% that the order will be accepted. If there are 3,2% defective units, then the incoming order has a 95% probability of being accepted. The OC curve indicates how effectively the sampling plan discriminates between good and defective units.

6.5.4 DOUBLE SAMPLING PLANS

Zenz (1981: 170 - 171) stated that in double sampling plans, a smaller initial sample is drawn and a decision is made to either accept or reject or resample the order used, if the number of defective units are likely to be quite large or small. A second sample is drawn if the results of the first sample are indecisive.

Since it is only necessary to draw and inspect the second sample in borderline cases, the average number of items inspected per lot is generally smaller with double sampling.

> In Metal Box the following example is used: Let us assume an order contains 15 000 units, with an acceptable quality level of 0,65%. The first sample of 200 is drawn with 2 defective units acceptable. If 2 or less defective units are detected in the first sample of 200, the entire order is accepted. If 5 or more defective units are detected, the order will be rejected. If there are 3 or 4 defective units detected in the first sample, the second sample of 200 is drawn and the number of defective units detected are added to the number of defective units found in the first sample. If the number of defective units are 6 or less, the order is accepted, if the number of defective units exceed 6, the order is rejected.[9]

6.5.5 STATISTICAL PROCESS CONTROL

Lee, Dobler & Burt (1984: 71 - 73) stated that since every process possesses some natural variability[10], it has been found that no production process can produce identical items over a long period of time. If this process is adjusted and controlled continually, variability around the mean quality level[11] is known and is

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9. Interview held with Mr D. Ramsay on 06.10.1986.
10. Variability refers to variation in performance.
11. Mean quality level refers to average quality level.

statistically forecasted.

The competent purchaser can reduce the costs of inspection and unsatisfactory products by liaising with the suppliers to accomplish the following:

(a) A reasonable matching of the supplier's process capabilities with the buyer's required quality characteristics.

(b) An agreement that the suppliers will utilize process control techniques at certain critical points in their production processes.

The statistical process control (as used in Metal Box) can be explained by the following example:[12]

Assume that Metal Box decides to buy 20 000 metal shafts with a diameter of 1 cm and with a tolerance[13] of +- 0,006 cm. The supplier is capable of producing the shafts with a diameter of 1 cm, but with a tolerance of +- 0,004 cm.

The supplier's process frequency distribution curve for the shafts is illustrated in figure 6.2 (a).

Assume that Metal Box decides to buy from the same supplier 20 000 shafts with 1 cm diameter, and with a tolerance of +- 0,003 cm. The supplier's process frequency distribution curve for the shafts is illustrated in figure 6.2 (b).

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12. Interview held with Mr D. Ramsay on 06.10.1986.

13. Tolerance refers to variation in the diameter of the shafts.

On examining figure 6.2 (a) and (b) Metal Box may make the following decisions:

(a) If the shafts meet the Metal Box's normal quality requirements, then Metal Box will accept the order.

(b) Metal Box may request the supplier to increase the normal range of process.

(c) Seek another supplier.

Assuming that Metal Box requirements are not met, according to figure 6.2 (a) and (b) then Metal Box may:

(i) Request supplier to reduce the normal range of process

(ii) Find a more suitable supplier.

Figure 6.2 (a)

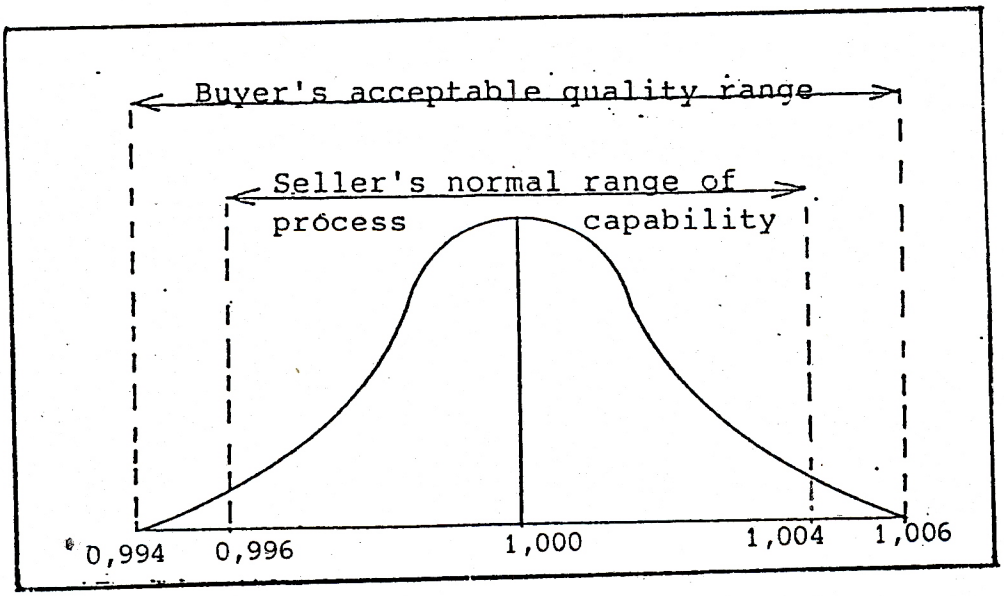
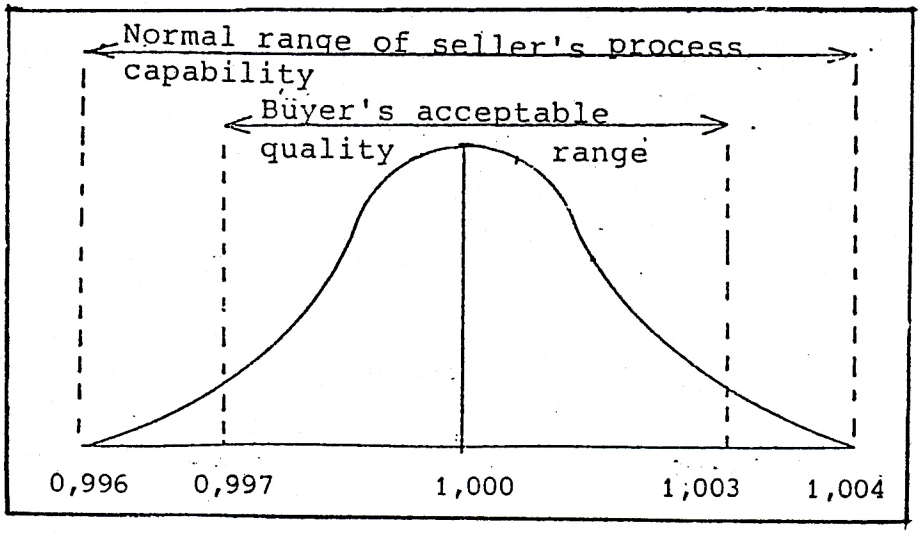


Figure 6.2 (b)



COMPARISON OF QUALITY REQUIREMENTS WITH PROCESS CAPABILITY

Source: Lee, Dobler & Burt (1984: 73 adapted)

The executives of Metal Box, Durban, both Divpac and Beverage Can Divisions, stated that the inspection procedures alone are not sufficient to guarantee the quality of incoming materials. A quality assurance programme must be drawn up. This should include specifications and standards, an inspection of incoming items against prescribed specifications and recordings, and tests to determine whether the orders are acceptable or not. They carry out random sampling for aluminium sheets. Inspection tests such as chemical composition of aluminium (carried out by Divpac Division only), checking thickness of the aluminium sheet, the surface finish and the tensile strength are carried out.

Aluminium sheets come in a batch of 1 000 sheets, packed into a stillage[14]. 20 stillages make a batch lot. A random sample is carried out for one stillage. Each stillage has a manufacturer's code number. If one aluminium sheet is found to be defective, the entire batch lot with the same code number is rejected. Tinplate comes in ten ton coil for the Beverage Can Division. The coil is fitted on to a processor, and the performance of the tinplate is monitored. Inspection tests are carried out for thickness, pinholes, welding of joints, temper, pliability, no splitting and, finally how it performs on the machine. If any defects are found, the entire tinplate coil is rejected. The Divpac Division buys tinplate in sheets, and also, packed into a stillage. The tinplate is checked for its purity by chemical methods. The tinplate has to be free of major non-metallic inclusions, if not the tinplate is rejected. There are two types of tinplate, viz., prime and secondary tinplate. Inspection tests for the prime tinplate are seldom carried out, because of its superior quality, and is mainly used for food can making. Random sampling is carried out for the secondary tinplate, if defects are found, a double sampling is carried out, and if the defects are major, the entire shipment is rejected. Secondary tinplate is usually used for non-food

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14. Stillage - terminology used to describe one pack of tinplate, e.g. 1 000 sheets (1 m x 1 m) of tinplate packed on a pallet.

containers. Coatings (lacquer) are used for inside of the cans.

The chemical composition of the coatings for food and beverage cans must pass the test as laid down by the Food and Drug Association (FDA) of the United States of America. This test resembles the test of the South African Bureau of Standards (SABS), but the FDA test is more stringent in order to ensure hundred per cent safety measures because the contents of the cans are for human consumption.[15]

EVALUATION

It appears that the methods of inspection carried out by Metal Box does meet with the current theoretical requirements for quality determination, because they use inspection methods such as quality assurance by supplier, acceptance sampling together with operating characteristic curves, double sampling plans and statistical process control. These measures must necessarily lead to an improved input/output ratio.

SUMMARY

The purchasing department is responsible for determining that the quality of the material is adequate for the intended purpose and suitable for the process and equipment used. The various methods

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15. Interviews held with Mr D. McKeaveney, Plant Manager of Beverage Can Division, and Mr J.M.V. de Gouveia, Production Manager of Divpac Division, on 06.10.1986 and 07.10.1986 respectively.

of describing quality by the buyer to the supplier were discussed in detail. It was shown how specification and standardisation play an important role in search for the right quality. Finally, in order to maintain the right quality, various methods of inspection could be used by the purchasing department.

It was shown how Metal Box uses the various methods in maintaining the right quality for the intended purpose and the equipment used. If the material fails on any of the points mentioned above, then the results for Metal Box can be costly, in terms of expensive delays, inefficient production, inferior products, broken delivery promises and unhappy customers. Therefore, Metal Box does attempt to fulfil its quest for optimum efficiency in obtaining the most favourable input/output ratio.

Selection of suppliers is one of the most important responsibilities of the purchasing manager. The choice of the right supplier influences the economic prosperity of the enterprise and is also necessary for the efficient functioning of the market mechanism and the application of scarce resources in the national economy. In the next chapter, the supplier selection decision, sources of supplier information and evaluation of suppliers will be discussed.

CHAPTER 7

SUPPLIER SELECTION

7.1 INTRODUCTION

The selection of the right suppliers is the path to success in the purchasing process. Lee, Dobler & Burt (1984: 95) indicated that if the right supplier is selected, then competitive pricing, reliable quality, on time delivery, good technical service, and other goals of good purchasing are more likely to be achieved than if only a mediocre supplier were selected. Marx & van Aswegen (1984: 207) allege that the choice of the right supplier influences not only the economic prosperity of the enterprise,[1] but is also necessary for the efficient functioning of the market mechanism and the application of scare resources in the national economy.

Therefore, buyers must consider three aspects of supplier management as recommended by Lee, Dobler & Burt (1984: 95):

(a) satisfactory suppliers must be rewarded and motivated

(b) unsatisfactory suppliers must be eliminated

(c) new suppliers should be researched and developed

If an enterprise chooses an inefficient supplier, the following

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1. See p. 1, 22, 27.

are some of the implications alleged by Van Rooyen & Hugo (1983: 105):

(a) stock shortages resulting in production and sales interruptions

(b) firm's return on investment is affected due to high costs arising from unnecessarily high prices

(c) unable to command a good competitive position in the market place and the possible decline in the firm's market share

(d) poor supply results in loss of good business opportunities

Therefore, effective purchasing is dependent on the capability and reliability of the supplier who can contribute to the achievement of the enterprise's objectives. It leads to the creation of a favourable input:output ratio and in doing this, the objective of the firm is achieved, viz., the maximization of shareholders' wealth.

7.2 THE SUPPLIER SELECTION DECISION

Heinritz & Farrell (1981: 231) indicated that there are four stages in the actual process of source selection:

(a) all possible sources for a product are explored in the survey stage.

(b) the relative qualifications and advantages of potential sources are analysed.

(c) negotiation and selection stage leading to the placement of the initial order.

(d) the experience stage, where the supplier/buyer

alternative satisfactory sources.

A study by G.W. Dickson (1966: 10 - 11) listed 23 factors which might be considered in evaluating potential suppliers. This is illustrated in Figures 7.1 and 7.2. The type of product purchased influences the ranking of importance of these factors.

Figure 7.1

Factor	*Mean rating*	*Evaluation*
Quality	3.508	Extreme importance
Delivery	3.417	
Performance history	2.998	
Warranties and claims policies	2.849	
Production facilities and capacity	2.775	Considerable importance
Price	2.758	
Technical capability	2.545	
Financial position	2.514	
Procedural compliance	2.488	
Communication system	2.426	
Reputation and position in industry	2.412	
Desire for business	2.256	
Management and organization	2.216	
Operating controls	2.211	
Repair service	2.187	Average importance
Attitude	2.120	
Impression	2.054	
Packaging ability	2.009	
Labor relations record	2.003	
Geographical location	1.872	
Amount of past business	1.597	
Training aids	1.537	
Reciprocal arrangements	0.610	Slight importance

AGGREGATE FACTOR RATINGS

Figure 7.2

Importance rank	*Case A: paint*	*Case B: desks*	*Case C: computer*	*Case D: art work*
1	Quality	Price	Quality	Delivery
2	Warranties	Quality	Technical capability	Production capacity
3	Delivery	Delivery	Delivery	Quality
4	Performance history	Warranties	Production capacity	Performance history
5	Price	Performance history	Performance history	Communication system

THE MOST IMPORTANT FACTORS BY SITUATION

Source: Dickson (1966: 10-11)

In the light of the above-mentioned stages, the following 10 factors are considered in the supplier selection as indicated by Lee, Dobler & Burt (1984: 96 - 106):

7.2.1 ASSURANCE OF SUPPLY

Due to recurring worldwide scarcities of materials, assurance of supply is becoming an important factor in the future. Suppliers who have rendered reliable service in the long-term for their raw materials and sub-assemblies should be maintained and developed. Suppliers who were not able to meet prompt delivery times due to shortages themselves, should be weighed carefully.

> Metal Box is assured of its raw materials supply. Tinplate is purchased from ISCOR, which is a government concern; aluminium is purchased from Hulletts Aluminium, a Barlow Rand Group; inks and coatings are purchased from AECI, Plascon-Evans, Coates and Inmont.[2]

7.2.2 SIZE OF SUPPLIER

Whether the size of the order should correlate to the size of the supplier is debatable. Some purchasing authorities feel that small orders should be placed with small suppliers and large orders should be placed with large suppliers, whilst others feel

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2. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 21.10.1986. See also p. 104.

that whether the order is small or large should be placed with the buyer's choice of supplier. The reasoning is that small suppliers may fulfil small orders efficiently, whereas large suppliers prefer not to handle too small orders. The supplier's view point is that large suppliers may be interested in developing smaller accounts, and small suppliers may be motivated to work harder in supplying the large order. There are many variables to be considered when placing an order, whether large or small, with small suppliers. Firstly, suppliers' capability of handling the order. Secondly, the small supplier may be dependent on the larger buyer for survival, thus placing moral restraints on the buyer. Finally, technological innovations may lead the small supplier to fall behind competitively. One should consider the above variables when placing an order with a small supplier.

> Metal Box purchases major critical items such as tinplate, aluminium, inks and coatings from large suppliers, and non-critical items such as consumables from small suppliers.[3]

7.2.3 NUMBER OF SUPPLIERS

Ideally, a buyer should use two or three suppliers because the firm has alternate sources of supply in times of shortages. Large buyers command good pricing and service from two or more suppliers.

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3. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 21.10.1986.

Factors favouring a single supplier are:

(a) small quantities are purchased

(b) supplier owns critical patents

(c) supplier offers lower freight rates

(d) supplier gives sizeable discounts

(e) supplier agree to carry the buyer's inventory

(f) supplier offers best pricing because of assured repetitive sales.

Another method of purchasing may be on 70/30 percent contract basis. Seventy percent of the order may be placed with a large supplier who is required to perform extra services, such as warehousing, inventory holding, and special deliveries. The 30% order may be placed with a small supplier stimulating the smaller supplier to perform his task efficiently in order to attract more than 30% of the order from the buyer. If the buyer feels that the large supplier is not performing up to expectations, he may allocate more business to the small supplier. In this way, active competition is stimulated thus making both suppliers to perform effectively. (Lee, Dobler & Burt 1984: 96 - 100).

As mentioned before, Metal Box is severely restricted by government in its purchasing.[4] In this case Metal Box is striving to maximize the value of the firm subject to government constraints.

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4. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 21.10.1986. See also p. 102.

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7.2.4 DEVELOPING SOURCES OF SUPPLY[5]

A buyer's firm must create its own supplier because there are no satisfactory suppliers to select.

Metal Box does not develop any sources of supply.[6] If Metal Box did consider developing its own sources of supply in inks, coatings and tinplate, it would have horizontally integrated into these industries. However because of the capital intensiveness of these industries, Metal Box prefers not to integrate.

7.2.5 BUYING LOCALLY

Most enterprises buy locally due to economic and technical considerations. Smaller quantities of materials may be obtained locally at lower prices than could be obtained from distant sources. Regular local users encourage local suppliers to maintain and finance inventory levels.

7.2.5.1 ADVANTAGES OF LOCAL BUYING

(Lee, Dobler & Burt 1984: 102)

(a) Due to geographical proximity, closer cooperation is possible between buyer and seller.

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5. See p. 27.

6. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 21.10.1986.

(b) Transportation is a minor factor and therefore delivery dates are more certain.

(c) Consolidated transportation and insurance can result in lower prices.

(d) Reductions in inventory is possible because of shorter lead times.

(e) Rush orders are executed more efficiently.

(f) Disputes are resolved more easily.

(g) Implied social responsibility to the community is fulfilled.

7.2.5.2 ADVANTAGES OF NATIONAL BUYING

(a) Lower prices may be offered because national concerns are able to produce in mass quantities for a large number of customers.

(b) National companies can provide superior technical assistance.

(c) Large national companies have greater production capacity and therefore greater production flexibility to handle fluctuating demands.

(d) Provisions for national service often include localised branch locations and warehousing facilities. (Zenz 1981: 149)

Metal Box buys its major critical items and non-critical items both locally and nationally because of the geographical situation of the suppliers. As stated previously, Metal Box cannot import its raw materials because of governmental regulations.[6]

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6. Interview held with Mr J.M.V. de Gouveia on 21.10.1986.

7.2.6 BUYING INTERNATIONALLY

International buying is an important consideration and is discussed in detail in Chapter 12.

7.2.7 MANUFACTURER OR DISTRIBUTOR

Buyers may purchase directly from the manufacturer or from a distributor. When dealing with a distributor, his services offered must be considered rather than his location. A distributor offers advantages such as alternative supply, specialised knowledge, stock-keeping, supplying buyer's specific needs such as quantity, size, finish and colour. Direct purchasing from the manufacturer may effect savings in costs, but large quantities and minimum requests required by the manufacturer may be more than the buyer's needs. The advantages of using the distributor lies particularly in the marketing function such as transport, storage, rearrangement, financing and availability.

> Metal Box purchases major critical items such as tinplate, aluminium, inks and coatings directly from the manufacturer. Non-critical items such as consumables are purchased either from the manufacturer or distributor[7].

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7. Interview held with Mr J.M.V. de Gouveia on 21.10.1986.

7.2.8 CONFLICTS OF INTERESTS

Conflicts of interests exists when the buyer's loyalty is divided between his firm and an external firm of which he is a major shareholder or alternatively if an order is placed where the buyer benefits personally.

> It is alleged by Metal Box executives that the above described conflicts do not occur in the firm.[8]

7.2.9 ETHICAL CONSIDERATIONS[9]

Due to increasing pressures on buyers to accept gifts and entertainment offers from potential and present suppliers, it has become necessary for top management to state their policy on the extent to which gifts and entertainment offers may be accepted from suppliers. Gifts or entertainment offers which are intended to influence buying decisions should not be accepted. Personal influence and relationships should not become the prime basis for purchasing decisions.

> Metal Box management permits the purchasing department to accept minor gifts such as a case or bottle of whiskey, or accept offers for lunch or dinner. Major gifts such as acceptance of cash, cars and houses are strictly forbidden by management.[8]

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8. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 24.10.1986 and 27.10.1986.

9. See p. 22.

It appears that Metal Box observes ethical rules. If they did not, personal interests would have taken precedence over that of the firm. Consequently, owner's wealth maximization would have suffered.

7.2.10 RECIPROCITY

Reciprocity refers to the practice of where enterprise A buys from enterprise B, and enterprise B buys from enterprise A. A stationery firm, e.g. buys chemicals from a chemical producer and the chemical producer buys stationery from the stationery firm. Most buyers disapprove of the practice of reciprocity because it restricts their ability to achieve competition among suppliers.

Metal Box does practice reciprocity to a relative extent. Metal Box purchases inks and coatings from Plascon-Evans. Plascon-Evans purchases containers for their paints and chemicals from Metal Box. If Plascon-Evans purchase containers from Van Leer (competitor to Metal Box for metal containers) at a cheaper price, then Metal Box will then decide to buy inks and coatings from either AECI or Coates or Inmont.

It is the policy of Barlow Rand to purchase materials from within the Group, providing that price, quality and service meets the demand. Plascon-Evans and Inmont belong to the Barlow Rand Group. By practicing reciprocity in the above-

mentioned way, Metal Box develops good supplier relationship.[10]

7.3 SOURCES OF SUPPLIER INFORMATION

Westing et al (1976: 91) and Lee, Dobler & Burt (1984: 107) stated that for any effective buyer, knowledge of sources of supply is a primary prerequisite. Some buyers rely solely upon their experience and memory for their knowledge of sources of supply. The authors list 12 sources of supplier information:

7.3.1 EXPERIENCE

Past experience is a widely used source of information about prospective suppliers. A wealth of information is available to the buyer on the basis of performance evaluation of the supplier because purchasing is repetitive in nature. Most purchasing departments maintain supplier files that contain the names and addresses of past and present suppliers, a list of materials that can be supplied, reliability of meeting delivery dates, willingness to handle emergency and rush orders, his quality rejection record, and his evaluation of performance as a supplier.

7.3.2 CATALOGUES[11]

Catalogues cover the most important materials in which a company is interested. The value of catalogues depends largely on the

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10. Interviews held with Mr J.M.V. de Gouveia, Mr L.A. Hass and Mr D. McKeaveney on 03.11.1986 and 04.11.1986 respectively.

11. Information from 7.3.1 to 7.3.14 are used by Metal Box.

form in which they are presented, the relative easiness with which the material contained in them is available, and the use which is made of such information. Buyers use catalogues to determine potential sources of supply and to estimate prices.

7.3.3 TRADE REGISTERS AND DIRECTORIES

Trade registers and directories list leading manufacturers, their addresses, number of branches, affiliations, products, their financial standings, and positions in trade. In addition, they contain listings of the trade names of articles on the market with names of manufacturers, and classified lists of materials, suppliers, equipment, and other items offered for sale, under each of which is given the name and location of available manufacturing sources of supply. The registers are indexed by commodity, manufacturer or trade name.

7.3.4 TRADE JOURNALS

Trade journals reflect advertisements of suppliers and their products. There are trade journals in almost every field and buyers read extensively those dealing with their own industry and with those industries to which they sell and from which they buy.

7.3.5 MAILING PIECES

Mail advertisements should be filed, numbered, dated and indexed by the name and number of each publication. When a new source is being sought, buyers can refer to the index and review the appropriate brochures and booklets.

7.3.6 SALES REPRESENTATIONS

Sales people constitute a valuable source of information about suppliers for particular products. They are familiar with similar and competitive products and often suggest new applications of their products which will eliminate search for new suppliers. Because sales representatives are valuable sources of information, many buyers are courteous to attend to every sales representative.

7.3.7 TRADE EXHIBITS

Buyers learn about possible sources of supply from regional and trade shows. At trade shows, members of industry display new products and modification of old products in an attempt to attract buyers, and if possible, make sales. A buyer can converse with representatives of many firms making similar products and decide whether to investigate suppliers any further.

7.3.8 SUGGESTIONS FROM ASSOCIATES

Valuable information may be obtained from circles of purchasing associates of other firms. This information is useful in developing sources of materials that the buyer had not purchased before.

> Metal Box may try another supplier, if suggested by associates from another branch.[12]

7.3.9 COMPANY PERSONNEL

Personnel from other departments in the same organisation can provide purchasing department with helpful information about

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12. Interviews held with Mr J.M.V. de Gouveia on 03.11.1986.

prospective suppliers. They learn about outstanding suppliers through their associations with professional bodies, social groups and civic associations.

7.3.10 INTERNATIONAL SOURCES

Information concerning foreign markets and companies is available from an increasing number of sources. Foreign sources have become more important in recent years with improvement of manufacturing skill in many parts of the world. Lower labour costs and technical skills have made such products competitive with domestic products.

7.3.11 REQUESTS FOR QUOTATIONS

A written request may be made to a prospective supplier to quote price and delivery of specified parts, including quality requirements and estimated usage.

Metal Box makes requests for quotations from the suppliers such as AECI, Plascon-Evans and Coates for inks and coatings.[13]

7.3.12 VIDEO TAPES

Good use may be made of well-selected video tapes in acquiring knowledge about major commodities of sources of supply.

Metal Box makes use of video tapes only for equipment.

It appears that Metal Box uses sources of supplier information mainly for non-critical items and not for

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13. Interview held with Mr J.M.V. de Gouveia on 03.11.1986.

critical items because there are only two sources of raw materials supply in the country, viz., ISCOR and Hulletts Aluminium. Also, Metal Box wishes to fulfil one of its many objectives, i.e., to achieve superior quality and service in all areas of endeavour and to maintain its position at the forefront of technological developments.[14]

7.4 SUPPLIER EVALUATION - FACTORS TO BE CONSIDERED[15]

Having compiled a list of potential suppliers, a qualitative evaluation and elimination process is used for each supplier. Evaluation of suppliers is a continuing task of purchasing management. Leenders et al (1980: 229) indicated that current suppliers have to be evaluated to test performance against expectations. New sources must by screened to see if their potential demands serious future considerations.

The buyer is left with a selected list of suppliers with whom he may desire to negotiate in terms of the desired quality, quantity, price and service.

Metal Box conducts research survey of suppliers. The following factors are considered when evaluating the supplier:

(a) technical services

(b) turnover rate

(c) reputation

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14. Interview held with Mr J.M.V. de Gouveia on 03.11.1986.

15. See p. 27.

These factors are considered in order to determine the stability of the supplier.[16]

Zenz (1981: 135 - 139) demonstrated that the following factors are considered in the evaluation of a supplier:

7.4.1 LOCATION

The geographical location of the supplier is important because a local source offers more dependable service than one located at a distance. Local deliveries are prompt because the distance is shorter and the dangers of interruption in transportation service are reduced.

Therefore, if a local source of supply can be located that renders the same service than that of any other supplier, it should be supported.

7.4.2 INTERNAL FACILITIES AND QUALITY-CONTROL PROCEDURES

One must consider technological development and the ability to keep up with current methods in evaluating services annually. Suppliers often advise buyers of the latest trends regarding design and material changes as new concepts are mastered. Quality control and inspection methods are also important in evaluating services annually. Careful and thorough plant maintenance ensures the supplier of minimal production disruptions, thus maintaining the assurance of continual supply.

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16. Interview held with Mr J.M.V. de Gouveia on 03.11.1986.

Metal Box holds meetings with suppliers to discuss the latest trends regarding design, material changes and quality.[17]

7.4.3 WARRANTIES

Suppliers should provide a service such as warranties on their products. They should also make replacement parts available. The assurance of supply includes assurance that the product delivered will be usable throughout its normal life. A supplier who does not back up his product may not be rated highly in regard to service.

Metal Box carries out quality tests, and enters into an agreement with the supplier, with regard to quality assurance.[17]

7.4.4 SUPPLY SOURCES

It is important that the supplier has well-developed sources of supply to ensure continuity of production during periods of fluctuating business conditions.

Metal Box makes requests for additional raw materials especially during the christmas period for manufacturing biscuit tins. Another seasonal experience is during winter when there is a demand for paraffin tins because of increased fuel consumption.[17]

7.4.5 PLANT VISITATIONS

Periodic visits to plants of suppliers constitute an important

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17. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 03.11.1986 and 04.11.1986 respectively.

means of evaluating existing suppliers. Where highly technical products are being purchased, a representative of the production department should accompany the buyer to arrive at sound judgments regarding the equipment and capabilities of the supplier. The following areas should be examined on such visits:

(a) The examination should include production facilities, plant layout, receiving and shipping departments, internal materials-handling system, supply and tool rooms, and office facilities.

(b) Observation should be based on morale of the employees, technical competence of the individual and trade union relations.

(c) Inspection of plant maintenance and general cleanliness should prove useful in relation to efficiency and reliability of output as expected of the supplier.

(d) Studies should be based on how the supplier processes orders from the time he receives it till shipment is effected in order to evaluate the level of efficiency and possible procedural problems.

(e) The buyer should determine the supplier's area of specialisation in order to effectively utilize it as a source.

Divisional reports on suppliers are sent on a daily, monthly and annual basis to the Head Office of Metal Box

in Johannesburg.[18] The problems are noted and discussed, thereafter, visits are made to the suppliers' plants, viz., ISCOR and Hulletts, and the quality control charts are examined thoroughly. This visit is normally made on an annual basis.[19]

EVALUATION

As already mentioned, Metal Box is assured of its materials (critical and non-critical) supply sources. It appears that Metal Box observes ethical rules. If they did not, personal interests would have taken precedence over that of the firm. Consequently, owner's wealth maximization would have suffered. Since it is the policy of Barlow Rand to purchase materials from within the Group, providing that price, quality and service meets the price, Metal Box does practice reciprocity, thus developing good supplier relationship. Metal Box uses sources of supplier information mainly for non-critical items and not for critical items because there are only two sources of raw materials in the country, viz., ISCOR and Hulletts Aluminium. Research surveys are conducted by Metal Box in order to determine the stability of the supplier. Also, Metal Box wishes to fulfil one of its many objectives, i.e., to achieve superior quality and service in all areas of endeavour

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18. See p. 77.

19. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 03.11.1986 and 04.11.1986.

and to maintain its position at the forefront of technological developments. The quality assurance techniques of Metal Box are in accordance with current theoretical literature. This is so because Metal Box is a large company and has to ensure that the quality of materials are adequate for the intended purpose and suitable for the process and the equipment used. Therefore, if the material fails on any of the points mentioned, then the results for Metal Box can be costly, in terms of expensive delays, inefficient production, inferior products, broken delivery promises and unhappy customers. Therefore, I feel that Metal Box does attempt to fulfil its quest for optimum efficiency in obtaining the most favourable input/output ratio, thus achieving the objective of the firm, viz., maximizing shareholders' wealth.

SUMMARY

The choice of the right supplier influences not only the economic prosperity of the enterprise, but is also necessary for the efficient functioning of the market mechanism and the application of scarce resources in the national economy. Therefore, effective purchasing is dependent on the capability and reliability of the supplier who can contribute to the achievement of the enterprise's objectives. Efficient supplier selection begins with a comprehensive analysis of the four stages in the actual process of source selection. There are various factors to be considered in the supplier selection decision. Knowledge of sources of supply is a primary requisite for any effective buyer. Having compiled a list of potential suppliers, a qualitative evaluation and

elimination process is used for each supplier. The buyer is then left with a selected list of suppliers with whom the buyer may desire to negotiate in terms of the desired quality, quantity, price and service.

Metal Box uses sources of supplier information mainly for non-critical and not for critical items because there are only two sources of raw materials in the country. Research surveys are conducted by Metal Box in order to determine the stability of the supplier.

The basic responsibility of the purchasing department is to obtain the best price (maximum value at the lowest cost) for products in relation to quality and quantity. Price determination by the supplier and by the buyer and discounts will be the issues discussed in the next chapter.

CHAPTER 8

PRICING

8.1 INTRODUCTION

Aljian (1973: 10-3) stated that the basic responsibility of the purchasing function is to obtain the maximum value at the lowest cost. This is in accordance to obtaining a favourable input:output ratio and therefore conducive to attaining the objective of the firm. Value has three components, viz., quality, price and service. The determination of a reasonable price for purchased goods and services assures the buyer of a fair transaction and the supplier of a reasonable profit.

Leenders et al (1980: 291) believe that a fair price is the lowest price that ensures a continuous supply of the proper quality where and when needed. Heinritz & Farrell (1981: 197) point out 3 criteria for measuring a fair price:

(a) the price must be reasonable in relation to manufacturing costs

(b) the price must be determined by supply and demand

(c) the price must be determined under conditions of competition

In regard to (c) above, Metal Box operates under a constraint in that the prices they pay are not determined under conditions of competition.

Therefore, the buyer must consider the above-mentioned influences in determining the right price for a given product at a given time. Metal Box uses the above-mentioned criteria

and includes quality as the main criterion.[1]

8.2 PRICE DETERMINATION BY SUPPLIER

Price determination is influenced by economic factors through the market mechanism and also by non-economic considerations. According to Zenz (1981: 310 - 313) the following 5 economic considerations are involved:

8.2.1 COST APPROACH

In illustrating cost as a basis for price determination, it is necessary to discuss two cost concepts briefly, viz., fixed costs and variable costs.

Fixed costs are costs that have to be met whether the supplier makes a profit or not such as rental of buildings, equipment etc. Variable costs are costs that vary in proportion to volume of production such as direct labour, direct cost of materials and certain overheads.

To this total cost, the supplier adds a certain percent of profit, thus arriving at his final price. (Lee, Dobler & Burt 1984: 163) The cost approach is very popular but is subject to the question of economic soundness:

(a) The seller may be better off if he sells his product at below full cost in order to maximize production capacity. It may

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1. Interview held with Mr J.M.V. de Gouveia on 13.01.1987.

also be necessary for the seller to sell certain products at a price that covers direct costs.[2]

(b) A certain range of products may be sold below full cost in order to stimulate the sales of another product which is highly profitable.

Zenz maintains that one should not be misled by a price set at cost or less unless the price relates directly to value.

8.2.2 MARKET APPROACH

Leenders et al (1980: 294) maintain that the market approach price is determined by supply and demand thus price is not directly related to cost. Zenz (1981: 311) maintains that prices are determined according to the market approach by the following methods:

(a) Through market research, the supplier can determine what quantities of his product will be sold at various prices.

(b) The supplier may set his price by following the price of an established competitor.

(c) When the seller desires a certain volume of business, he determines the price at which it must be fixed.

(d) Price is set, in relation to the price of related products.

Pricing to the market has a sounder economic basis than cost pricing because the price reflects conditions of demand and

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2. Direct cost refers to costs such as direct labour, direct materials and purchased parts.

supply and the significance of cost in the process of pricing is not over-emphasized.

8.2.3 GOVERNMENT CONTROLLED PRICES

According to Zenz (1981: 313) certain governments determine prices by establishing ceiling prices, production quotas, and various forms of price/wage controls. Governments can also stipulate as to how seller and buyer may agree on price because of anti-inflationary measures. Zenz (1981: 313) indicated that such price controls affect purchasing in the following ways:

(a) In the case of ceiling prices, the seller may have one price for all buyers.

(b) Because of the profit margin, there can be no negotiation of prices with the buyer.

(c) The buyer will have to rely less upon price as an indication of value.

The South African Government also exercises price control to a certain degree.

Metal Box cannot increase its prices of products even if salaries have to be increased. The only time Metal Box can increase the price of its products, is when raw material prices increase. Metal Box has to consult the Price Control Board before it could increase its prices.3

8.2.4 ADMINISTERED PRICING

Large companies set their own prices for products irrespective of

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3. Interview held with Mr J.M.V. de Gouveia on 13.01.1987.

the forces of supply and demand. This practice prevails because of few producers manufacturing few homogenous products. This method of pricing may lead to restricted production and retarded growth of the economy.

> At the present moment, it has been gazetted that prices should not be revealed to competitors in the industry due to price negotiation.[4]

8.2.5 PSYCHOLOGICAL CONSIDERATIONS

Psychological factors concerning price is based on the prediction of future supply-demand relationships. Confidence about the future will result in increasing prices, whereas being pessimistic about the future will lead to declining prices. Buyers must evaluate this intangible element by developing their economic expertise. The buyer may bargain with the supplier, and this may lead to such low prices that the supplier is forced out of the market, thereby leading to price rises for that particular product. (Zenz 1981: 310 - 313)

8.3 PRICE DETERMINATION BY BUYER

Quality and costs considerations must be taken into account in determining the specific quantities of the items to be bought. Lee, Dobler & Burt (1984: 156 - 161) maintain that there are

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4. Interview held with Mr J.M.V. de Gouveia on 13.01.1987.

three basic methods a buyer can use to determine the right price, viz., published price lists, competitive bidding, and negotiation.

8.3.1 PUBLISHED PRICE LISTS

Price lists are the buyer's main source of information when buying standardised products of a relatively low unit value. Price lists may appear in the form of daily quotations for standard commodities, indicating different prices for varying quantities. Prices indicated on the lists are seller's "asking" prices, and they may or may not be the actual selling prices because of discounts given by the seller in anticipation of future orders or annual minimum Rand amounts of business.

> In Metal Box, Head Office negotiates prices for major critical items such as aluminium, tinplate, inks and coatings. Divpac and Beverage Can Divisions make use of published price lists for non-critical items such as consumables and maintenance materials.5

8.3.2 COMPETITIVE BIDDING

In competitive bidding, requests for bids are sent to suppliers to quote prices at which they will perform in accordance with terms and conditions of the order or contract, i.e., if they are successful. The orders are given to the lowest bidder, provided

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5. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 13.01.1987.

he is qualified to perform the contract.[6]

Metal Box does not practice competitive bidding because there are only two suppliers in the country.[7]

8.3.3 NEGOTIATION[8]

Negotiation is normally used when published price lists are inappropriate or when one or more of the five criteria for competitive bidding does not exist. In negotiation, competition is sought on a less formal basis and includes the areas of quality, quantity and service.

8.4 PRICE ANALYSIS

Price analysis is normally used with competitive bidding. Lee, Dobler and Burt (1984: 161) define price analysis as the examination of a seller's price without examination and evaluation of the separate elements of the cost and profit making up the price.[9]

Metal Box does not make use of price analysis because there are only two suppliers in the country, viz., ISCOR, supplier of tinplate

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6. For more information on Competitive Bidding, see Lee, Dobler & Burt (1984, p. 156).

7. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 13.01.1987.

8. Negotiation is discussed in Chapter 9.

9. For more information on Price Analysis, see Lee, Dobler & Burt (1984, p. 163). See also p. 28, 140.

and Hulletts Aluminium supplier of aluminium.[10]

8.5 COST ANALYSIS

Lee, Dobler & Burt (1984: 163) define cost analysis as a review and an evaluation of a seller's actual or anticipated cost data. Cost analysis is used with negotiated purchasing. Cost analysis indicates the cost breakdowns for quotations.[11]

Metal Box does not make use of cost analysis because of the limited suppliers (as mentioned previously).[12]

8.6 SERVICE

Service includes delivery, repairs, installation, advisory services, training of personnel, and guarantees. Only the services specifically required by the enterprise should be chosen so that lower prices and optimum service is actually paid for. (Lee, Dobler & Burt 1984: 171).

Metal Box makes use of the supplier only for technical knowledge and the training of its employees to master the job in assembling and maintenance. E.g. Installation of polytype machinery for a production line equipment.[13]

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10. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 13.01.1987.
11. For more information on cost analysis, see Lee, Dobler & Burt (1984, p. 163).
12. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 13.01.1987.
13. Interview held with Mr J.M.V. de Gouveia on 13.01.1987.

8.7 DISCOUNTS

Discounts play an important role in price determination and is often the best way in which the buyer can bargain with the supplier for price concessions.[14]

In Metal Box, discounts are negotiated annually on a company basis for all major purchases, such as inks and coatings, tinplate, aluminium etc. Discounts negotiated at plant level apply to that plant/factory only.[15]

8.8 TYPES OF PRICE CONTRACTS

There are various types of price contracts available to a buyer when purchasing goods and or services. In choosing the best available contract, the buyer must consider all contracts and the factors influencing the use of such contracts.[16]

Metal Box does not enter into any price contracts with their suppliers, regarding raw materials supply because prices are constantly reviewed by the price controller, and, also, if there is a new supplier who can supply more efficiently, then Metal Box may change

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14. For more information on discounts, see Lee, Dobler & Burt (1984, p. 176).

15. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 13.01.1987.

16. For more information on contracts, see Lee Dobler & Burt (1984, p. 181).

its suppliers.[17]

EVALUATION

Metal Box negotiates for prices directly with its suppliers for major raw materials such as aluminium, tinplate and inks and coatings. By combining the purchasing orders for major critical items of all the plants in the country, Metal Box attempts to seek the best price. This practice does lead to an improvement in the input/output ratio. Metal Box is willing to change its suppliers if there are new suppliers who can supply more efficiently. They are flexible in that they can capitalize on future price changes to the benefit of the firm. Because of the limited suppliers in the country, Metal Box functions within severe constraints.

SUMMARY

Price determination is one of the basic responsibilities of the purchasing manager in order to obtain the maximum value at the lowest cost. The determination of price by the supplier and by the buyer, the significance of price analysis and cost analysis, discounts and contracts used, were discussed in determining the most suitable price.

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17. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 13.01.1987.

It has been shown that Metal Box negotiates directly with its suppliers for major critical items such as aluminium, tinplate, inks and coatings; and from distributors and suppliers for non-critical items such as consumables and maintenance materials. This practice serves the basic objective, viz., the highest possible return on investment or the profitability of the enterprise. This, in turn, contributes to maximizing the wealth of the owners of Metal Box.

Negotiation involves the discussion of quality, quantity, service and price. There are various factors to be considered when negotiating, such as when to negotiate, the negotiation process, techniques of negotiation, negotiating for price, and characteristics of a good negotiator. These issues will be discussed in the next chapter.

CHAPTER 9

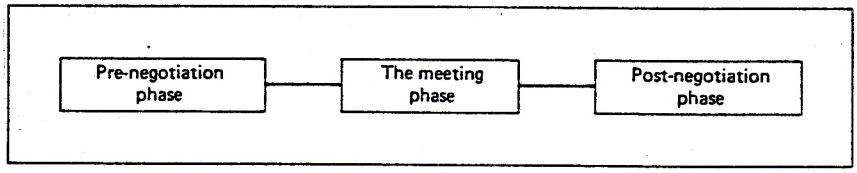
NEGOTIATION

9.1 INTRODUCTION

Heinritz & Farrell (1981: 196) define negotiation as the process of working out a procurement and sales programme together, to the point of reaching a mutually satisfactory agreement. Negotiation involves the discussion of quality, quantity, service, and price; the latter being the major element. Negotiation is used mainly for non-standard items, especially when the product or service is being provided to the buyer's specifications or where there are a limited number of suppliers with the element of competition being absent. Buyers can also negotiate when prices quoted by suppliers are unreasonable. Zenz (1981: 375) indicated that negotiation is also recommended when competitive bidding did not take place, purchasing order is made up of a multiplicity of terms and conditions of sale, high-risk situations exists where the supplier may have included an excessive factor for risk protection, and purchases involving high tooling or set-up costs.

Baily & Farmer (1977: 200) stated that it is useful to consider negotiation conceptually as a three-phase process, as shown in figure 9.1.

Figure 9.1

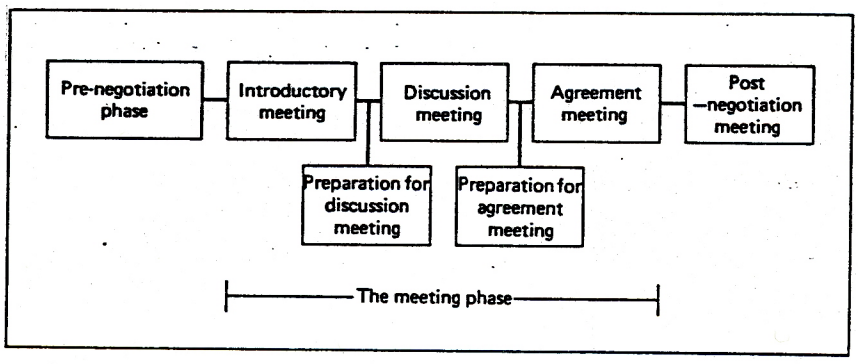


THE BASIC PHASES OF NEGOTIATION

Source: Baily & Farmer (1977: 200)

The first phase is known as the preparatory stage, when the information is analysed, the objectives are set and strategies developed. The second phase is concerned with the process of discussion, further information collection and analysis, and completion of agreement between parties. The third phase involves the implementation of the agreement represented in the second phase. The process of negotiation may involve several meetings, or agreement may be reached in one meeting. Figure 9.2 and figure 9.3 illustrate the phases of negotiation, indicating a multi-meeting and a single meeting.

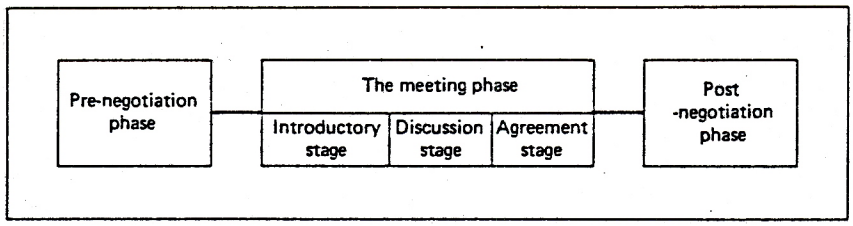
Figure 9.2



THE PHASES OF NEGOTIATION - MULTI-MEETING

Source: Baily & Farmer (1977: 201)

Figure 9.3



THE PHASES OF NEGOTIATION - SINGLE MEETING

Source: Baily & Farmer (1977: 201)

9.2 OBJECTIVES OF NEGOTIATION

Lee, Dobler & Burt (1984: 212) outline five major objectives that are common to all negotiations:

(a) To obtain a fair and reasonable price for the quality specified.

(b) To get the supplier to perform the contract on time.

(c) To exert some control over the manner in which the contract is performed.

(d) To persuade the supplier to give maximum co-operation to the buyer's company.

(e) To develop a sound and continuing relationship with competent suppliers.

These are also the basic objectives of Metal Box.[1]

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1. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney on 21.01.1987.

9.2.1 FAIR AND REASONABLE PRICE

Cost or price analysis should be performed before negotiation, especially when negotiation is used alone. Competitive bidding is used in conjunction with negotiation, where the buyer obtains a reasonable number of competitive bids, and then negotiates with the sellers who submit the best bids.

> Metal Box negotiates with its suppliers for a fair and reasonable price without the use of cost or price analysis because apart from not using cost analysis, prices are also controlled by the government.[2]

9.2.2 DELIVERY SCHEDULES

It is important for buyers to negotiate delivery schedules which suppliers can meet, without endangering other requirements of the purchase. Buyers can achieve this objective by ensuring that the supplier's plant is not overloaded and that his production schedule is on time. Failure to follow this method will result in the supplier making untimely deliveries, and the quality will be questioned. The main reason for suppliers being unable to meet delivery schedules are:

(a) failure on the part of requisitioners to submit purchase requests earlier to permit purchasing and manufacturing lead times

(b) failure of buyers to negotiate delivery schedules.

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2. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia on 21.01.1987.

Metal Box specifies its orders with its suppliers, e.g. 10 000 litres of ink. The supplier must deliver a certain number of litres per day or per week. Metal Box uses the "Just In Time" (JIT) method of inventory which will be discussed in detail in Chapter 11.[3]

9.2.3 SUPPLIER PERFORMANCE

Supplier performance can lead to the disruption of the buyer's production line. It is imperative that buyers should negotiate control to ensure compliance with quality, quantity, delivery, and service terms of the contract.

9.2.4 SUPPLIER CO-OPERATION

To obtain supplier co-operation, the buyer should reward the supplier by placing future orders. The buyer should treat the supplier with courtesy, good working relationship, timely payment of accounts - this will result in supplier goodwill.

Paragraphs numbered 9.2.3 to 9.2.5 are in accordance with Metal Box.[3]

9.2.5 CONTINUING SUPPLIER RELATIONSHIP

A buyer should recognise that current actions usually constitute only a part of a continuing relationship when negotiating with suppliers. Negotiating conditions which permit buyers to take unfair advantage of suppliers invariably, with time, change to conditions which allow sellers to "hold up" buyers. For this reason, the buyer should maintain a proper balance between short-

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3. Interview held with Mr J.M.V. de Gouveia on 21.01.1987

term and long-term performance of the supplier.

9.3 WHEN TO NEGOTIATE

Lee, Dobler & Burt (1984: 214) indicate the following circumstances to dictate the use of negotiation:

(a) When any of the five criteria for competitive bidding are absent.[4]

(b) When there are many variables affecting price, quality and service.

(c) When the buyer contracts a part of the supplier's production capacity, rather than for a product which the seller has designed and manufactured.

(d) When business risks[5] cannot be accurately predetermined.

(e) When tooling and set-up costs represent a large percentage of total costs.

(f) When a long period of time is required to produce the item purchased.

(g) When production is interrupted due to numerous changes in orders.

(h) When a detailed analysis is required to solve a difficult make-or-buy decision.

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4. For more information, see Lee, Dobler & Burt, (1984, Chapter 9, p.157).

5. Business risk refers to a condition in which there is a possibility of loss or losses in the quest for profit. (Athearn & Pritchett 1984: 2)

(i) When the products of a particular supplier is preferred to those of other suppliers.

9.4 THE BUYER'S ROLE IN NEGOTIATION

Lee, Dobler & Burt (1984: 215) indicate that the buyer may be the sole negotiator for the enterprise or he may lead a team of specialists who negotiate for the enterprise as a whole.

The buyer normally acts alone in purchasing recurring standard items. He negotiates with the seller on all important terms and conditions of the contract. For example, a supplier may inform the buyer that the prices of products are to be increased within thirty days, and the buyer responds by considering factors such as idle production capacity, available finance and cost of savings realised due to timeous buying. In this way, the buyer is negotiating.

9.5 THE NEGOTIATION PROCESS

Lee, Dobler & Burt (1984: 217) state that negotiation is initiated with the enterprise's requirements for specific materials. The buyer requests for proposals from potential suppliers and evaluates these proposals and prepares for discussion of important issues that may arise during the negotiation conference. The negotiation ends when all issues are resolved.

The buyer must be able to evaluate his own strength and weaknesses accurately in relation to the seller's strength and weaknesses, in order to negotiate skillfully the product's quality, quantity, and price at the right time.

9.5.1 THE BUYER'S BARGAINING STRENGTH

Lee, Dobler & Burt (1984: 219) say that the buyer's bargaining strength depends on three factors:

9.5.1.1 THE EXTENT OF COMPETITION

When there is intensive supplier competition, the buyer's negotiating position is strengthened. General economic conditions may dictate the extent to which the supplier wishes to compete. The supplier's backlog of orders, inventory position and production load affects the constant change of competitive climate.

The buyer can increase competition by developing new suppliers, manufacturing items in his own plant rather than buying them or providing the financially weak supplier with funds for equipment and managerial skills in order to make him more competent.

> Metal Box has relatively little bargaining strength in regard to supplier competition because of the limited number of suppliers.[6]

9.5.1.2 THE THOROUGHNESS OF BUYER PREPARATION

The buyer's negotiating position is strengthened by knowledge of theory and practice of negotiation, supplier's negotiating position, product being purchased and current economic conditions in the market for the product in question. The buyer must develop estimates of the price and value levels for the items being purchased. Due to the lack of buyer preparation, the supplier may

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6. Interview held with Mr J.M.V. de Gouveia on 21.01.1987.

accept psychological bargaining advantage.

9.5.1.3 THE ADEQUACY OF COST OR PRICE ANALYSIS

A comprehensive knowledge of cost analysis and price analysis is one of the basic responsibilities of a negotiator. Cost analysis is important when an initial contract is awarded for a portion of a supplier's production capacity rather than for a finished product. Price analysis is sufficient for follow-on contracts, and for common commercial items.[7]

Metal Box's bargaining strength is based on quantity. Metal Box's Head Office in Johannesburg negotiates prices with suppliers in regard to tinplate and aluminium. ISCOR is the only producer of steel used for tinplate, in the country, and so is Hulletts Aluminium who is the only producer of aluminium. In regard to tinplate and aluminium, agreement in pricing is reached for a period of 6 to 12 months according to the quantity stipulated.[8]

9.5.2 THE SELLER'S BARGAINING STRENGTH

The seller's bargaining strength depends on three factors:

(a) how eagerly the seller wants the contract

(b) how certain the supplier feels of getting the contract

(c) how much time is available to negotiate

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7. See p. 28, 127.

8. Interviews held Mr L.A. Hass, Plant Manager of Divpac Division, and Mr D. McKeaveney, Plant Manager of Beverage Can Division on 21.01.1987.

9.5.2.1 THE SELLER'S DESIRE FOR THE CONTRACT

General market conditions and the frequency of salesman calls indicate the seller's interest. The seller's financial statements, reports concerning backlog, volume of operations and trends are important sources of information about the seller. The seller's bargaining position is strengthened if he shows negative interest for the contract.

9.5.2.2 SELLER CERTAINTY OF GETTING A CONTRACT

If the seller is the sole source, or he is a preferred source of supply because of technical reasons, then he is certain of getting the contract. In these circumstances, the buyer will encounter great difficulty in bargaining with the supplier. The only way the buyer can gain concession is by making the product in-house. This however is extremely unlikely.

9.5.2.3 TIME AVAILABLE FOR NEGOTIATION

Long lead times strengthens the buyer's position whereas short lead times strengthens the seller's position. When the seller has knowledge that the buyer is desperate because of time, the seller can negotiate terms most favourable to himself.[9]

EVALUATION

Metal Box has no negotiating power with ISCOR (only supplier) and

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9. For more information on planning for negotiation, techniques of negotiation, negotiating for a price and the characteristics of a good negotiator, see Lee, Dobler & Burt, (1984, p. 220 - 232.)

Hulletts Aluminium (only supplier). Government regulations prevent Metal Box from importing tinplate and aluminium. Metal Box has relatively little bargaining strength for inks and coatings because of the limited number of suppliers in the country. If negotiation was possible, then it could have been possible to demonstrate that negotiation is a powerful purchasing tool which competent buyers could use to achieve maximum value at minimum cost. This action should lead to an increase in shareholders' wealth. Metal Box does not negotiate prices for non-critical items because they are considered to be of relatively less importance.

SUMMARY

Negotiation is used mainly for non-standard items involving the discussion of quality, quantity, service, and price being the major element. Inter alia, the following were discussed, viz., the objectives of negotiation and when to negotiate, indicating the buyer's role in negotiation, the seller's and buyer's bargaining strengths in the negotiation process, and the importance of planning for negotiation.

Metal Box has no negotiating power for tinplate and aluminium because there is only one supplier for each commodity in the country. However, Metal Box has relatively little bargaining strength for inks and coatings because of the limited number of suppliers in the country.

In the next chapter, it will be shown how purchase timing involves buying at the right time to meet production schedules without over-stocking, and to minimize unfavourable effect of price-level changes.

CHAPTER 10

PURCHASE TIMING

10.1 INTRODUCTION

Purchasing timing involves buying at the right time to meet production schedules without over-stocking, and to minimize unfavourable effects of price-level changes. The purchasing manager should be conversant with the supply-and-demand conditions of the market in order to make predictions concerning future market conditions.(Aljian 1973: 1-4)

10.2 DIFFERENT MARKETS

Lee, Dobler & Burt (1984: 284) maintain that purchasing timing varies according to the type of market in which materials are purchased. There are two types of market, viz., stable markets and unstable markets.

10.2.1 STABLE MARKETS

In the short run, prices of materials are not sensitive to fluctuations of supply and demand. In the long term, prices of materials are determined by the forces of supply and demand.

10.2.2 UNSTABLE MARKETS

In the short term, this market is characterized by considerable fluctuations in supply and demand because of political pressure, weather conditions, economic factors and strikes. Both short and long-term prices of commodities purchased are sensitive to the

factors of supply and demand. Products sold in this market are wool, copper, tin, wheat, rubber.[1]

10.3 FORWARD BUYING

Lee, Dobler & Burt (1984: 288) allege that forward buying practice involves buying in excess of minimum stock, ensuring safety stocks and related inventory levels.[2]

(i) ADVANTAGES OF FORWARD BUYING

(a) Large quantities of materials could be bought in order to obtain quantity discounts, reduced freight rates and reduced unit costs. This method is popular in unstable markets.

(b) Useful when planning future production schedules.

(c) Protection against inadequate supplier performance.

(d) Materials of desired quality are secured when available.

(ii) DISADVANTAGES OF FORWARD BUYING

(a) Working capital is tied up.

(b) Inventory carrying costs are increased.

(c) There is a risk of declining prices in the future.

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1. For more information on Purchasing Timing, refer to Lee, Dobler & Burt (1984, p. 283).

2. Inventory control is discussed in Chapter 11.

The disadvantages of forward buying outweighs the advantages because of the following:

(a) limited shelf life

(b) interest on capital investment

(c) Expensive warehousing

Metal Box, Divpac Division, practice forward buying only for soft aluminium. The supplier needs three month's notice for supplying soft aluminium. This is necessary because the processing of soft aluminium takes long in that it is pure and it is of a special grade. Forward buying for other products depends on demand and the availability of capacity.[3]

EVALUATION

By practising forward buying for soft aluminium, Metal Box overcomes the problem of disruption in production of products requiring soft aluminium, thereby increasing efficiency in production due to uninterrupted flow of materials. This, in turn, leads to reduction in production costs, thereby achieving a favourable input/output ratio.

SUMMARY

Purchasing timing involves buying at the right time to meet production schedules without over-stocking, and to minimize unfavourable effects of price-level changes. Purchasing timing varies in relation to stable markets and unstable markets. One may use different timing policies for the purchase of certain

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3. Interview held with Mr J.M.V. de Gouveia on 23.01.1987.

major materials.

By practising forward buying for soft aluminium, Metal Box overcomes the problem of disruption in production of products requiring soft aluminium, thereby increasing efficiency in production due to uninterrupted flow of materials. This, in turn, leads to reduction in production costs, thereby achieving a favourable input/output ratio, thus increasing the profitability of the firm.

The determination of inventory quantity is an important activity of purchasing management. The functions, classifications, costs and control of inventory will be discussed in Chapter 11.

CHAPTER 11

INVENTORY CONTROL

11.1 INTRODUCTION

Marx & Van Aswegen (1984: 205) maintain that quantity determination is an important activity of purchasing management. Good supplier relations and knowledge of the markets contribute towards making the correct decisions regarding inventory quantities. Conflicts often arise between the production department and the inventory department concerning the quantity of products to be purchased. The production department prefers a high inventory level in order to reduce the risk of interruptions during production. The inventory department prefers to maintain a low inventory level in order to reduce inventory cost and capital investment. The purchasing department is in a strategic position to reconcile those conflicting objectives on an objective basis. Heinritz & Farrell (1981: 149 - 150) point out that purchase quantities must maintain a balance with operating needs and with the advantage of volume buying, aided by the cushioning effect of an inventory reservoir of materials, to which current purchases are added and from which currently needed quantities are withdrawn.

According to Zenz (1981: 178) the effect of over and under-purchasing may be expressed as follows:

(a) If too small a quantity is purchased, unit cost increases, and shortages and expediting are likely to increase.

(b) If too large a quantity is purchased, inventory costs increase, obsolescence becomes a problem, and the need for additional storage facilities may create investment problems.

In table 11.1 Aljian summarizes the influence of too much or too little stock on the cost structure of the enterprise.

Table 11.1

Cost elements	Too much stock	Too little stock
• Material cost	• Greater risk of *losses* because of: (a) Depreciation owing to price changes (b) Obsolescence (c) Damage or theft	• Higher *prices* and *manufacturing costs* owing to small quantities of rush orders
• Manufacturing cost	• Increase in *manufacturing costs* due to: (a) Lack of storage space, overcrowded floor space and inadequate working conditions	• Increase in *manufacturing costs* due to: (a) Interruption of work (b) Dismissal and appointment of personnel, and consequently high training costs (c) Additional machine set-ups (d) Rush manufacturing and orders
• Overhead cost	• Increased *overhead costs* attributable to: (a) Additional insurance (b) Interest on possible loans (c) Rent for additional storage space • Loss of capital which could possibly be employed more profitably	• Increased *overhead costs* as a result of: (a) Additional costs such as clerical, labour, ordering, inspection or receipt costs (b) Increased costs of handling materials

INFLUENCE OF INVENTORIES ON OPERATING COSTS

Source: Aljian (1966: 13-23)

11.2 FUNCTIONS OF INVENTORIES

Lee, Dobler & Burt (1984: 236 - 237) allege that inventories facilitate smooth and efficient operation of a manufacturing organisation by decoupling individual segments of the total operation. Leenders et al (1980: 171) maintain that inventories are important because of the following reasons:

(a) They provide and maintain good customer service.

(b) They ease the flow of goods through the production process.

(c) They provide protection against the uncertainties of supply and demand.

(d) They obtain a reasonable amount of utilization of equipment and manpower.

11.3 INVENTORY CLASSIFICATIONS

Van Rooyen & Hugo (1983: 85 - 86) demonstrated that inventories may be classed in the following categories: production, in-process, MRO (Maintenance, Repairs and Operating Supplies) and finished goods.

11.3.1 PRODUCTION INVENTORIES

These include raw materials and parts and components intended for the manufacturing of the enterprise's products. Production inventories consist of two types, viz., specialised items manufactured according to specifications and standard industrial items.

Purchasing of economical quantities[1] have certain advantages such as: protection against interruptions in the supplier's production process as well as against delays in the delivery of raw materials.

11.3.2 IN-PROCESS INVENTORIES

These consist of semi-finished products which are stored at various stages in the production process. These inventories act as a buffer between the various stages, and prevent unstable production at other stages in the production process.

11.3.3 MAINTENANCE, REPAIRS AND OPERATING SUPPLIES (MRO)

These consist of lubricants, machine repair kits, packing materials and cleaning materials. These inventories are used in the production process and do not form part of the finished goods. MRO inventories assist in maintaining a smooth flow.

11.3.4 FINISHED-GOODS INVENTORIES

These consist of completed products ready for shipment when ordered. These inventories, when stored, have the advantage of separating the production process from fluctuating market demands and also serve to compensate for interruptions in the production process.

11.4 INVENTORY COSTS

Van Rooyen & Hugo (1983: 87) pointed out that inventory costs can

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1. An economical quantity refers to the quantity that is ordered, and planned in such a way as to keep total inventory costs to a minimum. See also p. 153.

be divided into three categories: inventory carrying or holding costs, inventory ordering or acquisition costs and total inventory costs.

11.4.1 INVENTORY CARRYING COSTS

Thomas (1980: 51) believes that the elements of inventory carrying costs are the following:

(a) the costs of capital invested in inventories

(b) administrative costs and the costs of keeping inventories

(c) handling costs

(d) storage costs

(e) insurance and taxes

(f) depreciation and obsolescence

These costs increase in direct proportion to the increase in inventory and the period of carrying costs. According to Thomas (1980: 52), inventory carrying costs should amount to between 10 and 15 percent of the annual capital investment.

11.4.2 INVENTORY ORDERING COSTS

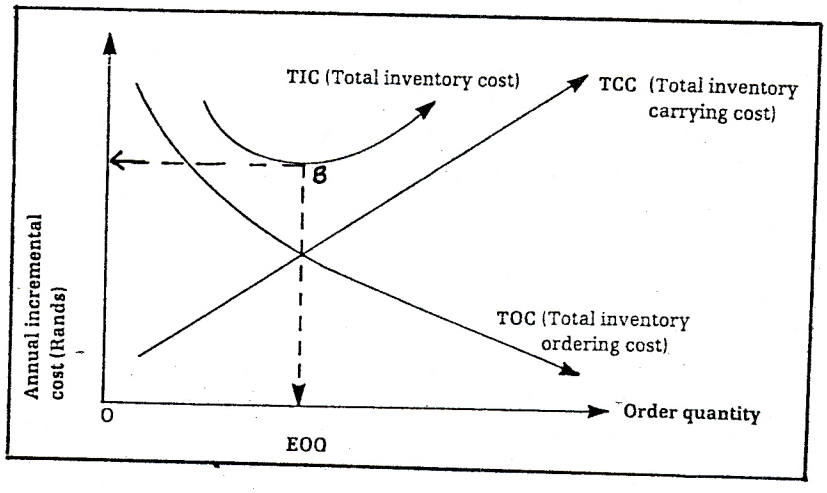
These costs are related to the number of orders placed during a specified period, such as administrative costs, follow-up and expediting costs, receiving and quality control costs, finalizing the order and payment of the invoice.

Carrying costs favour small inventory holding whereas ordering costs favour large inventories.

11.4.3 TOTAL INVENTORY COSTS (TIC)

The total inventory costs are equal to the sum of inventory carrying costs and inventory ordering costs. The minimum total inventory cost occurs at point where total costs are at a minimum. In figure 11.1, this point is depicted by B. This point also indicates the economic order quantity.[2]

FIGURE 11.1



ECONOMIC ORDER QUANTITY COST CURVES

Source: Bowersox (1978: 98 adapted)

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2. For more information on the economic order quantity, refer to Redelinghuis et al (1985: 160). See also p. 151.

Metal Box does not make use of the economic order quantity. Budgets and forecasts are used because of the market demand for products. Metal Box spends 30% of the production time on seasonal products and 70 % on non-seasonal products.[3] Seasonal products include packaging for biscuits, ham and puddings whereas non-seasonal products include packaging for toothpaste, shoe polish, deodorants, oil and paints.

11.5 INVENTORY CONTROL

The purpose of inventory control is to ensure that the quantity and Rand value of stock is determinable in order to maintain the level necessary to meet the demands in the production process. Zenz (1981: 190) feels that there are four major reasons for the maintenance of inventory control:

(a) Bulk purchasing permits lower unit costs.

(b) Bulk purchasing permits efficient use of manpower, machines and facilities.

(c) Capital invested is used efficiently.

Inventory catalogue and ABC-analysis assist in inventory control.

11.5.1 INVENTORY CATALOGUE

Lee, Dobler & Burt (1984: 238) maintain that an inventory catalogue records systematically and indicates the contents of the stores, the quantity of inventory, the maximum inventory required for the period, and the price of each inventory item. The

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3. Interview held with Mr J.M.V. de Gouveia on 10.02.1987.

catalogue is prepared by describing the inventory items, assigning numbers to manufacturer's parts and indexing them. The inventory catalogue serves the following purposes:

(a) It serves as a medium of communication, enabling personnel to select the right parts to be used by referring to the catalogue.

b) Proper cross-indexing of interchangeable parts assist users, such as MRO supplies. (See p. 149).

(c) If properly developed and maintained, it reduces duplicate records for identical parts.

Metal Box uses the card system, which is similar to the inventory catalogue. In the card system, every part or component has a number. This number is punched into a computer.[4]

11.5.2 ABC-ANALYSIS

This analysis is made on the basis of either the average inventory investment or the annual Rand usage of each inventory item. Lee, Dobler and Burt (1984: 240) propose that an ABC-analysis may be conducted as follows:

(a) All items are ranked in order of their average inventory investment.

(b) The average inventory investment for all inventory items are calculated.

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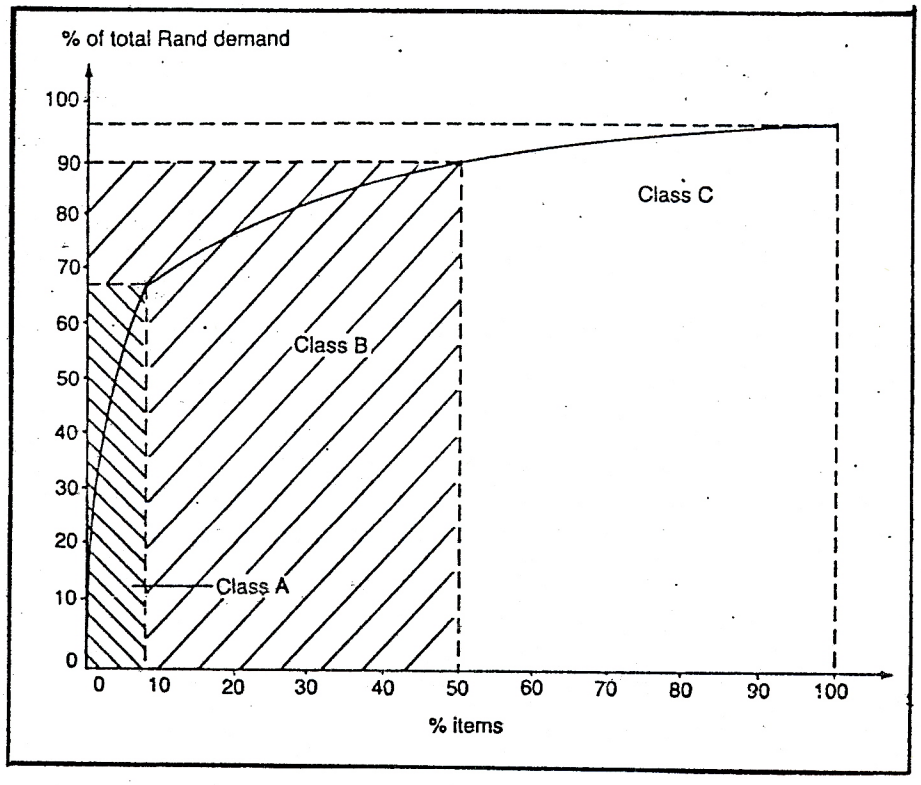
4. Interview held with Mr J.M.V. de Gouveia on 10.02.1987.

(c) The value of each individual item is expressed as a percentage of the total.

(d) A list of all inventory items are classified, with the item having the highest usage-value placed first, the next highest second and the next highest third.

(e) After such classification, each item becomes an A, B or C item. The percentages are plotted as shown in figure 11.2

Figure 11.2



ABC-ANALYSIS BASED ON RAND DEMAND

Source: Van Rooyen & Hugo (1983: 92)

ABC-analysis provides a sound basis to allocate funds and personnel time in regard to control over individual inventory

items, such as minimizing inventory investment, indirect costs associated with inventory, and effective use of personnel. Although the ABC-analysis is effective, it does not consider all relevant factors which the purchasing manager should make.

> The following example is used in Metal Box: If there is one customer taking a large range of cans regularly, there will be a certain lot or type that he will take in large quantities on a regular basis. This type of order will be treated as A. Then, there will be another range of cans that he may take in lesser quantities on a less regular basis. The latter type of order will be treated as B. If the demand for the balance of the cans from the range he buys is still more regular, it will be treated as C. Class A will be taken every day, and these cans must be kept in stock. Class B may be taken once a week, then the stock is kept in work-in-progress. Class C may be taken once per month, and these cans are made as the customers demand them.[5]

11.6 INVENTORY CONTROL SYSTEMS

Lee, Dobler & Burt (1984: 242) outline three basic systems: the cyclical ordering system, fixed-order quantity system and the material requirements planning system (MRP).

11.6.1 CYCLICAL ORDERING SYSTEM

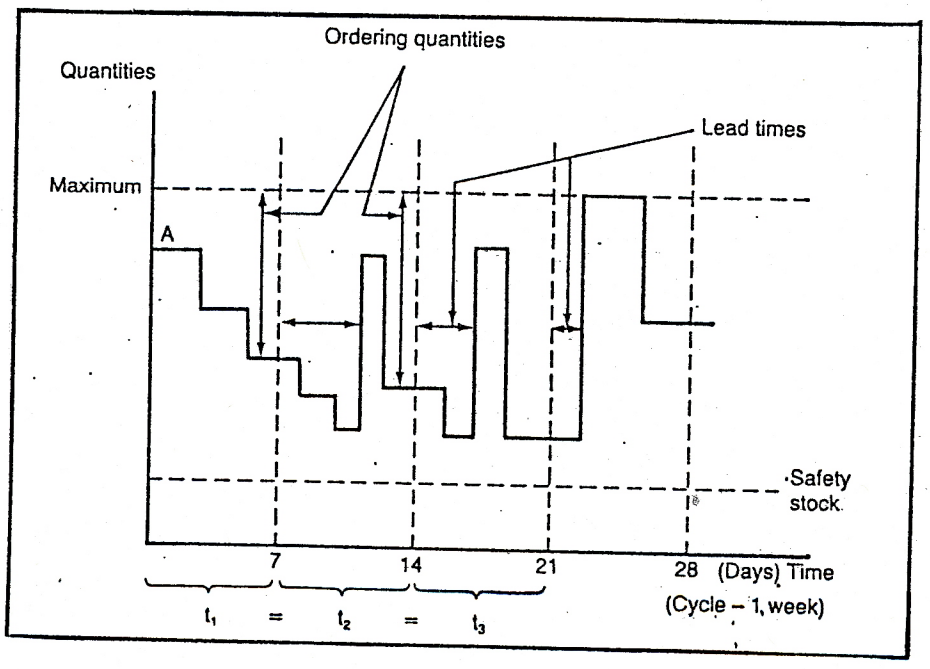
This system is based on time, implying that the inventory levels are reviewed at fixed time intervals in order to replenish supply

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5. Interview held with Mr J.M.V. de Gouveia on 10.02.1987.

at a predetermined maximum level, based over a certain period of time. A minimum inventory level (safety stock) is determined and it is assumed that consumption during a specific period will not cause inventory to fall below the minimum level. The cyclical ordering system is illustrated in figure 11.3. The maximum inventory level is A. Inventory is decreased at a rapid or slow rate depending on consumption, thus order quantities will vary at each review date. An order is placed at a fixed time for the required inventory - which is equal to the difference between the existing inventory level and the maximum inventory level. At the review dates, the inventory level can be physically monitored by calculation with the aid of inventory cards or with the aid of a computer.

Figure 11.3



THE CYCLICAL ORDERING SYSTEM OF INVENTORY CONTROL

Source: Van Rooyen & Hugo (1983: 100)

(a) ADVANTAGES OF THE CYCLICAL ORDERING SYSTEM

(1) Due to infrequent production schedules, it is suitable for inventories whose purchase must be planned well in advance.

(2) It is suitable for inventories which display an irregular usage, and its purchase must be planned well in advance based on sales estimates.

(b) DISADVANTAGES OF THE CYCLICAL ORDERING SYSTEM

(1) It makes the system inefficient because it compels a periodic review of all inventory items.

(2) It does not permit the use of optimum economic order quantity for each inventory item being ordered.

(3) It peaks the purchasing load around review dates.

Metal Box practices cyclical ordering for seasonal goods. E.g. containers for biscuits and pudding cans during the Christmas period, may be produced once or twice per annum. Cycling ordering is not practised for other goods because they are not seasonal goods, e.g. containers for motor oil.[6]

11.6.2 FIXED-ORDER QUANTITY SYSTEM

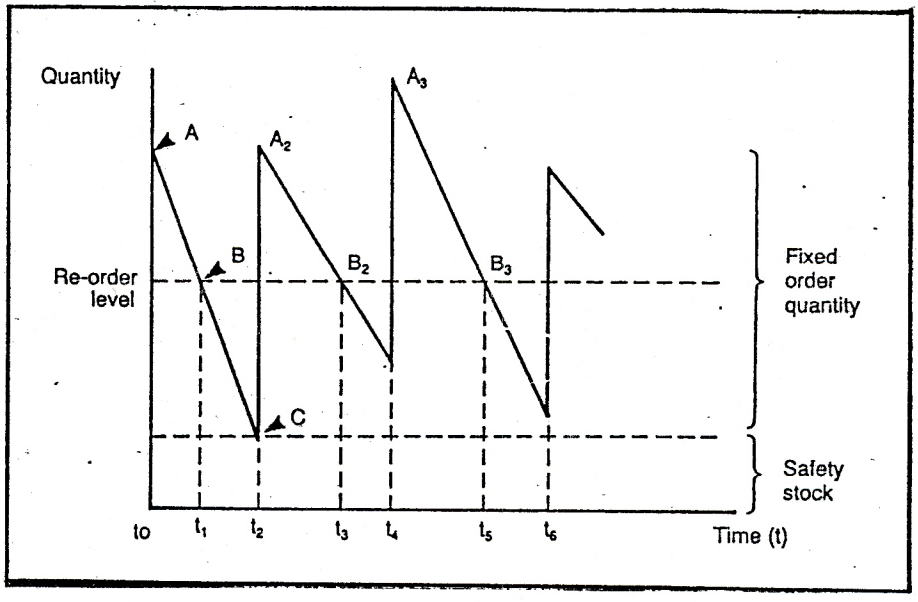
This system is based on the predetermination of a fixed quantity to be ordered each time the supply of the inventory item is replenished. Factors such as price, usage-rate, production and administration must be considered. A suitable order point is

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6. Interview held with Mr J.M.V. de Gouveia and Mr D. McKeaveney held on 10.02.1987.

determined. In other words, the inventory items are automatically ordered when the inventory level on hand decreases to the order point. Once the order point is determined, the estimated usage of the inventory items during the order lead time period will cause the actual inventory level to drop to a predetermined minimum level by the time the new order is received. On receipt of the new order, the inventory level is increased to a predetermined maximum level. The minimum inventory level is determined by calculating the difference between the order point and the average usage during the lead time. The fixed-order quantity system is illustrated in figure 11.4.

Figure 11.4



THE FIXED-ORDER QUANTITY SYSTEM OF INVENTORY CONTROL

Source: Van Rooyen & Hugo (1983: 98)

The maximum inventory level is point A. Inventory is issued on

demand until the predetermined order point B is reached. At the order point B, an economic order quantity is placed regularly. Further inventory issued causes the inventory level to drop to a minimum inventory level C. It is assumed that the supplier is reliable, and the new order is received as soon as the inventory level reaches the minimum level. The inventory is replenished until point A is reached. The safety (buffer) stock is only used during emergency situations and serves as a safety measure. The perpetual inventory record must be controlled and maintained to prevent inventory levels falling below the order point.

> The extent to which Metal Box uses the fixed order quantity system is relatively very little. This is applicable to non-seasonal items only such as toothpaste tubes, deodorant cans and shoe polish cans. The reason being that the sales figures of these goods are fairly stable.[7]

11.6.2.1 TWO-BIN FIXED ORDER QUANTITY SYSTEM

This system functions without perpetual inventory record. The inventory is separated into two bins or containers. The upper bin contains an inventory level equal to the difference between the maximum level and the order point level. The lower bin contains sufficient inventory to maintain production from the time a new order is placed until it is received in inventory.

The two-bin system functions as follows: The inventory required is taken from the upper bin until it is exhausted, indicating that

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7. Interview held with Mr J.M.V. de Gouveia on 10.02.1987.

the order point has been reached. Additional inventory required during the lead time is taken from the lower bin until the new order is received. When the new order is received, the predetermined quantities are again placed in the two bins.

> Metal Box regards the two-bin system as re-order level system. Metal Box uses this system for components such as wing lever (used on sides of Kiwi shoe polish cans), warding materials (packaging inside the lid) for lids, and spares for machinery such as belts. The two-bin system is the most suitable inventory control system for the above-mentioned items because of its relatively small sizes.[8]

11.6.3 MATERIALS REQUIREMENTS PLANNING (MRP)

Lee, Dobler & Burt, (1984: 245) indicate that materials requirements planning concept (MRP) provides a new way of looking at the management of inventories in a manufacturing enterprise. Basically, MRP challenges the traditional concept that any significant level of production inventory need be carried prior to the time materials are actually required by the production operation.

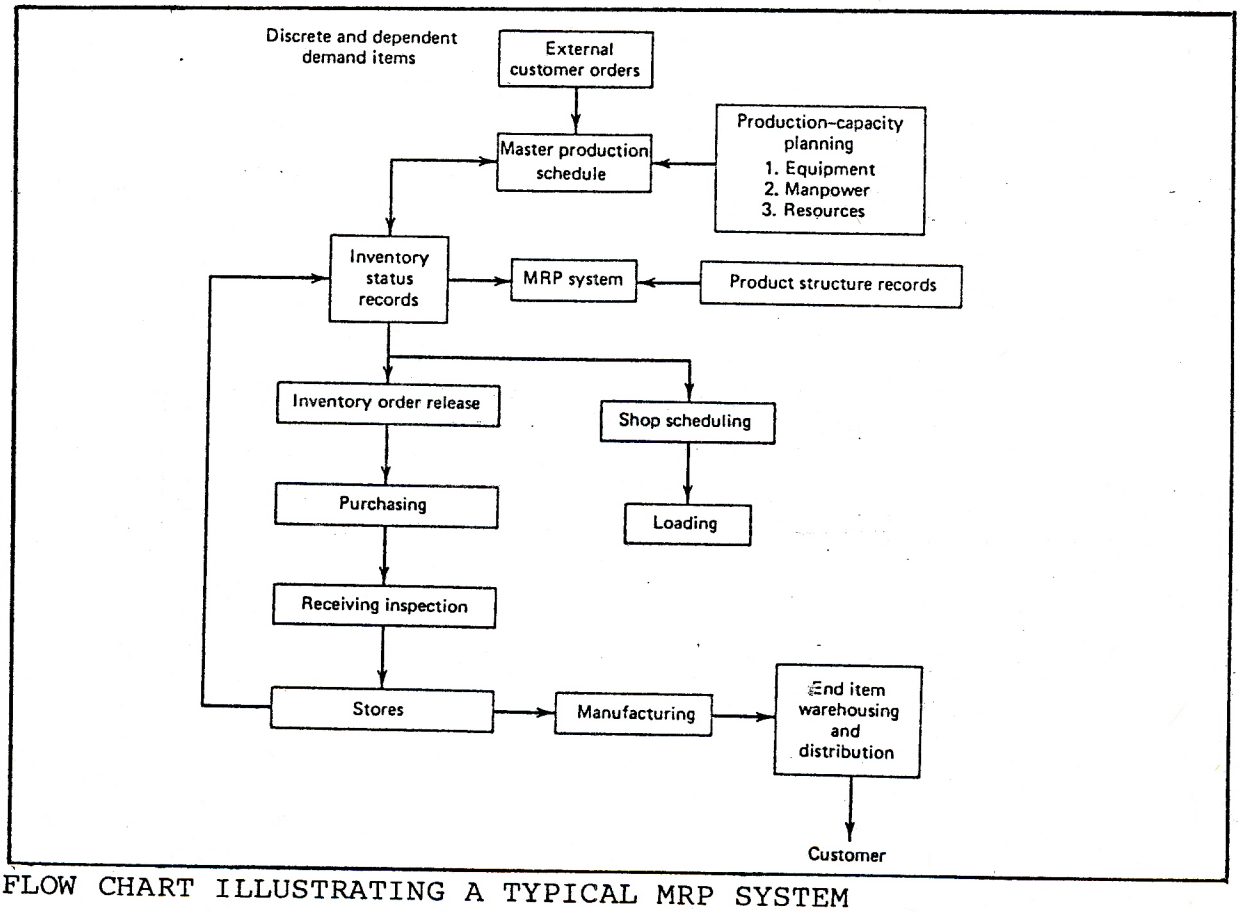
To adopt this system, all inventories used in the production process must be known well in advance of the commencement of production. A master production schedule must be prepared, showing the market demand for the finished products and the strategies that may be used in order to satisfy these

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8. Interview held with Mr J.M.V. de Gouveia on 10.02.1987.

requirements. The products bill of material must be drawn up in terms of the master schedule. The bill of material for a given product must be broken down and extended for the number of units to be produced in order to obtain the product's exact requirements for each item. The computer is used to schedule all assembly, fabrication and purchasing to meet product requirements at the desired time. Any changes in the master production schedule are determined through the MRP system either by a periodic issue of a new master production schedule or by issuing a net change report. Figure 11.5 illustrates a typical MRP system:

FIGURE 11.5



FLOW CHART ILLUSTRATING A TYPICAL MRP SYSTEM

Source: Zenz (1981: 197)

(A) ADVANTAGES OF THE MRP SYSTEM

[] The quantity of inventory held is reduced.

[] Inventory investment and carrying costs are reduced.

[] Order quantities are directly related to production requirements.

[] It permits the master production schedule to be changed.

[] It forms an integral part of production control. (Lee, Dobler & Burt 1984: 247).

(B) DISADVANTAGES OF THE MRP SYSTEM

[] It depends on accurate forecast, which is not always possible.

[] It applies only to inventories used in the production process.

[] It is expensive to maintain and has certain prerequisites to be met.

[] A great deal of organisational discipline is required to make it function smoothly.

11.7 METHODS USED BY METAL BOX

In addition to the above, Metal Box, Beverage Can Division, also makes use of inventory control based on target figures (possible ceiling sales figure), in terms of sales cover. The ratio is two and a half months sales' figures, which is then converted in relation to raw materials or finished goods.

The Divpac Division uses a Japanese method called "JIT", meaning "Just In Time", on a relatively small scale. The JIT

system is relatively a new concept that has now been employed by industries. Metal Box Divpac Plant has been aware of the necessity to achieve exceptionally high levels of productivity and quality because these two factors are major objectives of the organisation. This appears to be inter-related to manufacturing techniques developed around the "Just In Time" (JIT), total quality control concepts and finally the unique technological changes and innovations. The increasing competition from several organisations has encouraged the Divpac Plant managers to seek ways to upgrade the product quality and productivity. Therefore, it has been decided to adopt the JIT purchasing system. Materials must be delivered frequently in fairly small quantities, just in time for use. It can produce substantial benefits over and above that of traditional purchasing practices. Quantity discounts are not sacrificed because a large quantity is still purchased, but smaller quantities are delivered as and when needed. The paper work is increased on the supplier's side. Some of the benefits JIT system are:

(a) increased inventory turnover

(b) improved delivery promises

(c) reduction of scrap

However, it has been found that although major benefits have been identified, major problems were uncovered with the introduction of JIT purchasing. The significance of the problems depends to some extent, on a number of variables,

such as types of materials purchased, product being made, manufacturing facilities, and demand patterns. The most serious problems are "people problems" stemming from attitudes, past experience, practices and inter-personal relations.

Metal Box Divpac has been able to note the following:[11]

(A) LACK OF SUPPLIER SUPPORT

The most significant problem involved in the implementation of JIT purchasing was the lack of co-operation from suppliers, especially as it concerns quality. The following were also some of the reasons:

(i) Suppliers have little or no incentive to adopt the JIT system because they are assured of greater benefits that are normally received in the traditional buyer-supplier relationship.

(ii) A considerable strain is placed on suppliers. Under JIT purchasing, suppliers are constantly under pressure from the buyer to deliver good quality products in the right quantity on a continuing basis. If a supplier fails to meet the requirements mutually agreed upon, a new supplier will be sought.

(B) LOW PRODUCT QUALITY

A major problem that reduces the chance of implementing a JIT programme successfully is the difficulty of obtaining high quality materials/components on a consistent basis.

When suppliers fail to provide material of adequate quality on a regular basis, down-line supply problems occur that may create a production stoppage or slow down, and this, in turn, may jeopardize the JIT programme.

The problem appears to be of inadequate experience on the supplier management side of past manufacturing philosophies, where buyers used to allow the acceptance of an excessive percentage of defects in incoming material shipments.

(C) LACK OF EMPLOYEE READINESS AND SUPPORT

Many employees do not understand the concept JIT purchasing. It is essential that employee participation and support is obtained. The main reasons being:

(i) Resistance to change.

(ii) Fear of job loss as it is an introduction to a new system.

(iii) Increased pressure and potential frustrations as management will adopt to pressurise the employees to do their jobs correctly at the first time. It will also require individual employees to assume more responsibility for solving problems.

(D) LACK OF SUPPORT FROM CARRIER CONTRACTORS

Transportation is another problem in which case it has been found that the delivery requirements of JIT system is largely foreign to many carriers' modes of operation.9

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9. Interview held with Mr J.M.V. de Gouveia on 10.02.1987.

EVALUATION

In addition to the various inventory systems, Metal Box has advanced in supplementing its inventory control system by using the JIT system on a relatively small scale. The introduction of the JIT system on a small scale has led to maintaining a low inventory level in order to reduce costs and capital investments. This practice, in turn, leads to obtaining the most favourable input/output ratio, thus achieving the objective of the firm, i.e., maximization of shareholders' wealth. The reason for the gradual introduction of the JIT system is to inculcate confidence in the operation of the system. Once the JIT system is comprehended fully, it will be made fully operational.

SUMMARY

Good supplier relations and knowledge of the markets contribute towards the making of correct decisions regarding inventory quantity requirement. The purchasing manager must have a thorough knowledge of inventory classifications such as production inventories, in-process inventories, MRO (maintenance, repairs and operating supplies) and finished goods inventories in the enterprise. The understanding of inventory costs is important in determining the economic order quantity. It has been shown how the inventory catalogue and ABC-analysis assist in inventory control. Inventory control systems such as the cyclical ordering system, fixed order quantity system and the two-bin system were discussed.

In addition to the various inventory systems, Metal Box has

advanced in supplementing its inventory control system by using the JIT system. This action has led to maintaining a low inventory level in order to reduce costs and capital investment. This practice, in turn, leads to obtaining the most favourable input/output ratio, thus achieving the objective of the firm, i.e., maximization of shareholders' wealth.

Foreign supply markets keep domestic industries competitive in terms of cost and quality. International purchasing is of prime importance for the development of South Africa. The reasons, problems, organisation and relationships with foreign suppliers in international purchasing will be discussed in the next chapter.

CHAPTER 12

INTERNATIONAL PURCHASING

12.1 INTRODUCTION

Fearon & Hamilton (1980: 95) indicated that South Africa is considered largely a developing country because of the lack of trained manpower, shortage of capital funds and limited domestic markets. International purchasing is of prime importance for the development of South Africa. Foreign supply markets keep domestic industries competitive in terms of cost and quality.

12.2 REASONS FOR INTERNATIONAL TRADE

Fearon & Hamilton (1980: 97) indicated that South African buyers use foreign supply sources basically to satisfy the domestic demand for specific consumer goods, and more important, to maintain and improve the production capability of their own manufacturing concerns. The following 3 factors favour international purchasing:

12.2.1 COST ADVANTAGE

South African manufacturers cannot achieve the same cost advantages provided by large-scale manufacturing because of the limited domestic market. This indicates that the domestic product cannot compete in price with that of an imported product. By purchasing internationally, buyers achieve cost advantages.

Metal Box can buy tinplate and aluminium from the USA and

Japan at a cheaper rate than South Africa, but the South African government prevents Metal Box from importing the above raw materials. The South African government must protect its industries. Consequently, Metal Box's input/output ratio has to suffer.[1]

12.2.2 QUALITY REQUIREMENTS

Due to the lack of skilled labour and technology, domestic products cannot compete with imported products.

Metal Box finds that the quality of tinplate and aluminium of Japan is far superior compared to that of South Africa.[1]

12.2.3 AVAILABILITY OF PRODUCTS

A major factor that adversely affects the availability of goods on the South African domestic market is the lack of advanced technology and trained manpower. Advanced products, such as computers, have to be imported due to lack of technological skill and trained manpower.[2]

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1. Interviews held with Mr J.M.V. de Gouveia and Mr D. McKeaveney, on 16.02.1987.
2. For further information for reasons for international trade, refer to Fearon & Hamilton (1980, p. 97).

Metal Box, Beverage Can Division, imports tab stock (lever used in beverage cans) from Swansea in the United Kingdom and from Japan. The Divpac Division imports sealing compounds (used in cans to prevent chemical reaction such as ammonia in metal polish) from France and from the United Kingdom; cellophane tape (used inside food cans) from the United Kingdom. This cellophane tape has to be approved by the Food and Drug Association (FDA) of the USA. The Divpac Division also imports closures from West Germany for containers for hydroscopic products because inside these closures there are silicone gels that absorb any moisture; wing levers for polish cans are imported from Australia.[3]

12.3 PROBLEMS CONCERNING INTERNATIONAL PURCHASING

Fearon & Hamilton (1980: 99) indicated that when buying from foreign markets, one should carefully evaluate the difficulties to be encountered. The most important problems are:

12.3.1 EXCHANGE RATE FLUCTUATIONS

The economic advantages of international purchasing may be lost due to variations in the exchange rate. The South African buyer must be aware of this fact when entering international transactions. According to The Natal Mercury (13.11.1987: 22), The First National Exchange Rate was $1,00 = 200 cents. The lower this Rand/Dollar rate becomes the more it can adversely

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3. Interviews held with Mr D. McKeaveney and Mr J.M.V. de Gouveia, on 16.02.1987.

affect the input:output ratio, and consequently the value of the firm. Under such circumstances the firm has to increase the price of the finished product, in order to obtain a favourable input/output ratio. This action again could adversely affect sales figures.

12.3.2 GOVERNMENT INTERVENTION

Due to political pressure, foreign sources of supply are not easily accessible to South African buyers. Government intervention restricts competition on foreign markets and the risk is increased leading to the cancellation of contracts.

At the present moment, South Africa is being faced with economic sanctions from other countries.[4]

12.4 ORGANISATION FOR INTERNATIONAL PURCHASING

Fearon & Hamilton (1980: 109) demonstrated that the main task of the international buyer is to co-ordinate the activities of different groups that will ensure an effective supply of goods. Figure 12.1 illustrates the flow of documents and the different parties involved in an international transaction.[5]

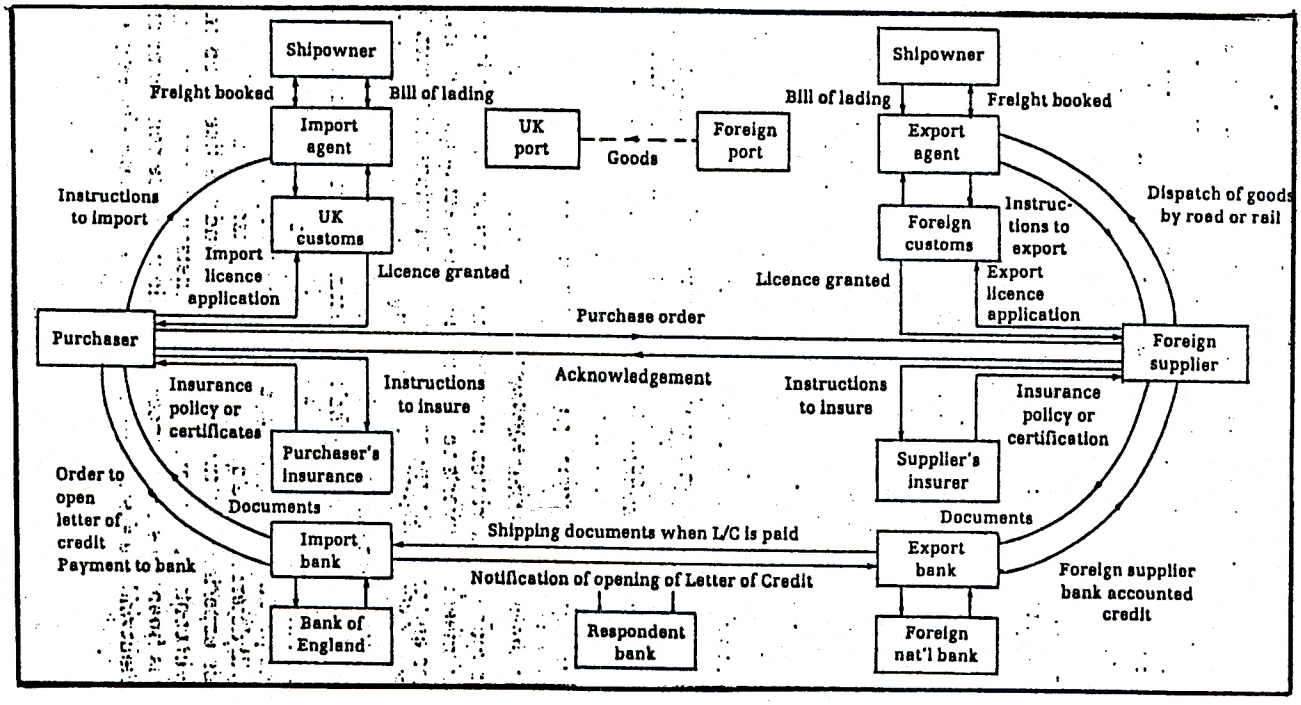
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4. For more information on problems concerning international purchasing, refer to Ammer (1980, p. 380).

5. For more information on organisation for international purchasing and relations with foreign suppliers, refer to Fearon & Hamilton (1980, p. 109 - 113)

In Figure 12.1, it is demonstrated how a purchaser of the United Kingdom makes a purchase from a foreign country. Figure 12.1 shows the flow of goods and documents involved in a foreign purchase.

Figure 12.1



PROCEDURE FOR FOREIGN PURCHASING

Source: Barker & Farrington (1976: 157)

It has been found that Metal Box does not import much of its raw material supplies from overseas countries. The Beverage Can Division imports 2,5% and Divpac Division imports 15% of their raw materials.[6]

EVALUATION

Metal Box purchases most of its major critical and non-critical items both locally and nationally. The import of raw materials represent a minor cost compared to the materials purchased in South Africa. Although the imports are minor, an unfavourable exchange rate could adversely affect the input/output ratio, thereby decreasing the profitability of the firm. The input/output ratio is also affected by government constraints on imports of high quality, low cost raw materials.

SUMMARY

International purchasing is of prime importance for the development of South Africa. Foreign supply markets keep domestic industries competitive in terms of cost and quality. The reasons and problems were discussed, emphasizing the importance of international purchasing. It has been shown that international purchasing is a complex task and there are high risks associated for the international buyer.

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6. Interviews held with Mr D. McKeaveney, Plant Manager of Beverage Can Division, and Mr J.M.V. de Gouveia, Production Manager of the Divpac Division, on 16.02.1987 and 19.02.1987 respectively.

Metal Box purchases most of its major critical items such as tinplate, aluminium, inks and coatings, and non-critical items such as consumables and maintenance materials, both locally and nationally. The import of raw materials represent a minor cost compared to the materials purchased in South Africa. Although imports are minor, an unfavourable exchange rate could adversely affect the input/output ratio, thereby decreasing the profitability of the enterprise.

CHAPTER 13

SUMMARY

13.1 CONCLUSION

The role of Purchasing and Materials Management plays an important role in the quest for optimum efficiency in that it must be able to provide goods and/or services at the lowest cost per unit, thereby obtaining the most favourable input:output ratio. This is consistent with the objective of the firm. The purchasing function was defined from a Business Economics' point of view and is currently regarded as a management responsibility; in this regard, five criteria were identified in indicating the importance of the purchasing function.

The function of the planning task of purchasing and materials management is to ensure that all members of a group know what they will be expected to accomplish in order to reach the group's goal. Purchasing planning can be arranged in a hierarchy, viz., strategic, management and operational planning. A purchasing policy and strategy must be developed in accordance with business objectives. Planning procedures outline the chronological sequences of required actions. There are various aids that are used in purchase planning such as the purchasing budget, purchasing research and network techniques.

It was pointed out that Metal Box uses materials budget as an aid to purchase planning. The Divpac Division draws up its budget based on a survey conducted by the sales people, and history of

past sales. The combination of these two data indicates the market growth. The Beverage Can Division draws up its budget based on each month's sales figures.

The purchasing department must be organised to integrate effectively into the enterprise as a whole in order to ensure that authority and responsibility are clearly demarcated, and managerial ability is effectively utilized. The organisation of the purchasing function is concerned with the internal organisation, the degree of centralisation/decentralisation or both, the place of purchasing in the corporate organisational structure, materials management and logistics management.

It was found that the Purchasing department of Metal Box, Durban, viz., Divpac Division is a line function whereas the Beverage Can Division is a staff function. Both Divpac and Beverage Can Divisions practise decentralised purchasing for non-critical items. Metal Box, Johannesburg (Head Office) practises centralised purchasing for critical items.

Directing is concerned with influencing people to strive towards the objectives of the enterprise. Three major elements of the directing tasks of purchasing management were considered, viz., leadership, communication, motivation and morale. Leadership depends on the level in the organisation structure at which the purchasing function is performed. The leader uses communication as the medium for influencing his followers so as to make them prepared to move in the direction of a specific objective. The purchasing department has continuing relationships with all the

other departments (finance, production, marketing etc.) in the enterprise as well as with enterprise's suppliers. The purchasing manager has to co-ordinate the activities of the purchasing department with the activities of other departments in the enterprise in order that the ultimate purchase will be to the best advantage to the enterprise.

In Metal Box, it was shown how the Purchasing manager has to synchronise activities with other departments in order that the ultimate purchase will be to the best advantage of the enterprise. Control involves the measurement and correction of activities of subordinates to ensure that the enterprise's objectives are achieved according to stated plans. The approach to control has three distinctive characteristics, viz., management responsibility, controlling purchasing proficiency and the control of purchasing efficiency.

In their quest for optimum efficiency, Metal Box strives to apply the function of purchasing control optimally. Metal Box requires purchasing management personnel to possess certain qualifications, such as National Diploma in Purchasing Management. In spite of the fact that Metal Box operates under conditions of severe government constraints, its application of the function of purchasing control enables it to depress the unit cost of goods and services to certain limits.

The practice and techniques of Purchasing and Materials Management involves a number of factors.

Firstly, the purchasing department is responsible for determining

that the quality of the material is adequate for the intended purpose and suitable for the process and equipment used. There are various methods of describing quality by the buyer to the supplier. It was shown how specification and standardisation play an important role in search for the right quality. In order to maintain the right quality, various methods of inspection could be used by the purchasing department.

Metal Box uses various methods in maintaining the right quality for the intended purpose and the equipment used. If the materials fails in regard to quality assurance, then the results for Metal Box can be costly, in terms of expensive delays, inefficient production, inferior products, broken delivery promises and unhappy customers.

Secondly, the choice of the right supplier influences not only the economic prosperity of the enterprise, but it is also necessary for the efficient functioning of the market mechanism and the application of scarce resources in the national economy. Therefore, effective purchasing is dependent on the capability and reliability of the supplier who can contribute to the achievement of the enterprise's objectives, i.e., increasing the wealth of the shareholders' of the firm.

Metal Box uses sources of supplier information mainly for non-critical items and not for critical items because there are only two sources of raw materials in the country, viz.,ISCOR and Hulletts Aluminium. Research surveys are conducted by Metal Box in order to determine the stability of the supplier.

Thirdly, price determination is one of the basic responsibilities of the purchasing manager in order to obtain the maximum value at the lowest cost. The determination of price by the supplier and by the buyer were discussed in determining the most suitable price.

It has been shown that Metal Box negotiates directly with its suppliers for major critical, and from distributors and suppliers for non-critical items.

Fourthly, negotiation is used mainly for non-standard items involving the discussion of quality, quantity, service and price being the major element.

Metal Box has no negotiating power for tinplate and aluminium, and relatively little negotiating power for inks and coatings which are major critical items. Metal Box does not negotiate prices for non-critical items because they considered to be of relatively less importance.

Fifthly, purchase timing involves buying at the right time to meet production schedules without over-stocking, and to minimize unfavourable effects of price-level changes. The purchasing manager must be able to forecast the right time to purchase materials, using the various buying practices in fluctuating markets.

By practising forward buying for soft aluminium, Metal Box overcomes the problem of disruption in production of products requiring soft aluminium, thereby increasing efficiency in production due to uninterrupted flow of materials.

Sixthly, good supplier relations and knowledge of the markets contribute towards the making of correct decisions regarding inventory quantity requirements. The purchasing manager must have a thorough knowledge of inventory classifications, their functions and costs related to ordering and carrying costs in the enterprise. He must be able to determine the economic order quantity and use the various systems to control inventory. It has been shown how the inventory catalogue and ABC-analysis assist in inventory control. Inventory control systems such as the cyclical ordering system, fixed order quantity system and the two-bin system were discussed. The material requirements planning (MRP) system attempts to minimize most inventory requirements and gear purchasing and production activities to the timing and quantity usage demands of the final product assembly schedule.

In addition to the various inventory systems, Metal Box has advanced in supplementing its inventory control system by using the JIT system. This action has led to maintaining a low inventory level in order to reduce costs and capital investment.

Lastly, international purchasing is of prime importance for the development of South Africa. Foreign supply markets keep domestic industries competitive in terms of cost and quality. The reasons and problems for international purchasing were discussed, emphasizing the importance of international purchasing. The information indicates the complex task and risks associated with the international buyer.

Metal Box purchases most of its major critical items and non-

critical items both locally and nationally. The import of raw materials represent a minor cost compared to the materials purchased in South Africa.

It proves that Metal Box South Africa, both Divpac and Beverage Can Divisions, practise purchasing and materials management to a certain extent in accordance with current literature. The reason being that it is a kind of industry in which the choice of suppliers are limited for major critical items because there are only two sources for tinplate and aluminium, viz., ISCOR (tinplate) and Hulletts (aluminium). Metal Box has a choice for one of its major critical items, i.e. inks and coatings. Metal Box can either purchase from Coates, Plascon-Evans, AECI or Inmont. Negotiation is the main element in regard to price and quality determination. Metal Box uses cyclical, fixed order quantity and ABC-analysis systems of control which is concurrent with current literature. In addition, the Divpac Division uses the Japanese system called the "JIT" (Just In Time) system. The benefits derived in using the JIT system are: increase in inventory turnover; improvement in delivery promises; reduction of scrap; and a saving on warehousing costs. The Beverage Can Division uses inventory control based on target, in terms of sales cover. The Beverage Can Division makes use of a ratio that is two and a half month's sales' figures, which is then converted in relation to raw materials or finished goods. The Beverage Can Division imports 2,5% of its raw material (tab stock), and the Divpac Division imports 15% of its raw

material (sealing compounds, cellophane tape and wing levers).

13.2 RECOMMENDATIONS

13.2.1 PROBLEMS OF JIT INVENTORY SYSTEM

In the implementation of the JIT system, the Divpac Division has noted the following:

(A) LACK OF SUPPORT FROM SUPPLIERS

To minimize the problems two strategies can be adopted:

I. Education and training of suppliers in order to ensure that suppliers thoroughly understand the main purpose of JIT purchasing.

Three approaches can be used to educate and train suppliers in JIT purchasing:

(a) Intensive presentation and group discussion of JIT purchasing concept at suppliers' plants, including representatives from appropriate functions, such as production, engineering and quality assurance.

(b) Continuous in-house training at suppliers' plants. This is achieved by sending selected staff to suppliers' plants to administer training and technical assistance.

(c) Have a "vendor day" at the buyer's plant for all JIT suppliers to enhance the understanding and co-operative nature of their relationships with the buyers.

II. Long-term relationships are encouraged with suppliers through the use of flexible long-term contracts.

(B) LOW PRODUCT QUALITY

The following recommendations are suggested:

(a) The development and utilization of a supplier certification programme. An effective supplier quality certification programme can assure that the quality specification have been met before parts leave the suppliers' plants.

(b) The utilization of a supplier's plant audit programme. One should conduct regular audits of the suppliers' plants.

The main objective is to improve quality and minimize problems through statistical process control.

(C) LACK OF EMPLOYEE READINESS AND SUPPORT

The following suggestions could be used:

(a) Long-term continuous JIT purchasing training.

(b) A broader orientation of employees focussing on the company's reasons for adopting JIT as well as the philosophy behind it.

Employees must understand that successful JIT purchasing will be a major influence on the company's long-term growth and profitability and that everyone's personal future depends on the successful operation of the JIT system.

(D) LACK OF SUPPORT FROM CARRIER CONTRACTORS

To resolve the problem:

(i) It is necessary to reduce the number of carriers used. This will involve that the buyer works more closely with each carrier in arranging mutually feasible delivery

schedules.

(ii) Sizeable shipments it can be organised from a contract carrier.

(iii) Lastly, a computer interface with major transport organisations is possible. The buyer can monitor delivery activity and develop internal scheduling modifications if required.

The adoption of the JIT concept can lead to the attainment of higher product quality and productivity. However, it is essential to overcome some problems such as poor supplier support, low product quality and inadequate understanding by employees of the firm.

It must be noted that the above points are not appropriate to all organisations, and it depends on its own style of manufacturing and its own unique culture and environment.

13.2.2 MATERIAL REQUIREMENTS PLANNING (MRP) FOR THE BEVERAGE CAN DIVISION

The Beverage Can Division manufactures beer cans and soft drink cans of the same size, i.e. the cans are of 340 ml size. The only difference is its painting designs on the cans. It is recommended that the Beverage Can Division should use the MRP inventory system. The MRP concept provides a new way of looking at the management of inventories in a manufacturing enterprise. The MRP approach attempts to minimize the inventory requirements and gear purchasing and production activities to the timing and quantity usage demands of the final product assembly schedule. The

implication of the MRP system will ensure that the delivery of production inventories coincides with production requirements, thereby maintaining relatively low levels of safety stocks. Management can easily update information concerning stocks by use of the computer. The MRP is not suitable for the Divpac Division because of types and sizes of products produced.

13.2.3 INTERNATIONAL PURCHASING

Since the Beverage Can Division imports 2,5% of its components (tab stock) and the Divpac Division imports 15% of its components (sealing compounds, wing lever and cellophane tape), it is recommended that Metal Box should request its supplier, Hulletts, to conduct research into the manufacturing of tab stocks and wing levers or to develop new suppliers. Metal Box should, also, request chemical companies such as Plascon-Evans, AECI, Coates and Inmont to conduct research in manufacturing sealing compounds that fulfil the requirements of food and health regulations. Local manufacturers of cellophane tape should be encouraged to manufacture cellophane tapes (used inside food cans) that will, also, fulfil the requirements of food and health regulations. These recommendations, when adapted, can only lead to a better input/output ratio and consequently further maximize the wealth of the owners' of Metal Box South Africa Limited.

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