Pricing and distribution policies in motor control gear industry

L O U G H B O R O U G H

U N I V E R S I T Y O F T E C H N O L O G Y

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Department of Industrial Engineering and Management

"PRICING AND DISTRIBUTION POLICIES IN MOTOR CONTROL GEAR INDUSTRY"

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I N D E X

SECTION B -- DISTRIBUTION

Part I

PRICING AND DISTRIBUTION IN MOTOR CONTROL GEAR INDUSTRY

OBJECTIVE OF THE PROJECT.

The Department of Industrial Engineering and Management of this University was commissioned by the National Marketing Council to prepare several papers on the theme 'Marketing in the Electrical Engineering Industry' for presentation at the forthcoming conference at the University.

The motor control gear industry was selected as the medium for a study of price and distribution policies. The study was to cover every manufacturer, large and small, in the industry. It was intended to investigate manufacturers' pricing objectives and methods and to appraise the importance of pricing as a competitive strategy: also to examine the channels for distribution and to analyse both the motivation of distributors and the methods used for their selection and performance evaluation.

The writer was required to work on a suitable project and then to submit a thesis in part-fulfillment for the requirements of the course of study leading to the M.Sc. degree. It was confidently felt that the study in 'Pricing and Distribution Policies of Manufacturers in the Motor Control Gear Industry', carried out in sufficient depth, would be adequate for submission as the thesis.

Because of the limited time available, it was decided to acquire the bulk of the necessary information through a postal questionnaire rather than through the more effective but lengthy process of personal interviews. However, the draft of the questionnaire was discussed in personal interviews, with top-level marketing executives (marketing/sales directors, commercial managers, etc.) of a few major firms in the industry and their comments were very favourable and highly encouraging.

The final questionnaire which is given on Appendix I was sent to 100 manufacturers in the Industry.

The almost immediate reaction to the questionnaire for the survey, came on behalf of BEAMA,[1] in the form of a recommendation to member firms in the motor control gear industry not to participate in the survey.*

The result was a poor response to the questionnaire, certainly very far below the expectations built up during the discussions with the marketing executives: but that which was obtained eventually was considered to be of sufficient merit to justify maintaining the study, which, augmented by work from other sources, might prove of some value to the industry in this relatively unexplored field. At the same time this would fulfil the requirements of the course of study for the writer.

Therefore, basically, this work is divided into two parts. One part deals with pricing and distribution in the motor control gear industry and the other with pricing and distribution of industrial products.

The first part is concerned entirely with the survey, that is, with the pricing and distribution in the motor control gear industry. The methodology for survey, the response and the results are discussed along with any conclusions which could be derived from the survey.

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* The writer was told by some manufacturers over the telephone and during personal interviews that they had received a letter from the Chairman of BEAMA Sub-Committee on Motor Control Gear recommending not to participate in the survey.

1 British Electrical and Allied Manufacturers Association.

The second part is sub-divided into two sections, A and B. In Section A, manufacturer's pricing objectives, the factors which influence or determine price and the methods of pricing are discussed and then presented in such a form as to give a better understanding of the role of price and the methods of pricing in many of the situations which arise in actual practice, including situations involving uncertainty and/or risk, where operational research techniques are applied. The initial discussion is based on the views put forward by various writers mentioned in the bibliography and, not the least, on the studies conducted on pricing by Brookings Institution, Haynes, Lanzillotti and Backman (all in the U.S.A.) and by Fog and Barback (in Europe).

In Section B, the distribution system, the costs and the channels of distribution, are discussed with particular emphasis on the industrial distributor. The discussion is based to a large extent on the studies conducted by the National Industrial Conference Board (in the U.S.A.) on 'Selecting and Evaluating Distributors'.

MOTOR CONTROL GEAR INDUSTRY

The motor control gear industry is a complex industry with manufacturers whose products are individual components, integrated equipment, or both. These products can be classified as conventional (i.e. with moving parts) or non-conventional (i.e. static) and they eventually find application in the field of motor control. Manufacturers building switchboard panels only are also included in this industry.

The turn-over in the U.K. has gradually increased from £20.m. in 1954 to around £41 m. in 1965. Since then it has remained fairly static (1). Concurrently the number of control gear manufacturers with a turn-over of over £0.5 m. has increased from 15 in 1954 to around 40 in 1964 (1).

One of the reasons for the large entry of manufacturers into this industry is the relatively low initial capital outlay required. In recent years there has been increased competition from overseas manufacturers, who import either integrated equipment or individual components which are subsequently assembled in their plants in this country.

The majority of the manufacturers, including all the large ones are members of B.E.A.M.A. (British Electrical & Allied Manufacturers' Association).

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(1) figures given by B.E.A.M.A.

The manufacturers seem to be in an oligopolistic market (2) with a handful of manufacturers having over 75% of the total market. The market segmentation is rather nebulous and, except in isolated instances, there do not appear to be price leaders in the industry.

It would appear that the larger firms manufacture other products in addition to motor control gear, and the majority of them are divisionalised (i.e. profit-decentralised).

There has not been an official survey conducted in the recent past on product, pricing and distribution policies in the industry, and it has been confirmed by B.E.A.M.A. that, to their knowledge, there are no plans for such a survey to be conducted in the immediate future. One large manufacturer is said to have approached B.E.A.M.A. last year with a proposal for a similar survey to be conducted at his expense but because of a lack of adequate response, with only about 3 manufacturers indicating willingness to participate, the survey was dropped. It is understood that a similar proposal from another manufacturer met an identical fate a few years previously.

(2) some observers fail to recognise that the mere existence of a large number of firms in a particular industry does not assure that industry is competitive. Haynes in 'Pricing Decisions in Small Business'.

SUMMARY

Pricing

The manufacturerers primary pricing objectives were to achieve 'a certain rate of return on turn-over' and/or 'a certain rate of return on capital employed'. Of these, the former is fundamentally an unsound objective for a manufacturer, because it does not lead to optimisation of his overall objectives. There was a lack of clarity about the guidelines (i.e. the pricing policies) used to achieve the objectives. The pricing policies were not sufficiently comprehensive to deal with different situations that arise in the process of pricing the different classes of products, at different stages of the product's life cycle and in different marketing conditions. The pricing methods used by the manufacturers were those of a total-cost pricing system, i.e. total cost per unit plus a percentage profit margin to arrive at the price of the product; but with the majority of the manufacturers, this profit margin was flexible, depending upon marketing conditions and varying with individual products, thereby suggesting that some consideration to demand and competition was given when pricing. Therefore, it can be said safely that the pricing policy was basically cost-oriented rather than demand-oriented, i.e. it over-emphasised the role of cost but did not emphasise the role of demand and competition. Price was not the most important factor in the manufacturers' competitive strategy - not even among the first three factors in the case of large manufacturers. By and large, the manufacturers did not have a very realistic idea of the demand characteristics for their products and were rather indifferent to or unconcerned with their competitors' marketing strategy. When they (the manufacturers) were introducing price changes, they seem to have had given inadequate consideration to the external factors, viz. effects on customers, distributors, etc. and reaction from competitors.

Distribution

The manufacturers have been making greater use of distributors (i.e. wholesalers) and this trend will continue; in the case of the larger manufacturers, the trend could well be to own their distribution outlets. The distributors were chosen on the basis of industrial coverage rather than geographical coverage: they were given sales targets, required to carry a minimum value of stocks and their sales force was provided with product training by the manufacturers. But the manufacturers did not avail themselves of the various ancilliary services which the distributors are in a position to provide. The criteria used by the manufacturers for the selection of their distributors was not unlike that used by their U.S. counterparts, with management ability of distributors and the quality and competence of the sales force being the most important attributes. Adequate attention was not given to the establishment of the standards of performance required of the distributor and to the methods used to evaluate the performance achieved. Technical and managerial assistance was the most important means of motivation provided by the manufacturers to their distributors, but there was no measure of the effectiveness of the means used.

METHODOLOGY FOR SURVEY

The survey was to cover all the manufacturers in the motor control gear industry. The names of manufacturers were taken, in the first instance, from B.E.A.M.A.'s membership list for motor control gear. With the refusal of the Statistics Branch of the Ministry of Technology, to disclose not only the names but even just the number of manufacturers who contribute to the Business Monitor's Production Series on Motor Control Gear, names of other manufacturers in the industry were taken from Kompass Publications, Section 37-13 and 37-15. The total number of manufacturers on the list amounted to 100.

Studies on pricing by manufacturers have been conducted by Brookings Institution, Lanzillotti, Haynes and Backman, (all in U.S.A.) and by Fog and Barback (in Europe). These studies were based on lengthy or extended personal interviews with top executives of the manufacturers, because this is the only really effective method of analysing objectives, policies and methods of pricing. In almost every study, each firm was interviewed on not less than two occasions. The National Industrial Conference Board conducted a major study in U.S. on Selecting and Evaluating Distributors.

However, in this study, the limited time available made it impossible to adopt the above approach, and it was therefore decided to acquire the bulk of the necessary information through a specially constructed, comprehensive postal questionnaire, care being taken to avoid stretching the patience or killing the interest of the respondent.

A preliminary questionnaire was constructed on the general assumption that the pricing and distribution policies of manufacturers in the U.K. were not vastly different from those of their counterparts studied by Brookings Institution, Lanzillotti, etc. It was then tested on the relevant case studies available from various sources. The appropriateness of this questionnaire was discussed, in personal interviews, with top marketing executives, viz. Marketing/Commercial Directors, Commercial Managers etc., of a few major firms in the industry. The comments from these executives were very favourable and highly encouraging. They even suggested the ways and means, and the sources to approach, in order to obtain a wider response to the survey, and they gave an overall impression that such a survey was much needed in the industry. Because of the approaching summer holidays for the industry, it was not possible to test the effectiveness of the questionnaire by means of a pilot survey.

The final questionnaire (Appendix I) was addressed to the Marketing Managers and mailed to the 100 manufacturers.

The questionnaire is divided into two separate parts, Pricing and Distribution. The pricing questionnaire is concerned with two classes of products, standard or catalogue items, and special or custom-built items. There is a further sub-classification to distinguish between the product which is new to the manufacturer, but not new in the market (i.e. it is a new brand), and the product which is a major innovation, thus new to the market. Distribution is concerned entirely with standard products.

By average standards, it was a lengthy questionnaire; this was necessary because of the depth of study required. There were several open-ended questions, the overall objective of the questionnaire being to seek the reasons for a particular decision taken, the alternatives considered before taking the decision and the basis for a particular policy adopted, rather than accumulating data and figures. To this extent, questions on vital matters were almost duplicated and were tantamount to making doubly sure.

There was a pre-supposition in the questionnaire that every firm had some form of pricing objectives and policy, formal and otherwise. The reason for this pre-supposition being that: where decisions are made on 'ad hoc' basis or on intuition, i.e. without resort to reason or any conscious mental process, neither the decision-maker himself can explain, nor anyone else can learn anything useful from the process.

An improvement was attempted on the conventional method of ranking in an answer, where more than one factor is involved, by introducing the awarding of marks, between 0 - 10, to these factors. This is the only method whereby one is able to have some idea not only of the relative importance between the factors involved but also the degree of their relative importance. It was realised that special circumstances could alter the degree and even the relative importance between the factors involved.

It was anticipated that some of the answers, and even the questions themselves might need further clarification. Where there was ambiguity or lack of clarity in the question, it was requested that it be altered to make it more meaningful and then to answer the rephrased question.

Comments and elaborations on any of the answers were explicitly invited. Where the answer had to be an approximation, it was explained that a reasonable approximation was far more useful than no answer at all. It was realised that one or two answers to the questions involved highly confidential information which some manufacturers might find it difficult to disclose; therefore, a clear distinction was solicited between the information which could not be disclosed and that which was not available. General instructions on the questionnaire were provided in the preamble.

Lastly, subject to encouraging and prompt replies to the questionnaires, it was planned to seek personal interviews lasting several hours, with the marketing executives of the leading manufacturers and to have brief discussions over the telephone, with the rest of the respondents, in order to make the study on the lines conducted by the sources mentioned earlier. Application of the official pricing policy, the assessment of opportunity costs in the decision to manufacture a particular product, the corrective action taken when the actual results deviated from the desired performance, the relationship between the firm's share of the market and its annual profit, the factors taken into consideration in determing the nature and the number of channels of distribution and the factors involved in deciding the margins for distributors were intended to be included within the scope of this further study.

RESPONSE TO THE SURVEY

The response to the questionnaire was very poor indeed. Nevertheless the turn-over of the firms who participated in the survey is more than half of the industry's total turn-over. About two dozen manufacturers claimed that they were not in motor control gear industry, half of that number excused themselves from replying on the grounds that their involvement in control gear was negligible; some manufacturers replied that they would not participate in the survey, and a few did not even acknowledge receipt nor return the blank questionnaire.

It was realised that those executives who replied to the questionnaire were perhaps not involved with actual price setting or not intimately aware of the pricing process in their firms. Furthermore, the terminology used in the questionnaire might not have been the one to which these respondents were accustomed - after all, there is some lack of consistency among accountants regarding the terminology used in accounting practice, therefore it will be little surprising if marketing executives did not understand as intended.

Among those who returned the completed questionnaire, there were a few who left some of the questions unanswered, in other questions the respondents replied that the information was not available or that they had declined to disclose. Many respondents obviously found it difficult to quantify the several factors involved in some of the answers and gave a blanket reply 'all factors are significant'; others gave the conventional ranking to the factors involved.

To this extent, the system of awarding marks did not achieve its full value. In a few cases there was a significant inconsistency in the answers, in some instances the answers could not be used, and answers received to one or two questions ranged from a generality to vagueness: for example, on question C5 "Who is responsible (function of the individual) for setting the price?' one of the answers was 'Management'. Another, on question C1a 'Does your firm have a formal statement on pricing policy?' one respondent inquired whether it meant a 'price list' - the price list can hardly be a firm's pricing policy, but the list is the outcome of the decisions taken within the framework of pricing policy. And while many of the respondents either did not answer questions Nos. G10 and G11, or declined to disclose the information, one answer obviously included the administration costs and other general overheads as part of the manufacturing costs.

ANALYSIS OF THE QUESTIONNAIRE

It was intended to follow the conventional method of giving fictitious names to the manufacturers participating in the survey and then tabulating the answers provided in the questionnaire. However, as the industry is dominated by a handful of large manufacturers, of which some have participated, it was soon realised that, from the answers to as few as four key questions, a marketing executive from the industry could immediately deduce the identity of at least two large manufacturers involved. Because of the highly confidential information involved, it has been decided to adopt the more labourious method of analysing the results.

The manufacturers are divided into two groups; the smaller manufacturers whose turn-over is less than £1 m. per annum are placed in one group and the other manufacturers, i.e. the larger ones, are placed in the other group. The results are discussed separately for each group. The summary and conclusions are common for the two groups.

PRICING

Group 2. (Large Manufacturers)

Most manufacturers have more than one main objective. To the majority, profit was stated as the top objective. There was one firm where profit was the only objective. Growth was high on the list of objectives for the majority. Almost half of the firms included the goodwill of customers and the esteem of the public as objectives. To one firm, prestige was a minor objective. Survival was not an objective to any of the firms. To one firm it was not possible to quantify between the inter-related objectives.

In a majority of the firms the above objectives were formally laid down.

All the firms (studied) manufactured other products as well, and in the majority of the firms motor control gear was profit-decentralised.

Achieving return on turn-over, or rate of return on capital employed, or both, were the top pricing objectives of all the firms. Achieving profits to pay regular dividends, and improving liquidity of the firm were also included as pricing objectives. For one firm it was not possible to quantify the interrelated factors.

Most firms reviewed pricing objectives continuously, one firm revicwed them annually.

A majority of firms had a formal statement on pricing policy, and profits seemed to provide the main points of such policy.

Share of the market was mentioned by one firm. Where there was no formal statement, profit was still the main point of the policy generally understood.

The pricing policy was common to all classes of products in all firms, i.e. profits, on all classes of products. Formulation of price policy in these firms varied slightly from marketing management to board room, and this policy was reviewed continuously in all firms.

The responsibility for setting prices varied from firm to firm. It was generally the sales executive, the cost accountant, or the product manager.

Discretionary latitude in pricing was permitted in all firms and the individual authorised to use discretion was a top ranking executive, viz. managing director, marketing director, etc.

Profit margin was the most important factor for all firms in pricing all classes of products. For standard products, sales volume and costs were also important factors. One firm specifically mentioned design leadership and gave it top marks; this firm also included prospects of new markets as a factor. Share of market was the third most important factor for one firm; production capacity and contribution to overheads were mentioned by another. Competition was a less important factor to all and no firm considered demand as a factor of importance. Only two firms replied to the section on special products, and innovative products. To one firm, costs were very important to both types of products, new and innovative, and for innovative products, sales volume and share of market were almost as important as cost and profits.

All firms gave discount for trade, the majority gave discount for quantity and almost half of the firms gave discount for prompt payment. Almost half the number of firms gave arbitrary discounts, sometimes to special customers. No firms had a geographical price policy.

The majority of the firms did not have a policy of maintaining constant profit margins and the same majority changed profit margins depending upon marketing conditions.

Almost half of the number of firms never accepted orders for special items which did not cover their full share of the fixed costs, and the others did so in special circumstances, depending upon the competition and the type of customer. No firm accepted orders for special items whose price barely covered variable costs.

All firms sold replacement parts and their pricing policy was based primarily on retaining customer goodwill, while source of profits was the next most important criterion.

Only one firm indicated a steady increase in the share of the market; for other firms their share of the market was steady or slightly down. One firm declined to answer. Every firm replied that the trend for the next five years would be an increase in their share of the market and most of them even specified what this growth rate would be.

The majority of the firms did not appear to know the trend of their major competitors' share of the market.

All firms avoided specifying the techniques employed for sales forecasting and estimating market trends.

Almost half of the firms claimed that price sensitivity to their products was low, i.e. a 5% to 10% variation in price would not affect demand for their product. To the other half of the firms, the sensitivity was positive and even considerable.

Most of the firms were of the opinion that there was no price leader because of product differentiation. One firm thought that there was a price leader for some products.

For the majority of firms, standard products formed the bulk of their turnover. To one firm, standard products constituted about 50% of total sales.

All the firms appeared to use the total costing system, and this was applied to all classes of products. Standard costs were used by all the firms, except one, which used future costs with allowance for inflation.

Every firm was confident that the variable and fixed costs associated with each one of their class of items was identified and measured accurately, and while most of the firms disclosed the ratio of fixed costs to variable costs, one firm replied that it was not available.

This ratio seemed to vary considerably in every firm.

All firms gave costs as the most important basis for pricing a product which was an innovation in the market. Assessing the value of a product to the customer was given little importance by all the firms. One firm stated that all the factors were influential.

The majority of firms recovered research and development costs as part of overheads. One firm recovered it as a standard percentage of costs.

To almost all firms price was the least important of the areas mentioned for their firm's competitive strategy. Quality and reliability appeared to be right on top, followed closely by service before and after sales, product development, and delivery of distribution. To one firm it was not possible to quantify the interrelated factors.

Reactions taken into consideration when introducing price changes were varied. To one firm it was profit, to another it was market reaction, to a third, customer reaction, and so on, including one who would consider whether it would be a temporary or permanent gain of business.

On pricing standard items in relation to pricing of competitors, one firm kept its prices 5% below the market. To another firm this was not a prime factor as there was no constant relationship, while still another replied 'dependent on the comparative values of the products'.

When the main competitors reduced their prices, most of the firms said they would re-examine their costs and would not follow the competitor. One firm did not find it possible to generalise.

A majority of the firms said they would not raise their prices if their competitors did so. One executive replied that the reaction of his firm would be 'none, except satisfaction'. One firm replied that it would raise its prices subject to P.I.B. clearance. One firm did not find it possible to generalise.

Almost half the number of firms said that they had 'loss leader priced' motor control gear in recent times, but all the firms replied that no other product of the firm was 'loss leader priced' to benefit motor control gear in recent times.

New products were, or seemed to be priced equal to or below competitors prices' by some firms. Others declared that it depended upon the product, and some replied that there was no constant relationship.

The cost of manufacturing, advertising and selling and distribution as a percentage of total sales varied vastly with the firms. In one firm the percentage of distribution costs seemed particularly high.

PRICING

Group 1. (Small Manufacturers)

All firms had one or more overall objectives. Profit was the top or nearly the top objective for all firms. Survival was next most important objective for a few firms, and for one firm it was the most important immediate objective. Growth was mentioned by a few firms as one of the important objectives. Only one firm gave importance to goodwill of customers, and public esteem as objectives. To one firm all the objectives were important.

In the majority of the firms these objectives were not laid down formally.

The majority of firms manufactured other products besides motor control gear, and the motor control gear section was not divisionalised.

Rate of return on turn-over was the most important pricing objective for nearly all the firms. Improving liquidity was mentioned by few firms, and rate of return on capital employed and profits to pay regular dividends were quite important to a a few firms.

In the majority of the firms these objectives were reviewed annually.

None of the firms had a formal statement on pricing policy. Rate of return on turn-over was the main point of the policy generally understood. In one firm it was at the board of directors discretion to formulate policy, or perhaps to decide the main points of the policy. In the majority of the firms the policy was not common to all the classes of products and one of the reasons put forward was the competitiveness of the product.

The board of directors or the managing director formulated pricing policy in the majority of the firms and this policy was reviewed annually.

In the majority of firms, a sales executive was responsible for setting the price, but in one firm it was the managing director.

All firms replied that discretionary latitude was permitted in pricing and the authority was vested in the executive who sets prices.

Most of the firms gave discount for trade and for quantity, a few only gave discounts for prompt payment. Only one firm had a geographic price policy based on F.O.B. Factory/Warehouse.

A majority of the firms gave arbitrary discounts.

The majority of the firms maintained constant profit margins between different items of the same class, and most of the firms changed profit margins depending upon the marketing conditions.

A majority of the firms accepted orders whose price did not cover the full share of fixed costs only where the quantities involved were large, and the customers were of importance to the firms. None of the firms would accept orders whose prices barely covered variable costs.

All firms sold replacement parts and customer goodwill was the primary factor influencing the policy for pricing of replacement parts.

Only one firm disclosed its share of the market for the year, and it was steady. Some declined to disclose; one replied "we have no idea", and one found it difficult to estimate.

Some firms replied that the trend for their share of the market was increasing (or growing); one aimed at massive increase in 5 years time, one hoped to increase and one did not know.

Most of the firms appeared not to know the trend of their competitors' share of the market; one replied 'Static (we hope)', and another replied 'increasing'.

Varied replies were given in describing the techniques used for sales forecasting, etc., such as, economic climate, rate of expansion, professional surveys, sales force reports, etc.

Some firms claimed that their products were not sensitive to price variation of 5% to 10%; one claimed only certain items at or below a specific price level were price sensitive; another firm claimed a high degree of price sensitivity to some items, and a rise in price would price them out of the market.

A majority replied that there was no price leader; one did not understand the question.

Around 80% of turn-over was made up of standard items in some firms.

Most of the firms use a total costing system and it was applied to all classes of products. Historical costs and standard costs were widely used, and only one firm used future costs in its costing system.

From the replies it appeared that in the majority of the firms the variable and fixed costs associated with each class of item had not been identified and accurately measured.

For pricing a product which was an innovation in the market, half of the firms used 'value to the customer' as the more important basis, the other half used costs.

Research and development costs were recovered as general overheads in some firms, in other firms as standard costs, and some firms did not specify (probably they did not do any research and development).

Quality and reliability made up the most important areas of the competitive strategy of all the firms. Price and product development were quite important areas for some firms. One firm replied that all areas were important.

Most firms apparently did not take any possible competitive reactions into consideration when introducing price changes. However, some firms replied that they notified the changes and the reasons for change well in advance. One firm replied that it had raised its prices by 10% in 10 years.

By and large it appeared that most firms priced their products in line with those of their competitors; had the competitors lowered their prices, they would have re-examined their costs. On the other hand, if the competitor raised his prices, some firms would hold their prices steady while others would raise them; as implied from their replies, viz. 'a chance for me, too', 'pleasure' etc.

A majority of the firms did not "loss leader" price motor control gear; neither did they do so with other products to benefit motor control gear.

For new products some firms would price below their competitors' price, others would equal it, and the rest did not disclose their policy.

There was a great variation between one firm and another in the ratio of manufacturing costs to the total costs of standard products. One firm replied 'not known'.

DISTRIBUTION

Group 2. (Large Manufacturers)

All manufacturers, except the one who had his own distribution outlets, used distributors and the bulk of the sales was through these distributors. The rest of their sales was to O.E.M. All firms excluded the use of agents. Contractors were used only by one manufacturer who also sold directly to large users.

The majority of the firms (including the firm which did not make use of distributors) said that the channels used by them were similar to those used by their main competitors. About half of the firms were satisfied with the effectiveness of the distribution system, and the other half wanted greater use to be made of distributors and more active selling done by them.

While most firms agreed to the greater use of distributors in the future, one firm anticipated distributors specialising and using modern techniques, another firm anticipated area franchise for distributors in certain products. One of the firms expected little change.

The majority replied that greater use of distributors had been the principal change in the distribution system during the last 10 years. In the industry itself, said one firm, there had been little change.

Most of the firms replied that they had a formal statement of policy for distributors, but none of them enclosed a copy of such a statement. The others seemed to have no objection to such a statement except to imply that it would reduce flexibility.

The number of distributors seemed to vary considerably, from several hundred branches for one firm, to less than a hundred each for the others - whether these were accounts, rather than branches, was not clarified.

The basis for establishing distribution areas was industry-wise, and none of the firms had distributors with area franchise.

A majority of the firms set 'target sales' for distributors and the basis was past history and forecast, or potential, for the area. There was a minimum value of inventory which the distributor had to carry from these manufacturers. This same majority of firms recommended retail prices for their products and provided technical training to the distributors' sales force, but only one firm specified this as a requirement.

All the firms replied that their distributors carried other products of the firm as well. All firms encouraged feed-back information from the distributor. Asked to specify, the answers were fairly general rather than specific, viz. all relevant commercial, technical, competitor activity, new product prices, analysis by customer, etc.

A majority of the firms had literature for the distributors in the form of catalogues, sales manuals, sales aids, etc., and only a minority kept the distributor informed about his sales and how it compared with his potential market.

All the firms replied that they maintained communication with distributors regarding expected new products, market trends, proposed expansion of capacity, etc.; and they also examined the distributors system of motivating his sales force, the financial terms offerred by the distributor to customers etc., with a view to making recommendations or suggestions.

All the firms, it would appear, were helpful to a distributor who placed urgent orders and the procedure in such circumstances, from one firm was "First supply; second ascertain why not in stock; and third, if necessary, amend the schedule". One firm offerred a 24 hour service.

Where the manufacturer sold directly to O.E.M. or to the user, a majority of the firms seemed to imply the need for a compromise or an understanding between themselves and the distributors. One firm replied that it actively tried to see that all such accounts went to the distributors. Another firm seemed to imply that it informed its distributors that it would handle the particular account directly.

Screening of distributors was done in all firms primarily on reports and recommendations from the field sales force. Of secondary importance was the information from trade sources and from distributors' customers. Two of the firms also used such sources of information as Chambers of Commerce etc. The screening itself was done by executives in the marketing department, although in one firm the financial section had a say as well.

Most firms replied that they had a standard form for selection of distributors: the authorisation for selection was vested with the marketing executives at the head office, though in one firm the regional managers made the selection with final approval from head office.

Only two firms disclosed the criteria used for selection of distributors. Size and quality of sales force, sales and technical competence, and management ability came high on the criteria list. One firm made it a point to say that 'preparedness of distributor to co-operate with manufacturers' was the top priority. To the other firm, the product lines carried by the distributor were also an important criterion and that his distributors were not to carry lines which would compete with the firm's products.

The firms evaluated the distributor's performance either continuously or at regular intervals and this evaluation was done by management.

The majority of firms did not have a standard form for evaluation of distributor performance. The criterion used for performance evaluation was the turn-over compared to the turn-over of the firm's other distributors, past performance and sales quota. Field reports were also used as a criterion by one firm, so also, information received from customer reports, following-up customer inquiries.

The majority of the firms replied that their distributors were aware of the criteria used for their performance evaluation.

The most important means used by all the firms to motivate their distributors was the offer of technical and managerial assistance or both. Fair and prompt dealings were very important for the majority of the firms.

All firms apparently invited their distributors to visit the firm as a means for motivating them. Advertising, etc., did not appear to be very important. Use of the whip, i.e. threatening to cancel the distribution seemed a poor motivator. And one firm seemed to attach high importance to financial incentives viz. better financial terms, discounts on larger and cumulative orders.

All firms claimed that the effectiveness of their motivation had been assessed by such criteria as 'resultant increase in turn-over', 'regular requests from other wholesalers for appointment as our authorised distributors'.

All firms had a field sales organisation, the effective strength varying around 50. One firm claimed national coverage. The main jobs of the field force varied from firm to firm. In one it was just selling, in the next it was active selling and maintaining existing accounts, in the other it was promotion of all the firms products.

One firms field force was apparently highly sophisticated, perhaps well qualified engineers, and well trained in dealing with distributors and customers.

A majority of firms replied that before-sales service was important and was provided by their own sales force and in one firm by the distributor's sales force as well. All firms replied that after-sales service was important and this service was provided by the same personnel as before-sales service. Customers of most firms could obtain replacement parts generally through distributors and in one firm through their factory. Only one firm obliged with a skeleton organisation chart.

DISTRIBUTION

Group 1. (Small Manufacturers)

The bulk of the sales of these firms was made directly to O.E.M. and to users. Some firms used distributors, a few used agents as well, and a few others had their own distribution outlets.

Most firms replied that their channels of distribution were similar to those generally used by their competitors and there was a majority agreement that they were not satisfied with the effectiveness of the present system of distribution. Some wanted greater use of distributors; one suggested more agencies, and these were the changes anticipated in the future.

None of the firms had a formal "statement of policy" for their distributors and some of the reasons put forward were: the lack of flexibility; takes insufficient account of local factors, etc.

The numbers of distributors of each one of these firms was in single digits, and they were based geographically. Most of the firms' distributors did not have area franchises.

The distributors of all these firms were not given a target sales and some of the firms replied that their distributors had to carry a minimum of stock.

The use of distributors was at present seen to be of relative unimportance to these firms. Distributors did carry other products of the firms.

A majority of the firms had a field sales organisation. The effective strength of the field sales force was not more than 10 in each firm; and their paramount task was to sell or to get orders. In two firms the main job of the field sales was to obtain specification, and in another, customer liaison, market intelligence and after-sales service.

CONCLUSIONS (PRICING)

This survey was intended to investigate the pricing objectives of manufacturers in the motor control gear industry and the methods used in pricing all classes of products. It was also intended to appraise the role of pricing in the competitive strategy of the manufacturers.

Some inconsistencies were found in the replies to the questionnaire from both large and small manufacturers, partly because perhaps of the inherent deficiency of the method used in the survey. It seemed too that certain areas of the questionnaire did not receive adequate attention from the respondents. These factors, the inconsistency and the inadequate attention (one could have been the cause for the other) have greatly increased the difficulty in drawing any specific conclusions. Two additional reasons, and very important ones too, have compelled the writer to adopt an extremely guarded approach to the conclusions of the survey. These reasons are:

1. the sample who responded to the survey could not be considered fully representative of the industry; probably, only the more progressive manufacturers ignored B.E.A.M.A.'s recommendation, and
2. the postal questionnaire had to accept at face value the brief replies to the questionnaire from the respondents; thus failing to analyse in depth the reasons for any particular decision taken.

Main Objectives

The findings of the survey indicated that all the manufacturers, large and small, had more than one main objective and that profit was the most important objective to almost every manufacturer.

In other objectives, large manufacturers differed from their smaller counterparts. While the former aimed for growth, goodwill of customers etc., the latter aimed for survival, and surprisingly did not seem to be concerned with the goodwill of customers which is just as important to their survival, as it is to the larger manufacturers for their growth. Another difference between large and small manufacturers was that the former had their objectives laid down formally in their organisations.

Pricing Objectives

The most important pricing objectives were 'to achieve a certain rate of return on turn-over' and/or 'to achieve a certain rate of return on capital employed'. The small manufacturers aimed at the first objective, while the larger manufacturers aimed at either or both of the objectives. 'To improve the liquidity' was also a pricing objective for some of the manufacturers from both groups. But although this objective is invariably a short-term one which would need to be clarified and reviewed frequently, there was no evidence to suggest that this was done. Other relevant objectives such as 'to improve or retain the share of the market' and 'to meet competitors' prices', did not figure on the list of the large and small manufacturers respectively. Another difference between large and small manufacturers was that the former seemed to review their pricing objectives more frequently than the latter.

A pricing objective 'to achieve a rate of return on turnover' would be acceptable for a retailer whose substantial proportion of the capital is tied to the inventory and whose operating costs were largely created by the storage, display and selling of the product. But this is an unsound objective for the manufacturer because it neither maximises total profit (by optimising

volume-cost and price-volume combination) nor is it directed towards improving the sales volume/share of the market, or to achieving any other main objective, except perhaps, to stabilise prices.

Pricing Policy

There seemed to be some form of pricing policy for almost all manufacturers, although very little information was provided on it, even by the large manufacturers, who claimed to have a formal statement on pricing policy (the size of the organisation perhaps made it necessary to have the formal statement). Generally the policy was formulated at a very high level of the organisation hierarchy, and even at the board level. Just as in the case with objectives, the policies appeared to be reviewed more frequently by the larger manufacturers. (If this were to be true then the smaller manufacturers would have surrendered one of the advantages they are expected to hold over larger manufacturers - their flexibility and the speed to adapt to a new and changing situation - unless there was inconsitency in the application of the policies and some of the decisions could be made on 'ad hoc' basis).

None of the manufacturers had a separate department to perform the actual task of price setting: this task was delegated to an individual from the marketing or the accounting department. With some small manufacturers, the top executive probably had a hand in the actual setting of price.

Almost all manufacturers disclosed that their official or list prices* could be adjusted to meet special circumstances;

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* according to National Board for Prices and Incomes, Report No.55 Price Lists are not enforced. These lists are, it is alleged by the manufacturers, for convenience of the distributors.

but where such circumstances demanded (and they could do) speed in making and implementing the decision and did not create other implications for the manufacturers, then it would appear that the authority to use tactical pricing discretion, in such circumstances, had not been delegated to the operating level in the organisation, in order to be effective.

Standard types of discounts viz. trade, quantity and prompt payment, were generally given in the industry. There was no geographical price policy. Arbitrary discounts (which is almost the same as reduction in list prices and in profit margins) were given by some manufacturers to some customers, defined as special customers. The criterion for taking such decisions would obviously be that the prospects of future advantages out-weighed the possible side effects of retaliation from other customers, of leaning on indifferent salesmanship and of rationalising such decisions, and the most likely rationalisation being - 'if we did not make this particular concession, our competitors would have'.

The price policy was stated, by every manufacturer, to be common to all the classes of products. From the analysis to the questionnaire it would appear that the policy was not comprehensive enough to provide guidelines in its application to pricing of all classes of products nor to deal with different marketing conditions. This is also the area of the questionnaire where inconsistencies were found in the replies; some brief discussion of the factors which would normally influence pricing of the four classes of products would, therefore, seem necessary.

For standard (or catalogue) products sold in an oligopolistic market, depending upon the degree of product differentiation, demand and competition, should be the most important factors in establishing prices. Then only can the manufacturer achieve his objectives of maximising total profits or controlling a specific share of market.

In the case of special products, cost is a factor which highly influences prices, particularly where competitive bidding is involved. Where the turn-over on special products is relatively a small proportion of the total turnover of the manufacturers, the profit margin on special products becomes subordinate to:

1. unused or available capacity, viz. facilities for production, distribution and selling.
2. prospects of new markets for itself or other products.
3. contribution to overhead and to total profits.

The pricing of new products involves, in the first place, meeting the purpose for bringing out the new product; this purpose may be to complement the product line, to absorb the available capacity either in production or in selling, to create derived demand, etc. Costs would have already been taken into account during the planning stage and long before commencement of the manufacturing process. Very often, share of market or the extent of market penetration is more important than the immediate profitability.

For a product which is a major technological innovation in the market, there is no immediate and direct competition except from substitute product suppliers who may retaliate with price reductions.

Depending upon the product and the state of potential competition, the manufacturer has the option of pricing to skim the market and thereby recover his development costs and make quick profits. On the other hand he can be more adventurous and penetrate or entrench in the market with the objective of long-term profits. Costs hardly enter into such 'demand-oriented' pricing policies, except to set the floor price; therefore price will be based on the value or utility the product has to particular groups of customers.

It would appear that the manufacturers did not have a very realistic idea of the demand characteristics for their products, nor had they, (the manufacturers) developed a system of competitive intelligence which would have helped them in planning their own marketing strategy, so important in an oligopolistic market.

Pricing Methods

The pricing method of almost all manufacturers is the total costing one - i.e., adding a % profit margin to the total cost per unit of the product, in order to arrive at the price of the product. This method was applied to all the four classes of products. The larger manufacturers claimed that they had identified and accurately measured their fixed and variable costs, but little use appeared to have been made of this exercise. Perhaps it would have been more useful to the manufacturers to direct some of their efforts dissipated in allocating fixed costs more accurately, into analysing the demand characteristics for their products and investigating their competitors' marketing strategies.

The small manufacturers did not give adequate attention to the costing of individual products and therefore would be better off if they priced to meet competition.

Total cost (or sometimes called full-cost plus 'mark-up') pricing has several drawbacks: it ignores demand and overlooks competition; it fails to focus on the critical factors of production and includes such factors as sunk costs which have no bearing on the current costs of producing and selling. However, the only situations where full cost pricing could have some justification are:-

1. when the production is to near full capacity.
2. when the overall efficiency of production and marketing is expected to be the same as those of the competitors; thus reducing the risk of price wars, and
3. where the buyers have the economic power and other resources to manufacture the product themselves.

The profit margins used by most of the manufacturers in arriving at the final price of the product were not rigid, but were dependant upon marketing conditions. This surely is the correct approach, and there was no reason for the rest of the manufacturers not following this practice, or adotping it in principle. Therefore, at least in principle, when the demand is high, the competition is moderate, and the economic conditions are good, the profit margins (and the total profit) should be higher to match the alternative investment opportunities available for higher returns on investment; on the other hand, although an increase in costs may seem to justify increase in prices, the level and type of demand may not permit the increase.

For assessing costs, the large manufacturers typically used standard costing and the smaller manufacturers historical costing. Pricing is concerned with costs to be incurred, therefore, it is the future costs, perhaps projected from historical costs, which should have been used. Research and development costs are correctly recovered as part of general overhead costs by the majority of manufacturers, but a tiny minority charged them as the standard costs of the product. One would wonder at the basis used by this minority of manufacturers to recover the R. & D. costs of a project which did not produce any results of immediate value and application.

Also, and on the part of this minority of manufacturers a strict adherence to a constant or common rate of return on each product item, i.e. each product item having to stand on its feet, would have resulted in overpricing some products and under-pricing others, and thereby losing the competitive advantage which these manufacturers had in some of their products. Bearing in mind that cost per unit fluctuates with changes in volume and that the allocation of fixed costs is always an approximation, such a policy of 'averages', i.e. expecting a constant rate of return, automatically would have:-

1. eliminated some marginal products and thereby lost their contribution towards total profit, unless the resources were deployed to manufacture only the more profitable products.
2. ignored the complementary demand and other useful effects created by these products and
3. done little to push the sales of higher profit products.

Pricing as a Strategy

Price was not stated as the most important factor in any manufacturers' competitive strategy. For large manufacturers, such factors as quality and reliability, service (before and after sales), and product development, in that order, were suggested to be of greater importance than price. In the case of small manufacturers, price appeared to share the second place along with other factors, but quality and reliability was still the most important factor to them in their overall marketing strategy. (G. Udell similarly concluded, that price was not the most important factor in the industrial manufacturers' competitive strategy). It would therefore, be logical to assume that product differentiation was sufficiently significant to permit some degree of independence in pricing. Motor control gear probably adds a small proportion to the total cost of the end product for which it is used, but its role in the end product would be a very important one; its effective operation is of vital importance, and its failure would result in the consequential failure of great magnitude to the end product; hence the importance of quality and reliability of the product to the manufacturers' competitive strategy. Given this situation, the manufacturers did not make full use of the relative independence in pricing, and have adhered to the 'safety first' or indifferent basis for pricing, i.e. cost plus pricing.

Considering the absence of a price leader in the industry, and the apparent absence of a system of competitive intelligence from the manufacturers, (except perhaps for the examination of competitors' products) the reaction of the manufacturers to price changes introduced by their competitors did not appear

to have been resulted from any careful and systematic analysis to deduce the competitor's reasons for price changes. Perhaps it may be added that, in general, the manufacturer operating in the top segment of the market, viz. the quality market, should follow the competitor in price increases and may stay put in price decreases; and vice-versa for the manufacturer operating in the lower segment of the market.

When the manufacturers introduced price changes they appeared to confine themselves to an examination of their own immediate motives and advantages and gave little attention to:

1. the effects of the changes on distributors and customers.
2. competitors' reactions, and
3. other areas, external to the manufacturers, affected by the price changes.

CONCLUSIONS (DISTRIBUTION)

This survey was intended to describe the channels of distribution used by manufacturers in motor control gear industry to sell their standard (or catalogue) products, the methods used to select and motivate distributors and to evaluate their performance. A guarded approach is adopted to the conclusions on this survey. This is done for two reasons:

1. the sample who responded to the survey could not be considered as being fairly representative of the industry; most probably only the more progressive manufacturers ignored B.E.A.M.A.'s recommendations, and
2. the postal questionnaire had to accept at face value the brief replies from the respondents and thus failed to analyse in depth the reasons for any particular decisions taken.

Channels of Distribution

The survey has conclusively indicated that during the last 10 - 20 years, manufacturers have been gradually making greater use of industrial distributors, i.e. wholesalers. At present, the bulk of their sales is through this channel. The other channels are direct selling to the O.E.M. and to the users and through the firms own distribution outlets. Agents are used only by a few small manufacturers. The trend for the near future is towards greater use of distributors.*

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* It is inevitable that the larger manufacturers will own their distribution outlets - see para. 2 of following page.

In fact, the distributor, often under-rated and sometimes criticised under the label 'wasteful, middle-mens profits', will play a very important role by performing the last part of the marketing function for the manufacturer's standard products, which have a geographically wide and scattered market, thus requiring maintenance of local stocks and provision of essential before and after-sales services.

However, for some manufacturers with a large turn-over, for manufacturers whose turnover proportion of special products to standard products is relatively high, or for manufacturers of diversified products (other than motor control gear) sold through distributors, there is a good case for assessing the economy of scale which could be obtained by extending their marketing function to actual selling of the products directly to ultimate customer or to the user, through manufacturer-owned distribution outlets. This form of distribution is used, or planned for the near future, by some manufacturers and will naturally be a part of their competitive strategy, enabling the product to be made available within a matter of hours.

On the other hand, a manufacturer who has a concentrated market area may find it more conomical to use the direct channel of selling to the customer in this particular market.

Policy Towards Distributors

Most manufacturers claimed to have a formal 'statement of policy'. There seems to be no valid reason for the rest of the manufacturers not following this useful practice - so long

as such a formal statement is flexible enough to take individual factors into consideration and to avoid the creation of a strictly formal relationship between the two parties.

The basis for establishing the area of distribution, in general, is the marketing approach of industrial coverage, i.e. types of industries/customers served, rather than the easier process of geographic coverage; the manufacturers did not grant area franchise to the distributors.

The role of distributors in the manufacturers' ultimate marketing success is understood and accepted, and manufacturers, by and large, follow the general practices of their progressive counterparts in U.S.A. by taking interest and helping their distributors in their plans and their needs. In their turn, the manufacturers ensure that their own interests are covered as well, by setting a sales target to their distributors and specifying a minimum value of stock which their distributors must carry, etc.

However, there are two areas which may not have been given the attention they deserve by manufacturers:-

1. although the manufacturers claimed that they encouraged marketing information from their distributors, because of the vagueness of the replies to the questionnaire, it is not possible to conclude that the manufacturers take full advantage of the range of services which the distributors are in a position to provide, such as, information on market conditions and trends, competitors' activities, customers' needs and problems, responses to particular products and reactions to any price changes.

2. Where the product is sufficiently sophisticated to require training to the distributor's sales force, most manufacturers, while providing the training, do not specify it as a requirement. Thus they leave it to the discretion of the distributor, and thereby reduce the sense of purpose which should emanate from the manufacturer towards his distributors.

Two problems which may arise between the manufacturer and his distributors occur:-

1. when the manufacturer sells directly to O.E.M./user, and
2. when the distributor places an urgent order.

In the first situation the manufacturer is almost in direct competition with his distributors; most manufacturers believe that the only way to minimise the conflict is by a compromise and understanding between the two parties. Where the manufacturer makes it a practice to deal always directly with the profitable O.E.M. with little compensation to the distributor for his efforts, then the distributor will have equally little reason for not ignoring such prospective customers in the future, resulting in the manufacturer being the real loser in the long run.

In the second situation, it would appear that most manufacturers would adopt a helpful attitude towards their distributors, but the best approach to the situation is surely that from the manufacturer whose reply was 'first supply, second ascertain why not in stock and third, if necessary, amend the periodic schedule'.

However, two major distribution factors are involved in this situation; the first is that some of the functions of the distributors are stock-holding, forward purchasing (thus reducing manufacturer's warehouse expenses and the funds tied to the inventory), and the other is that additional costs will be incurred by the manufacturer in speeding up the order (viz. customer order-processing, changing production scheduling, sub-optimising transportation and delivery). Therefore, any customer-service policy from the manufacturer, such as the 24-hour service, must be cost-justified in the light of the two factors.

Selection of Distributors

Reports and recommendations from a manufacturer's field sales force play the most important part in the initial screening of prospective distributors. This is quite consistent with the practice in the U.S.A. Other sources for screening* are used to a small extent. None of the manufacturers appeared to have a separate organisation responsible for distribution; the screening and selection was, therefore, carried out, in most cases, by the marketing executives at the head office. The major criteria for selection in almost every case was the distributor's management ability - and rightly so, provided it is possible to assess it correctly in the short time available. The quality of the sales force and its technical competence were the other criteria given a very high rating, thus indicating the important role of the distributor in the manufacturer's marketing organisation.

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* Discussed under 'Selection Process'.

Unlike the practice in the U.S. industry, finance and credit-worthiness of the distributor were not considered important criteria, and one would wonder whether the manufacturers take it for granted that their distributors are financially sound or whether they (the manufacturers) are technically oriented rather than customer-oriented, and overlook the situation where the distributors may not have sufficient financial strength to extend lines of credit to worthy customers. The top selection criteria from one manufacturer - 'Preparedness of distributor to co-operate with manufacturer' is excellent and highly desirable in practice, but is assessment will be extremely difficult at the selection stage, thus reducing its feasibility and application. Where personal judgement has been exercised in selecting the distributors, it would appear that it is not generally done by the individual who should be in the best position to do so - the regional manager.

Evaluation of Distributors' Performance

There was not sufficient evidence to indicate that forms for selection and for performance evaluation of distributors are used extensively or effectively. The advantages which a well-designed form can provide would, therefore, be lost.

It would appear that adequate consideration is not given to the two major factors involved in evaluation of the distributors performance. The first factor is to establish the standards of performance, the second is to develop methods to evaluate the performance against the standards. Almost every manufacturer in addition to setting a target sales for the distributor expects marketing information from the distributor.

But it appears that the only criteria for evaluating a distributor's performance is, with almost all manufacturers, the distributor's sales performance, whether measured against his sales quota or past performance or against other distributors' performance.

This is obviously not a sound practice. It offers little incentive for distributors to provide marketing information to the manufactuer which may be of great use to him in forming his long-range marketing strategy, and it may impose a shortsighted policy of over-emphasis on sales quota and induce the distributor to push the products or product lines currently in great demand and neglect the lines which require some effort, but have huge potential for the future. Further, the distributors may remain content with pursuing the business with existing customers and - ignore a large prospective customer. While criteria for evaluation based on reports from customers, follow-up of customer enquiries, etc., is realistic, the criterion from one manufacturer which gives high importance to 'the ratio of his (the manufacturers) sales to the distributor's total turnover** is of doubtful value and may well indicate that a low ratio could be due to some deficiency in the manufacturer's product or in his motivation system, or that the product is of limited value to the distributor, hence little interest from the latter. Lastly, every distributor must be fully aware of the performance required of him and of how it is being evaluated.

** "The total volume of business in all lines done by the distributor is of no particular interest to us. His capacbilities in our specialised field and his method of doing business are, however, very important"
- Besley-Welles Co.

Motivating the Distributors

Technical and managerial assistance to distributors, fair and prompt dealings with them are the most important means of motivation used by the manufacturers twards their distributors. What is significant with these means is that they indicate an active interett and the participation of the manufacturer in the sales of his products and in the sharing of the problems of the distributor. It would appear that the "carrot or the stick" approach is of very little value, and that other means such as inviting the distributors to visit the works, advertising, etc. are not major means of motivation.

Whatever the means used for motivation, it must achieve the desired results in order to be said to be effective. A good means of motivation should lead to greater co-operation and increased team effort between the manufacturer and the distributors. There must be a good case for consulting the distributors, regarding the optimum means of motivation. A 'blue ribbon' manufacturer will have requests from other wholesalers for appointment as his authorised distributors because of the quality of the product or his reputation, and not necessarily because of the high effectiveness of his motivation system. "Make a good mouse trap - and the world will beat a path to your door step" - Emmerson, may have some truth in it.

PRICING AND DISTRIBUTION IN MOTOR CONTROL GEAR INDUSTRY

A SURVEY

The survey is in the Motor Control Gear Industry in the United Kingdom and the attached questionnaire is divided into two separate parts: Pricing and Distribution. Pricing is concerned with primarily two classes of products, Standard, i.e. those that appear as complete packages or as items on the Firm's catalogues, and Special, i.e. those products that are Custom-built. A further sub-classification is made where the product is New to the Firm, and where the product is a Major Technological Innovation and thus new to the market (most probably new to the Firm). Distribution is concerned entirely with Standard catalogue items/products.

The questions refer to the Motor Control Gear in U.K..; unless otherwise specifically stated. They are set in such a form as to enable the answers to be fairly straightforward, but in a few instances the answers may have to be estimated - and a reasonably estimated answer is far more useful than no answer at all. Do elaborate on any answer you wish to, continuing on opposite page if necessary. Where a dotted line is provided, you are specifically requested to elaborate and/or to write down other factors which do not appear on this questionnaire. In case of an ambiguity or lack of clarity in the questions, please write your understanding or interpretation of the question and the corresponding answer.

There is a slight departure from the conventional method of ranking in an answer, where more than one factor is involved. Instead, you are requested to award marks, between 0 to 10, the more important factors receiving the greater number of marks. Please specify any particular circumstances which could alter the marks awarded. There is no limit to the total number of marks awarded in any one answer.

Where the answer requires information which is not available please write NA (i.e. Not Available) in the appropriate space; on the other hand, if it is your Firm's policy not to disclose the information at all, please write DD (i.e. Declined to Disclose).

P R I C I N G

of standard (i.e. catalogue) and special (i.e. custom-built) items or products; also products which are new to the firm, and products which are major technological innovations in the market.

SECTION 'A'

GENERAL

A.1 What are the main objectives of your Firm as a whole? (Please check and award marks)

..... Survival; ..... Growth; ..... Prestige;

..... Good will of Customers and Esteem of Public;

..... Steady profits; .....

.....

A.2 Are they formally laid down? YES .....; NO .....

A.3 Does your Firm manufacture other products besides Motor Control Gear? YES .....; NO .....

A.4 If YES, is the Motor Control Gear Section divisionalised (i.e. Profit Decentralised)? YES .....; NO .....

SECTION 'B'

OBJECTIVES

B.1 What are your Firm's objectives regarding pricing? (Please check and award marks)

..... Maximise total profits in the short-run

..... Achieve a certain rate of return on Capital Employed.

..... Achieve certain profits to pay regular dividends on shares.

..... Improve the liquidity of the Firm.

....

....

B.2 How often are these objectives reviewed? .....

.....

SECTION 'C'

POLICY

C.1a Does your Firm have a formal statement on Pricing Policy?

YES .....; NO .....

C.1b If YES, please write down its main points .....

.....

C.1c If NO, please write down the main points of the policy generally understood

.....

C.2a Is this policy common to all the classes of products?

YES .....; NO .....

C.3 At what level is the policy formulated? .....

.....

C.4 How frequently is the policy reviewed? .....

.....

C.5 Who is responsible (Function of the individual) for setting the price?

.....

C.6a Is discretionary latitude in pricing permitted in special circumstances, say, in order to meet a competitive situation?

YES .....; NO .....

C.6b If YES, who is authorised to use discretion? .....

C.7 In the Pricing of all the classes of Products, what are the most important factors your Firm takes into account? (Please check and award marks)

	Standard	Special	New	Innovation
Competition	.....	.....	....	.....
Demand	.....	.....	....	.....
Costs	.....	.....	....	.....
Sales Volume	.....	.....	....	.....
Profit Margins	.....	.....	....	.....
Share of Market	.....	.....	....	.....
Production Capacity	.....	.....	....	.....
Prospects of New Market	.....	.....	....	.....
Contribution to Overhead	.....	.....	....	.....
.....	.....	.....	....	.....

C.8 Does your Firm give discounts for:

(a) Trade YES .....; NO .....

(b) Quantity YES .....; NO .....

(c) Prompt Payment YES .....; NO .....

C.9a Does your Firm have a geographic price policy?

YES .....; NO .....

C.9b If YES, what is the basis of this policy (Please check)

..... Freight Allowed; ..... FOB Factory/Warehouse;

..... Freight Equalisation; ..... Zone Pricing;

..... Basing-Point.

C.10 Irrespective of your answers to questions C.8 and C.9, does your Firm give arbitrary Discounts?

YES .....; NO .....

C.11 Irrespective of your answers to questions B.1 and C.7, is it the policy of your Firm to maintain constant profit margins between different items of the same class?

.....

C.12 Does your Firm change profit margins depending upon marketing conditions?

.....

C.13 Under what circumstances does your Firm accept orders for Special items whose price covers only variable costs and not the full share of fixed costs?

.....

C.14 Would your Firm accept orders for Special items whose price is just below or barely covers vafiable costs?

YES .....; NO .....

C.15a Does your Firm sell replacement parts?

YES .....; NO .....

C.15b If YES, what is the basis of policy for selling replacement parts? (Please check and award marks)

..... Important source of profits;

..... Customer goodwill;

....

SECTION 'D'

MARKET

D.1 What is your share of the U.K. market for Motor Control Gear in 1966 .... 1967 .... 1968 (6 months) ....

D.2a Does your Firm buy components or parts from Motor Control Gear Industry?

YES .....; NO .....

D.2b If YES, please write down the value of the components which:

	1966	1967	1968 (6 months)
(a) you bought from British Manufacturers	£....	£....	£....
(b) you imported from abroad	£....	£....	£....

D.3 What is the trend of your share of the market for the next five years?

.....

D.4 What is the trend of your major competitors' share of the market?

.....

D.5 What techniques do you employ for Sales Forecasting and assessment of Market Trends?

.....

D.6 How sensitive to price variations is the demand for your product? (In other words, if your Firm alone raised or lowered the price by, say, 5% or 10%, would you expect a change in demand for your products)

.....

.....

D.7 Is there a price leader? .....

Who and why? .....

D.8 What is the turnover of your Standard products and Special products, as a percentage of your total turnover?

Standard .....% ; Special.....%

SECTION 'F'

METHODS

F.1a What system of costing is used in your Firm? (Please check)

..... Total Costing; ..... Marginal Costing (Contribution Basis); ..... Backward Cost Pricing.

F.1b Is this system applied to all the classes of products?

.....

F.2 What costs are used? (Please check)

..... Historical Costs; ..... Standard costs for a certain level of production; ..... Future costs with allowance for Inflation; .....

F.3 Have the variable and the fixed costs associated with each one of your classes of items been identified and accurately measured?

.....

F.4 What do you consider is the average ratio of Fixed Costs to Variable Costs for your Standard products?

.....

F.5 How does your Firm base the price of a product which is a major Innovation in the market? (Please check and award marks)

..... by assessing its value to the customer; ..... by conducting a sort of test market; ..... on the basis of costs; .....

F.6 If your Firm incurs Research and Development Costs, please explain how they are recovered.

.....

SECTION 'G'

STRATEGY

G.1 What are the major important areas in your Firm's competitive strategy? (Please check and award marks)

..... Product Development; ..... Quality and Reliability; ..... Price; ..... Before and After Sales Service; ..... Delivery and Distribution; ..... Advertising and Sales Promotion; ..... Others (please specify) .....

.....

G.2 When introducing price changes, what possible reactions and problems both internal and external, does your Firm take into consideration?

.....

.....

C.3 How does your Firm price the 'Standard' items in relation to the competitors' prices? (above, below or equal to competitors' prices)

.....

G.4 Why? .....

G.5 If your main competitors reduced their prices, would your Firm

..... Follow the competitor; ..... Re-examine its costs;

.....

G.6 What would your Firm's reaction be if your competitors raised their prices?

.....

G.7 Has your Firm 'Loss Leader Priced' Motor Control Gear in recent times?

.....

G.8 Has any other product of your Firm been 'Loss Leader Priced' to benefit Motor Control Gear directly or indirectly in recent times?

.....

G.9 How does your Firm come into the market with prices for your 'New Products'? (above, below or equal to competitors' prices)

.....

G.10 For standard items, what are the costs of:

(a) Manufacturing .....%
(b) Advertising (and or Sales Promotion) and .....%
(c) Selling and Distribution .....%

as percentage of Sales Revenue?

G.11 Taking Motor Control Gear as a whole, what are the costs of:

(a) Manufacturing .....%
(b) Advertising (and or Sales Promotion) and .....%
(c) Selling and Distribution .....%

as percentage of Total Sales Revenue?

Name of the respondent completing the Questionnaire:

.....

Official Designation .....

Name of Firm .....

Address .....

.....

.....

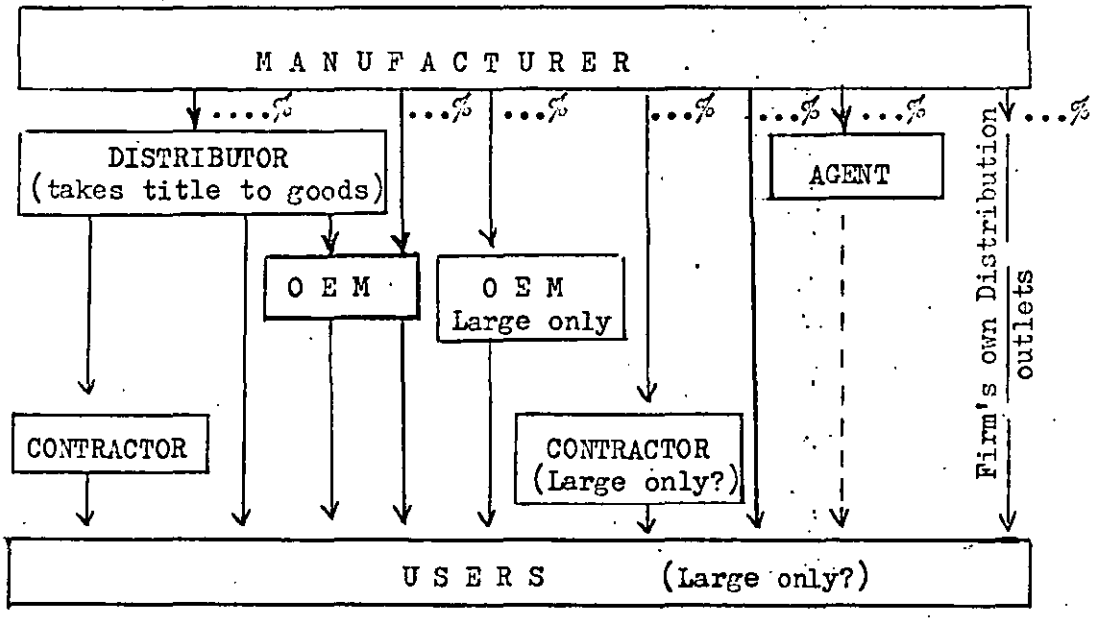
D I S T R I B U T I O N (IN U.K.)

of standard (i.e. catalogue) items or products

SECTION 'M'

CHANNELS

M.1 What are the Channels for Distribution of your Product? (Please check on the diagram the channels used by your Firm and write across each channel the estimated percentage annual sales revenue in U.K.)



Comments .....

M.2 Are the channels used by the Firm similar to those generally used by your main competitors?

YES .....; NO .....

M.3a Are you satisfied with the effectiveness of your present system of distribution?

YES .....; NO .....

M.3b If NO, what changes would you like to see and why?

.....

M.4 What changes do you anticipate in the distribution system during the next 10 to 20 years?

.....

.....

M.5 Over the last 10 to 20 years what have been the principal changes in the distribution system used by the industry?

.....

NOTE: If you do not make use of DISTRIBUTORS (i.e. Wholesalers) at all, please skip 'N', 'P', 'Q' & 'R' and proceed directly to Section 'S'.

SECTION 'N'

GENERAL on Distributors

N.1a Does your Firm have a formal 'Statement of Policy' describing what it expects from its Distributors and what they can expect from the Firm?

YES .....; NO .....

N.1b If YES, please enclose a copy.

N.1c If NO, please comment on the disadvantages of having such a formal statement

.....

.....

N.2 How many Distributors does your Firm have in U.K.? .....

N.3 On what basis has your Firm established the areas for Distribution? (Please check)

..... Industry-wise; ..... Geographically; .....

N.4a Do any of your Distributors have Area Franchise?

YES .....; NO .....

N.4b If YES, what percentage of Distributors have Area Franchise?

.....%

N.4c What percentage of your sales is through such Distributors?

.....%

N.5a Does your Firm set a 'Target Sales' for the distributors?

YES .....; NO.....

N.5b If YES, on what basis is the Target set? .....

.....

N.6 What is the system for your Distributors to place their orders?

.....

N.7 Does your Firm have recommended retail prices for the various items?

SOMETIMES .....; YES .....; NO .....

N.8 Is there a minimum value of stock which your Distributor must carry?

YES .....; NO .....

N.9a Does your Firm provide technical training (related to your product) to Distributors' Sales Force?

YES .....; NO .....

N.9b If YES, is it a requirement specified by your Firm?

YES .....; NO .....

N.10 Do your Distributors carry <u>other products</u> of your Firm?

YES .....; NO .....

N.11a Does your Firm encourage feed-back information from the Distributors?

YES .....; NO .....

N.11b If YES, what kind of information is encouraged? .....

.....

.....

N.12 Does your Firm have literature for Distributors viz. Catalogues, Price Lists, Technical Literature, Instruction and Sales Manuals, Sales Aids etc.?

YES .....; NO .....

N.13 Does your Firm keep the Distributors informed regularly about his sales and how it compares with his potential market for the product?

YES .....; NO .....

N.14 Does your Firm maintain communication with the Distributors regarding your expected new product items, your proposed expansion of capacity, the market trends, suggestions for pushing a particular item, etc.?

YES .....; NO .....

N.15 With the objective to making recommendations or suggestions does your Firm:

(a) Examine the motivation system used by the distributor to his Sales Force?

YES .....; NO .....

(b) Examine the financial terms (viz. credit, etc.) offered by the Distributor to the Customers of your product?

YES .....; NO .....

(c) Examine any other area in the control of Distributor which may influence the sales of your product?

YES .....; NO .....

N.16 How does your Firm deal with Distributors who place urgent orders?

.....

N.17 If you also sell directly to the OEM and/or to the user, how do you avoid or minimise the conflict which could arise between yourself and your Distributor?

.....

.....

SECTION 'P'

SELECTION of Distributors

P.1 How does your Firm screen prospective Distributors? (Please check and award marks)

..... On reports and recommendations from Field Sales Force

..... On information from Trade sources

..... On information from Distributor's customers.

..... On results from direct mail solicitations & campaigns

..... On information from other sources, viz. Chamber of Commerce, Banks, Classified Telephone Directory.

P.2 Who does the screening? .....

.....

P.3 Does your Firm have a standard form for selection of Distributors?

YES .....; NO .....

P.4 Who is authorised for selecting the Distributors? .....

.....

P.5 What criteria does your Firm use for selection of Distributors? (Please check and award marks)

..... Finance and Creditworthiness; ..... References;

..... Young & Dynamic; ..... Well-established;

..... Growth Prospect; ..... Market Coverage;

..... Inventory and Warehousing Facilities; ..... Size;

..... Size and Quality of Sales Force - Sales and Technical Competence; ..... Attitude to the products of the Firm;

..... Management Ability; ..... Good Reputation in Locality;

..... Area Coverage; ..... Previous Experience;

..... Product Lines he carries, viz:

(i) must be complimentary
(ii) must not compete with your product
(iii) must be compatible with yours in quality etc.

..... Personal Judgement; ..... (others) .....

.....

SECTION 'Q'

EVALUATION of Distributors

Q.1 How often does your Firm evaluate its Distributors? .....

.....

Q.2 Who contributes toward evaluation? .....

.....

Q.3 Is there a standard form for evaluation? YES .....; NO .....

Q.4 What criteria does your Firm use for evaluation?
(Please check and award marks)

..... Performance measured against his sales quota.

..... " " " " performance for earlier period.

..... " " " other distributors and their respective sales potential.

..... " " by Some other standard, viz.

.....

..... On his performance with <u>other products</u>

..... On the basis of information received from other sources, viz. Customer reports, follow-up Customer Inquiries etc.

.....

Q.5 Is your Distributor aware of the criteria used for evaluation of his performance?

.....

<u>SECTION 'R'</u>

<u>MOTIVATION</u> of Distributors

R.1 What means does your Firm use to motivate its Distributors?
(Please check and award marks)

..... Offer better financial terms, discounts on larger and on cumulative order;

..... Invite him to visit the Firm and give Red Carpet welcome;

..... Offer technical or Managerial Assistance or both;

..... Threaten to cancel the Distributionship;

..... Advertise (or other sales promotion) which will be of direct benefit to the particular Distributor.

..... Be fair and prompt in your dealings with him.

.....

R.2a Has the effectiveness of your Motivation been assessed?

YES .....; NO .....

R.2b If YES, please describe in a few words .....

.....

SECTION 'S'

FIRMS MARKETING ORGANISATION

S.1a Does your Firm have its own Distribution outlets?

YES .....; NO .....

S.1b If YES, how many outlets do you have in U.K.? .....

S.2a Does your Firm make use of 'Manufacturer's Agent's'?

YES .....; NO .....

S.2b If YES, how many such Agents do you have in the U.K.? .....

S.3a Irrespective of your answer to questions S.1a and S.2a, does your Firm have a Field Sales Organisation?

YES .....; NO .....

S.3b If YES, what is the effective strength of the Field Sales Force?

.....

SECTION 'T'

BEFORE AND AFTER SALES SERVICE

T.1a Is 'Before Sales Service' important for your standard items?

.....

T.1b Who provides this service? .....

T.2a Is 'After Sales Service' important to your standard items?

.....

T.2b Who provides this service? .....

T.3 From which sources does the customer obtain Replacement Parts?

.....

Please draw a skeleton Organisation Chart for your Distribution Organisation, indicating the authority, responsibility and the relationship of the departments and the individuals concerned (including collection of accounts from Distributors).

Name of Respondent completing the questionnaire

.....

Official Designation .....

Name of Firm .....

Address .....

.....

.....

Part II

PRICING AND DISTRIBUTION OF INDUSTRIAL PRODUCTS

SECTION 'A'

PRICING

Figs. Nos. 1 - 31 are given at the end of the Section

PRICING

Price is the money paid by the customer in exchange for the value received which is the product itself, and the various factors of value associated with it. The factors which could be of value to the customer are the quality, performance, shape and size of the product, the service provided before and after sales, and the financial terms given by the manufacturer; also the availability of the product in the right quantity and at the right time and place.

Where the products are uniform or homogenous and there is no difference between the value-factors associated with each one of the products concerned, the price asked for by the sellers in any market should, theoretically, be the same for all. It is the difference, apparent or real, in the value-factors associated with the products which induces customers to pay different prices asked for by the sellers.

Pricing is a vital function for a firm. Pricing must be such that, in the long run,* the total revenue earned should cover at least all the costs incurred for the survival of the firm, and should bring in profits for the growth of the firm.

A good deal of literature is available on pricing. This literature could be divided into three main sections. Firstly comes the theoretical approach to pricing , generally found in the text-books of economics. Secondly is the perceptive approach to pricing. The notable writers in this area are Dean, Oxenfeldt, etc. Thirdly, there is the actual pricing of manufacturers. Contributions in this area have been made by various bodies or individuals, viz. accountants, students working on their theses, etc., but the major ones have been from studies conducted by Brookings Institution, Lanzilloth,

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* There is no such thing as a long-run pricing decision; pricing decisions are a series of short-run decisions taken within the frame-work of a 'long-run' pricing policy.

Backman and Haynes in the U.S.A. and by Fog and Barback in Europe. (It should be noted here that the studies of Haynes, Fog and Barback were concerned with the manufacture of consumer products).

It will be shown from the three approaches to pricing, that determination of price and pricing policies is influenced to a greater or lesser extent by six factors: the firm's objectives, demand, cost, competition and legislation, social and ethical considerations.

In the theoretical approach, demand, cost and competition (i.e. the type of market in which the firm operates) are the major factors which determine price. Firm's objectives, costs and competition generally appear to be the influencing factors in the actual pricing of manufacturers; their relative importance depending upon the size of the manufacturers. To the larger manufacturers their pre-determined objectives influenced their pricing decisions while competition almost dictated the pricing decisions of smaller manufacturers. By contrast, the perceptive approach to pricing aims at maintaining a proper balance between all the factors which influence price.

In this study , pricing is tackled from a practical point of view; a more elaborate definition to this study would be 'an effective and practical approach to pricing by manufacturers of industrial products in an oligopolistic market'.

An attempt is made to cover most of the pricing situations which arise in practice, such as the different pricing policies and methods of pricing which have to be applied or adopted for different classes of products (viz. standard, special, new brands and technologically innovative products) at different stages of their life cycles and in different marketing conditions (but still in an oligopoly).

Numerical examples and diagrammatic representations, particularly on the application of operational research techniques for pricing situations which involve uncertainity and risk, are included to illustrate some of the situations. A brief description of the first four factors which influence price, and the way in which they do this, has been given at the beginning of this chapter. This is followed by a brief description of the general theory of price in order to focus attention on the objective of profit maximisation by the application of the principle of marginalism.

Most of the discussion in this study originated in the views put forward by the various writers mentioned in the bibliography. Although studies by Brookings Institution, Lanzillotti, etc. gave the writer considerable insight into the actual process of pricing by firms, it is not felt necessary to reproduce here a summary of their findings or of the views of individual writers; however, reference to their findings and comments on their views are made from time to time where this is appropriate.

FIRMS' OBJECTIVES

Objectives are the goals or the ends to which a firm is striving to achieve within a specified period of time; the length of the period determines whether the objectives are designated short or long term. These objectives may be formally laid down and will require to be reviewed from time to time in order to assess that they are relevant and valid, and are being achieved. Where there are several objectives to be achieved, the firm has to establish the level and the degrees of priority between them - in some cases leading to sub-optimisation of some of the objectives.

Objectives can be classified as main or sub-objectives, i.e. the achievement of certain sub-objectives leads to the achievement of a main objective. For example, if the main objective of a firm is growth, the pertinent sub-objectives could be diversification of products, enlargening the share of a certain market, increasing profits, etc.

Policies are subordinate to objectives; policies are the guide-lines for action to be taken, often in a recurring situation, in order to achieve the objectives; policies are not substitutes for the use of discretion. It is only when policies become absolutely rigid that actions taken support the policies rather than achieve the objectives. Such a situation could be illustrated by the following example: One of the objectives of a department in a firm was to reduce costs and the policy was to ban overtime work. The department (or the firm) was laying down underground cables, and on one occasion the job was left uncompleted and exposed for the evening, because of the ban on overtime work and despite a warning from the local weather forecast office of a heavy shower in the area at night. The costs to the firm due to the damage from the rain were considerable, for the action of the supervisor directing the operations was thus in support of a policy rather than being directed to achieving the objectives.

Maximisation of profits is often taken for granted by many people, within and outside the firm or industry as being the overall objective of the firm. However, this may not be quite true; firms do look for goals other than profits alone; in the U.S.A. some of the progressive firms have declared that their overall objective is to maximize benefits to the customers, public, employees and the owners of the firm, in an equitable manner. To put it in another way, their objective was to maximize the present value of the enterprise. Value to the enterprise includes profits and also such intangible, at least in the short term, but nevertheless essential elements as customer goodwill, good industrial relations, prestige, etc.

Profits for the firm have quite valid reasons. No firm can survive or grow unless it operates profitably and the criteria for a fair profit are that it must be,

1. Adequate, to be able to attract external capital for investment in the firm.
2. Comparable to firms in similar industry or product-mix and subjected to similar risks.
3. Adequate for self-generated growth of the firm.

Profit is one of the measures of management efficiency and effectiveness and is a reward for innovation or risks taken. Attenuation of profit objective can lead to;-

1. 'Safety first' attitude, i.e. concentration on minimizing riske rather than maximising opportunities and,
2. Over-emphasis on certain functions, viz. workmanship or sales expansion without cost/profit or other relevant justification.

On the other hand, over-emphais on profit maximisation could gradually divert the attention of every one concerned within the organisation, particularly of the top management to entirely immediate or quick profits,

by liquidating the long-term welfare and progress of the firm, viz. cutting down on research and development projects, neglecting to modernize capital plant, etc. When a firm makes large profits by exploiting the weak bargaining position of its customers, it would result in the loss of customer goodwill. The employees, in their turn, may claim for a larger share of these profits for themselves and the vast disparity in the wages which would be created between workers in different industries or firms who were using basically similar skills would lead to social and economic problems.

Therefore, it is imperative that the firms must look or aim at goals other than profit-maximisation alone.

Pricing objectives must be compatible with the firm's overall objectives. The generally held pricing objectives are*:-

1. Maximisation of profit.
2. Profit as,
   a) specified return on capital employed,
   b) specific figure, and
   c) specific rate of return on turn-over.
3. Turn-over as
   a) specific share of market, and
   b) specific figure.
4. Stabilisation of price and margin.
5. Meeting competition.
6. Improving liquidity.

A firm could and invariably would have more than one pricing objective; one of which must be a profit objective or at least a

---

* See 'Pricing Goals of Twenty Large Industrial Corporations' on Appendix II

profit constraint, for reasons to be explained later; the pricing policies are formulated to achieve the firm's pricing objectives. The latter are now discussed briefly.

Maximisation of profit.

This is the economist's pricing objective (and is discussed under pricing theory). It is achieved by the conscious application of the concept of marginalism, i.e. the price must be such that the net addition to the total revenue from the sales of an additional unit of output equals the net addition to the total cost of producing and selling that unit. This is not an easy objective to be aimed at in actual business situations because of inadequate knowledge of demand, costs and competition; it is a technically vague objective which would be difficult to be converted into a functional policy and it is controversial because profit maximisation, at least in the short term, may not be the firm's objective.

Profit as a specific return on capital employed for some similar criterion.

This is the most common and important pricing objective of firms studied by Brookings Institution. It involves setting a specific target against which performance can be measured. It provides an objective means of comparing alternatives of investment, or other capital expenditures for expansion, modification, etc. It provides some form of comparison with other firms in the industry. However, its drawbacks are:

a) It could create erroneous optimism during periods of inflation.

b) It assumes average risk factor thus overlooking the need for higher rate of return in a higher risk investment or vice-versa.

c) It implies that both theequity capital and the borrowed or loan capital should bring identical returns, and

d) It could place an over-emphasis on the ratio itself and overlook the fact that capital employed can be measured in diverse ways, viz. historical, current or replacement values, and with or without adequate allowances for the erosion of capital through inflation and the erosion of technology through obsolescence.

Profit as a specific figure.

This is a part of the earlier objective and permits performance to be measured against the set objectives, but it does not enable or require any comparison to be made against the amount of capital required to generate the profit.

Profit as a specific rate of return or turn-over.

Such an objective may be appropriate for a retailer, but not as a criteria in itself for a manufacturing firm.

Turn-over as a specific share of the market.

This is a very important pricing objective for a firm. It indicates the firm's competitive position, and over a period of time enables performance to be measured against the objective aimed at. A long or short-term profit constraint must be included with this objective, because it is possible to increase the share of the market with an overall decrease of profits and without any long-term advantages. In a growth market, or during an inflationary period, a firm's share of the market is a better indication of its corporate health than its specific return on investment.

Turn-over as a specific figure. This objective has the advantage of being able to be measured against performance almost continuously.

Stabilisation of price and margin.

High prices often lead to higher profits and an increase in capacity invariably through entry of new firms into the industry. The

result after a period of time is excess of supply over demand, followed by lower prices, squeezed profit margins and then exit of some firms from the industry, i.e. there are wide swings in capacity and prices, and the customer is faced alternately with shortage or oversupply. Therefore, this objective serves two purposes:-

a) It minimizes worry for existing firms in the industry by consciously pricing to prevent entry of competition, and

b) It helps to improve the public image of the firm by claiming that it did not make excess profits even when the opportunity was available.

Meeting competition.

This is an objective where the firm has no control, nor the means used to achieve it. Such an objective would be appropriate for small firms which have little room to exercise influence over market determined prices; it will also have application where the product differentiation is little. Any firm can meet price competition, at least temporarily, and this provides a deterrent to potential price-cutters.

Improve liquidity

This is a short-term objective to improve the cash or liquid funds of the firm. It is accomplished by price-reductions, price-cuts, offers of hidden or prompt payments or other types of discounts.

DEMAND

Demand for the product (or services) is the primary factor on the marketing system for the product. Production, sales promotion, distribution and selling are planned to meet the forecasted demand. A potential demand is made into a real demand by educating the potential customers, advertising, etc.

There is a close relationship between demand (i.e. demanded volume) for a product and its price. In general, and in the long run*, the higher the price the lower is the demand and vice-versa, i.e. a price change will cause a change in demand in the opposite direction.

The relationships between changes in percentage price and corresponding changes in percentage volume are known as price sensitivities or price elasticities of demand. A product whose price change causes a more than proportionate change in demand (volume) is known as price sensitive.

In economics, this price sensitivity is measured by a dimensionless quantity known as the coefficient of elasticity $\mathcal{E}$. In Fig. 1

$$\mathcal{E} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}, \text{ or } \frac{Q_1 - Q_2}{Q_1 + Q_2} \times \frac{P_1 + P_2}{P_1 - P_2}$$

where, ΔP is the small change in price P, from P_1 to P_2

ΔQ is the corresponding change in demanded volume Q, from Q_1 to Q_2

$\frac{\Delta Q}{\Delta P}$ represents the slope of the line, i.e. the slope of the demand curve.

Where the demand curve is a straight line, i.e.

$\frac{\Delta Q}{\Delta P}$ = Constant,

* In the short run a price change may cause a change in demand in the same direction.

ε will change continuously because P and Q will change; in fact ε will have a higher value at the top end of the curve than at the bottom end of the curve.

A typical demand curve[1] for industrial products in a market or an industry is given in Fig.1 . The demand can be divided into various segments, the quality or prestige products operating in the upper segments and the cheaper products operating in the lower segments. There is a general belief that price sensitivity in the lower segments is greater than in the higher ones.

The demand curve for products of an individual firm is not necessarily the same as that for the market or the industry. A typical curve for an individual firm is given in Fig.3. Furthermore, the demand curve for the firm is influenced considerably by the channels of distribution used by the firm. Where distributors are used, it is generally believed that demand from distributors is relatively elastic, even though demand from ultimate customers is relatively inelastic. Therefore, it is essential for the firm to have a good idea of the demand curve for its products, i.e. the firm must know the price sensitivity to demand of its products.

Industrial products are bought in order to produce other products. They are said to have a derived demand because buyers of industrial products base their purchasing decisions primarily on the economic conditions of the market which affect the end products to be manufactured. Therefore, it can be said that 'demand for industrial products is price-insensitive, but sensitive to change in the level of economic activity'. During a depression period there will be limited effect on demand by means of price reductions; on the other hand, in prosperous times, it

---

* Reproduced from Fog.

1 The area under the demand curve represents the total revenue for the specific price-volume relationship. In fig.2, the total revenue curves are drawn where demand is elastic ($\varepsilon > 1$), unit elasticity ($\varepsilon = 1$) and inelastic ($\varepsilon < 1$).

is feasible to raise prices without affecting demand.

Demand for industrial products depends upon the needs of the customer and the economic power he wields. The customer is represented by his industrial buyer; he is trained, experienced, and has knowledge of the products and their value or role in his own products. He is keen to control the costs of his own end products, hence he is conscious of price and other factors of value which go with the product he has to buy. If he is one of the few buyers in the industry and represents a large buying unit or a large firm then he wields great economic power over the seller, and can almost dictate the price of products he buys - because he may have the alternative choice of manufactuing them himself.

Consider the demand curve in Fig. 4 . For prices P_1, P_2, P_3; the corresponding volume demanded are Q_1, Q_2 and Q_3 respectively. If the firm sold volume Q_1 at price P_1 its total revenue will be $P_1 \times Q_1$ and represented by the area given by the rectangle $P_1 D_1 Q_1 0$. Similarly, if the manufacturer sold <u>all</u> his volume (or output) Q_3 at price P_3 his total revenue will be $P_3 \times Q_3$ and represented by area $P_3 D_3, Q_3 0$. Now, imagine the manufacturer selects his customers who are prepared to pay prices P_1, P_2 and P_3 and sells them the quantity they would buy for those prices, then the total output of Q_3 will be sold in lots of Q_1, $(Q_2 - Q_1)$ and $(Q_3 - Q_2)$ at prices P_1, P_2 and P_3 respectively. Then his total revenue will be the total shaded area under the curve, which, it will be noted, is greater than if the total quantity of Q_3 were sold at price P_3. This is the rationale behind the market segmentation and price discrimination which will be discussed later. By segmenting the market into infinitesimal steps (a practical impossibility) the total revenue will be the total area under the curve.

Demand can be increased without affecting price or price can be increased without affecting demand or both can be increased simultaneously by providing greater value factors with the product; they can also be increased by communicating more clearly to the customer the inherent or existing value factors. These two processes are commonly known as product differentiation and advertising (which is part of Sales Promotion) respectively and are important areas of the firm's competitive strategy.

Cross-elasticity of demand

The discussion has, so far, been confined to one product. However, demand for one product is influenced by price changes for alternative or substitute products from either the same manufacturer or a competitor, and depending further on whether they are good or poor substitutes. For example, copper and aluminium are strong competitors in the electrical industry but not say in aircraft or in boat-building industries. (With the former, steel and with the latter, fibre-glass compete with aluminium). Therefore, an increase in the price of aluminium will induce its marginal users to change to copper in the electrical industry but not in the other two industries, and so demand for copper in the electrical industry will increase. The cross-elasticity of demand is defined as the ratio of relative change in the quantity of the product (say x) and the relative change in the price of substitute product (say y). Firms sometimes lower the prices of their products in order to gain entry into new fields and new markets and thus widen the use of the product.

Complementary demand

This is said to exist when a change in demand for one product causes a corresponding change or a similar change to demand for another or fellow products. Complementary demand arises not only because

of functional or technical relationships between the products concerned but also because of value-factors in one of the products, viz.quality, performance, reliability, etc. Loss leader pricing is an excellent example of application in practice of complementary demand. When the firms manufacture a new product or even a new brand, one of the criteria used is whether, and by how much, it will benefit the whole product line; similar criteria must be applied when the product is planned for deletion.

COMPETITION

In an oligopolistic market (which is discussed under Pricing Theory, page 40) competition is a factor of considerable importance in pricing. When competition is strong, profit margins can become very thin, even if the general economic conditions are favourable for business.

Firms involved in a particular industry or operating in a particular market must take competition into consideration when setting prices for their products or preferably when formulating their price programmes. For the pricing of standard products, competition is a useful guide; if the firm prices are well above competitors' prices without offering any additional value factors with the product, it is likely to lose volume and may even price its product out of the market. On the other hand, if it prices well below the prices of its competitors, it may lose on the profit side (depending upon price-volume and volume-cost relationships), besides facing the threat of price retaliation from its competitors.

In some instances, pricing policies are specifically geared to take competition into account. Such policies are:

1. 'Skimming the market', i.e. make your whack as fast as you can and before competition comes into the market, and
2. 'Penetration into the market', i.e. grab the largest share of the market and try to keep the competition out.

Other competition-oriented pricing policies are to follow the price leader, to meet competitors' prices by pricing above, below or equal to their prices, and freight equalization pricing (in geographical price policy).

According to Fog, many small firms do not undertake any form of price calculations, but just set their prices on the bases of their larger competitors' prices. Evidence of such practices were also found

by Lanzillotti and by Haynes. Even large firms, including giants in their respective industries admitted that the prices calculated or initially set, often went haywire once the product was on the market facing severe competition, and that, eventually, it was competition that practically dictated the price. (Ralph Cordinier of General Electric, U.S.A., has stated that 'the price is completely subject to the force of competition in the market place and the value the customer believes he is receiving).

Competition may arise not only from firms making similar products but also from firms making substitute or alternative products. For instance, when a manufacturer introduces a new product which provides a major technological innovation on the market, the immediate reaction from competitors may be to retaliate by reducing prices or by increasing the value-factors of existing substitute products.

One of the major pricing objectives is to retain or enlargen the share of the market and this may be achieved by a reduction of prices, by heavy sales promotion and even by price-cutting, with the consequent reduction in immediate profits this entails.

In general, however, firms avoid price-cutting which could lead to price wars, as far as possible; it is one thing for a firm to win competitors' customers by superior salesmanship or other marketing strategy; it is entirely a different thing to win competitors' customers by offering price-cuts; also, simple, straightforward price reduction is one strategy which every manufacturer or a firm can meet, at least in the short run. A marketing strategy of existing firms in the industry to prevent entry of potential competitors, is to deliberately keep their profits low by means of lower prices. The important criteria for entry of potential competitors into an industry or a market are the growth potential of the market, or the industry, the expected profits, the substitute products available, the state ofexisting competition and the additional resources required by potential competitors for producing

and for developing the markets.

Because of the significance of competition over the actual price of the product in the market, it is important that every firm develops a system of competitive intelligence*. This will enable the individual firm to be prepared to some extent, for any actions which its competitors may take regarding pricing and other marketing strategies. Large firms could have a more sophisticated system, viz. application of games theory, reaction curves, Bayesian decision-making theory, etc.

*See 'Developing a System of Competitive Intelligence' by A. T. Safford, Jr., AMA No.66.

COSTS

Costs are the expenses incurred by the manufacturer to manufacture products and to deliver them to distributors or customers. Included in these costs is the wear and tear of capital equipment (i.e. capital erosion), rents, rates, the interest on borrowed capital, expenditure for research and development, advertising and sales promotion, programs on employee welfare and public relations, and the salaries of administrative and other staff.

Costs are, to some extent, under the control of the manufacturer; it should be his aim to minimize them.

In the long run, all costs are variable, but in the short run, costs can be classified into two categories, fixed and variable. A third concept of costs is the opportunity costs; this should be the real criterion in costing and is discussed elsewhere.

Variable costs, in the strictest sense, are those costs which vary in direct proportion to the degree of activity to which they are allocated; if the activity is halved, than the variable costs will be halved. If the activity is discontinued than there will be no variable costs. Such costs as labour*, material, power, commission on sales, etc. come into this category.

Fixed costs are those costs which are incurred during a certain period of time in running a business but not through manufacturing and selling a product. The costs are unaffected, theoretically, by the degree of activity of the manufacturer. Fixed costs can be classified

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* There may be some difficulty in classifying labour as a variable cost where firms are reluctant to part with their employees who are not fully occupied in a slackperiod; the reasons may be because the firms want to retain them for their special skills, or because of implications of redundancy payments, or as a matter of policy to maintain good labour and public relations.

as constant costs and programmed costs.

Constant costs are, as the name implies, those costs which generally remain constant, viz. salaries, rent, rates, depreciation, etc. Programmed costs arise because of management decisions or because of the requirements of the activity concerned; if these costs are related to the long-term progress of the firm, as a whole,-general research and development, employee welfare, public relations and image, etc.-then they are called general programmed costs: On the other hand, if the costs are concerned with that particular activity - tooling, test rig, specifically directed development, advertising, etc. for that activity, then they are called specific programmed costs and are allocated to that activity. Nevertheless, it will be noted that these costs are not proportionate to the degree of activity. It will also be noted that some of the fixed costs would have been incurred before production had started; these are known as sunk costs, because they cannot be undone, while some of the programmed costs are (to an extent) revocable and would not affect the subsequent degree of activity. It could be said, therefore, that fixed costs help the management to decide whether to stay in a particular business/activity or whether to add a new line or whether to go into another business.

Some costs fall in the category of semi-fixed, semi-variable costs; they are not proportional to the degree of activity but move in sympathy with the activity.

Where the manufacturer has only one product, there is little problem regarding allocation of fixed costs. But almost all manufacturers make more than one product, i.e. they have a product line, many have a range of products and product lines and some manufacturers are diversified. It is in these situations that extreme difficulty arises in allocating the constant costs and the general programmed costs to the products and product lines involved.

The traditional method of allocating fixed costs to a product has been to charge this cost, often arbitrarily, or on an empirical basis, such as a certain percentage cost, to some factors of production. Not infrequently, this method of allocation, which might have been acceptable or workable when it was introduced, continues in its application after the installation of new plant, or after the introduction of new techniques of production and changes in labour rates, material costs and output, that is after it has ceased to be valid.

Therefore, in a multi-product firm, a figure which is stipulated as the total unit costs (variable plus fixed plus semi-variable costs) of a product should be accepted at most as a guide and seldom as a statement of fact. While the variable costs of a product can be determined with a reasonable degree of accuracy*, the share of the fixed costs allocated to the product can seldom be determined with a reasonable degree of accuracy.

Within a certain range of production, variable costs are constant. Beyond this range, which in some industries is regarded as beyond 85% of the plant's full production capacity, variable costs increase due to overtime payment for labour, that is to a drop in performance, to wastage of material, etc. and sub-optimisation of some factors of production.

With an increase in demand and the consequent increase in production, the situation arises where more plant, more space, more supervision and ancilliary services are required. Often production capacity can be increased only in multiple steps rather than gradually. The fixed costs

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* In some industries, the cost of input material of a by-product is difficult to estimate.

jump rather than rise gradually, and these costs are invariably irreversible*. The application of new technological developments in the manufacturing processes leads to an increase in jump costs which in turn reduce variable costs per unit of output because of improved, more effective utilization of man-power. However, the difference in the jump costs where only the production capacity is increased and the jump costs where the whole manufacturing processes are modernized (commonly known as capital intensified) possibly along with an increase in production capacity, is that in the former, the variable costs per unit may remain unaltered; while in the latter they are invariably lowered, so that with a high rate of output, there is a reduction in the total cost per unit.

Minor modifications or improvements to the product invariably affect variable costs only. The addition of new features might affect not only variable costs, but also fixed costs, i.e. the specific programmed costs.

Consider a firm XYZ with a range of products, one of which is 'Beta'. The sales volume of Beta is 100,000 units and the statement of account is given below.

Description.	Total Cost (£)	Cost/Unit (£)
1. Materials and Parts	550,000	5.5
2. Direct Labour	400,000	4.0
3. Factory Overhead	400,000	4.0
4. Total Factory Cost	1,350,000	13.5
5. Apportioned Selling, General and Administration Expenses	450,000	4.5
6. Total Cost	1,800,000	18.0

* It must be emphasized that the actual cost of increasing plant capacity or of modernization of plant is the interest on borrowed capital for capital expenditure, and the adequate allowance for erosion of capital due to inflation, fair wear and tear, and obsolescence.

Assume that:

1. Factory overhead includes,

   a) Test Rig costing £ 50,000

   b) Tooling costing £ 50,000

2. Selling, General and Administration expenses include

   a) Selling Commission on 'Beta' £ 50,000

   b) Advertising 'Beta' £ 50,000

   c) Long-term R & D of XYZ £100,000

   d) Advertising XYZ's image £ 50,000

Then the previous statement of account can be presented as shown.

	Description	Total Cost (£)	Cost Unit (£)
1.	Materials	550,000	5.5
2.	Labour	400,000	4.0
3.	Selling Commission	50,000	0.5
4.	Total Variable costs	1,000,000	10.0
5.	Tooling	50,000	
6.	Test Rig	50,000	
7.	Advertising	50,000	
8.	Specific Programmed Costs	150,000	
9.	Long Term R & D	100,000	
10.	Long Term Advertising	50,000	
11.	General Programmed Costs	150,000	
12.	Factory Expenses	300,000	
13.	Administration, etc. Expenses	200,000	
14.	Total Constant Costs	500,000	

Therefore:-

Total Variable Costs are £1,000,000 or £10 per unit

Total Fixed Costs are (costs of items 8, 11 and 4)

= (£150,000 + £150,000 + £500,000) = £800,000

It should be noted that costs attributed to items 9, 10, 12 and 13 are apportioned or allocated costs. These costs would remain unaffected, at least in the short-run, if the product Beta was deleted by the firm. On the other hand, specific programmed costs (items 5,6 and 7) would not arise, if the firm decided not to manufacture Beta.

Now consider that the units involved were 80,000 and 120,000. The specific programmed costs will remain unaltered if there is no increase or decrease in tooling on other costs. From the definition, the rest of the fixed costs will remain unaltered. Therefore, change in the number of units produced and sold only affects the variable costs, and since variable costs are proportional to the degree of activity, the total variable costs in each one of the two cases will be £800,000 and £1,200,000; the variable (total) cost per unit remaining unchanged. The situation on the cost position for each one of the three cases will be as shown:-

No. of Units of Beta	Variable Cost per Unit (£)	Total Variable Costs (£)	Total Fixed Costs (£)	Average Total Cost per Unit (£)
80,000	10	800,000	800,000	20
100,000	10	1,000,000	800,000	18
120,000	10	1,200,000	800,000	16.67

It will be noted from the above example that the average total cost per unit is related to the total number of units of Beta involved.

Costing methods are generally classified as full costing and marginal costing.

Full Costing.

In this method, each product - like product Beta in the previous example - is allocated its full share of the constant and general programmed costs. These costs, together with specific programmed costs and the total variable costs, make the total costs for the product. Within limits, the average total cost per unit changes in the opposite direction to changes in volume. It is essential to note that average total cost per unit always refers to a specific volume.

Marginal (or Variable) Costing.

Marginal cost is the change in cost for a unit change in volume produced and sold. Within a broad band of volume involved, often adequate for a firm's plan of activity for a period of time, marginal costs per unit remain constant, i.e. they are the variable costs* per unit. Furthermore, these costs do not include the arbitrarily apportioned constant and programmed costs, i.e. the costs which would remain unaffected irrespective of the changes in the degree of activity. This is the advantage of this method of pricing, which will be discussed later; it focusses attention on those cost elements which are directly affected by the changes in volume.

Where costs constitute a factor in the pricing of a product, there are three points which should be

1. A firm must know the cost behaviour for its individual products, or at least its product lines, in order to deduce or arrive at the volume-cost relationship, i.e. the relationship between various volumes and the unit total or full costs at each one of the volumes considered. This is particularly important when planning expansion of sales by means of price reductions.

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* Marginal costs are not always variable. Marginal costs will include 'jump costs', where the change in output involves extension of production capacity, etc.

2. Most management decisions are taken to achieve results for the future. Therefore, the costs to be taken into account should be those which would be incurred for that future period, and

3. where specific programmed costs are recovered during the early life cycle of the product, the subsequent total unit cost of the product will be reduced.

Curves for fixed and variable costs, and total costs are shown on Figs. 5, 5a, 6, 6a, 7, 7a, 8, 8a.

Opportunity Cost: The use of any resource in a particular way deprives it from being used in alternative ways. The outcome which would have been achieved by the resource, had it been used in the best alternative way is the opportunity cost.

PRICING IN THEORY

Pricing is an important part of micro-economic theory. It is concerned with supply and demand for a product and the structure of markets within which the buyers and sellers are involved. The theory takes for granted that the primary objective of pricing is to maximise total profits, even in the short-run; this is achieved through the application of the principle of marginalism.

Perhaps the most important contribution the theory has made to the businessman when pricing his products in the actual market is in the use of the elasticity of demand, i.e. the percentage change in demand for a percentage change in price.

It is proposed to discuss here - very briefly - supply and demand for a product, the principle of marginalism and the three important types of market structures, competitive, monopolisitc and oligopolistic.

Supply and Demand

Price is the factor which in stable conditions equals supply to the demand for the product. The higher the price the greater would be the supply. A typical supply curve, given in Fig. 9 shows the relationship between the various prices and the corresponding quantities supplied.

The cost of producing and selling a product is a major determinant of the quantity supplied by the firm or the industry. Any change in the factors of production and selling which affect costs will cause a shift in the supply curve; a change which reduces the unit costs of production, thereby increasing productivity, will cause a downwards shift to the supply curve and vice-versa (Fig.10).

Supply curves have positive slopes, because an increase in prices will induce the supplier to increase quantities supplied (unless the product is a fixed quantity), the factors remaining unchanged.

The price of the product will also influence its demand. The higher the price, the lower is the demand and vice-versa (Fig.1). Other factors which inluence the demand for the product are:-

1. Change in prices of substitute or complementary products.
2. Change in tastes, preferences and habits of the buyers.
3. The buying power or the general economic conditions.
4. Expected trends in tastes, prices, etc. and
5. Better communication to the buyers, services, etc.

All these factors, individually or collectively, can cause shifts in the demand curve, illustrated in Fig.11.

The demand curve shown in Fig.1 has a negative slope, i.e. increase in price causes a decrease in demand. This is explained by the concept of marginal utility.

Marginal utility simply menas that the preciding unit of the product is worth more to the customer than the succeeding one, and that the customer pays only as much as the last unit that is worth to him.

Utility (or contribution towards welfare) must not be confused with economic value. For instance, water and air contribute much towards welfare, but their economic value may be very little. Furthermore, total utility of the product does not determine its price or its demand. Only the relative marginal utility, the relative scarcity and the costs of the last unit of the product determine, from the sellers point of view, its price. Where several products, viz. x, y, z etc. are involved, the maximum economic value or the minimum cost is achieved.

$$\frac{\text{Marginal product of x}}{\text{price of x}} = \frac{\text{Marginal Product of y}}{\text{price of y}} = \frac{\text{Marginal product of}}{\text{price of}}$$

Supply and demand curves are shown diagrammatically on Fig. 12. The point of intersection of the two curves represent the price and the quantity which the buyers are prepared to buy and the sellers are prepared to sell, i.e. it is the equilibrium price. Any changes in demand or in supply which would cause a shift in these curves, will lead to a new equilibrium price, and a new equilibrium level of sales: The move being in the same direction as the change in demand and in the opposite direction as the change in supply.

The Principle of Marginalism

Before dicussing the principle of marginalism, it will be helpful to define some of the terms involved.

1. Total cost is the sum of all the costs incurred in producing and selling a specific output. Total cost can be sub-divided into fixed and variable costs.
2. Average Cost (denoted by AC) is the total cost divided by the respective total output. It is the total cost per unit at a specific output.
3. Average variable cost (denoted by AVC) is the total variable cost divided by the total output.
4. Marginal cost (denoted by MC) is the net change in the total cost for an unit change in output at that specific output. It is the difference in cost between two adjacent outputs, divided by the difference in the units of these adjacent outputs.
5. Average Revenue (denoted by AR) is the total revenue divided by the respective total output.
6. Marginal Revenue*(denoted by MR) is the net change in the total revenue for an unit change in the output at that specific output. It is the difference in the revenues between two adjacent outputs, divided by the difference in the units of these adjacent outputs.

Consider the hypothetical firm whose costs and the corresponding volume of output are given in Table 1 and illustrated diagramatically in Fig,13

* Marginal Revenue is positive when demand is elastic and negative when demand is inelastic. For an individual firm, Marginal Revenue is less than price, except under conditions of perfect competition, where Marginal Revenue equals price.

Table I

Output (units)	Total Costs (£)	Average Total Cost per Unit	Marginal Cost per Unit
40	300	7.5	
			6.5
50	365	7.3	
			7.0
60	435	7.2	
			7.5
70	510	7.3	
			8.0
80	590	7.4	
			8.5
90	675	7.5	
			9.0
100	765	7.6	
			9.5
110	860	7.8	
			10.0
120	960	8.0	

Table II

Output	Total Revenue	Total Costs	Marginal Cost/Unit	Marginal Revenue (=Price)	Total Profit (£)
40	360	300			
			6.5	9.0	60
50	450	365			
			7.0	9.0	85
60	540	435			
			7.5	9.0	105
70	630	510			
			8.0	9.0	120
80	720	590			
			8.5	9.0	130
90	810	675			
			9.0	9.0	135
100	900	765			
			9.5	9.0	135
110	990	860			
			10.0	9.0	130
120	1,080	960			120

The profit is maximized when the quantity (i.e. output) is such that the Marginal Cost of producing the last unit of output is equal to the Marginal Revenue derived from the sale of that unit of output. In Table II, the Marginal Cost equals Marginal Revenue when the output is equal to 90 units; the profit is £135, which is a maximum.

It will be noted that the marginal cost curve tends to be U-shaped and rises sharply as output increases. This sharp rise is because the cost follows the law of diminishing returns.

The average cost curve decreases so long as the marginal costs are less than the average cost for the corresponding volume of output, and the average costs are a minimum where the marginal cost curve cuts the average cost curve, i.e. average costs = marginal costs.

The point of intersection between the marginal cost curve and the average cost curve is known as the firm's break-even point of long-run, non-profit competitive equilibrium.

The Marginal cost curve intersects the average variable cost curve at the latter's lowest point. This is the shut-down point for the firm - a price below this level would induce the firm to produce zero output because by going into production it would incur costs over and above the fixed costs. (As a short-term expediency, the firm may go into production even at this price.)

Now consider that the firm is in a competitive market (to be explained later) and the price per unit is £ 9 .

Table II is compiled giving marginal revenues and nett profits for the firm at each level of output. The curves of average (AC), marginal (MC) and average variable costs (AVC) and the average (AR), marginal (MR) Revenues (which in these cases is price) are shown diagramatically in Fig. 14.

From Table II it will be seen that the firm makes a maximum total profit at the level of output where the marginal cost equals marginal revenue, or where the rising part of marginal cost curve intersects the marginal revenue curve. In other words, a firm goes on increasing the

output from a fixed plant, until the marginal revenue which, in this case is price, is equal to its marginal costs, because had its output been lower than this level, then every additional unit of output sold brings it a net revenue which is greater than the net cost of producing and selling that unit. This is the principle of marginalism, the profit for the firm is maximised (or the loss to be incurred is minimised) when, with a given fixed plant, the output is such that marginal cost of producing the last unit of output just equals the marginal revenue from the sale of that unit.

The above concept can be illustrated algebraically and diagramatically.

Algebraic expression (in a competitive market)

When the output rises by ΔQ, profits rise by,

$$P \Delta Q - \left[C(Q + \Delta Q) - C(Q) \right]$$

where $C(Q)$ is the cost of producing Q

ΔQ is the small change in Q

P is the price

If profits are at a maximum, there will be neither an increase nor a decrease in the profits with a small change in output ΔQ, and the expression will equal to zero.

Therefore, $$P = \frac{\left[C(Q + \Delta Q) - CQ \right]}{\Delta Q}$$

and the expression on the R.H.S. is the marginal cost.

Diagramatic illustration*(in a competitive market)

Consider a quantity Q_x in Fig.14 . The nett total profit at quantity Q_x is the area OQ_xBP_o less area OQ_xCD; the nett total profit is represented by area C D P_oB. The output for maximum profit is Q_o, where MC = MR and the profit rectangle H L R P_o has the maximum area. If the firm increased its production to Q_1, then for the added output of

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* Can also be illustrated graphically.

$(Q_1 - Q_o)$ it would incur more additional costs than additional revenue, and this difference is represented by the triangle RST. On the other hand, if the firm curtailed its output to Q_2, then because of the reduced output of $(Q_o - Q_2)$, it would lose the opportunity of making the additional profit represented by the triangle RNM.

In a competitive market the marginal cost curve becomes the firm's supply curve. For various market prices, each individual firm must supply specific quantities represented by their supply curves, in order to maximise profits. The sum total of the supply curves from all the firms in the industry constitutes the industry's supply curve. The industry then operates at maximum efficiency since marginal costs of all firms are equal, and production within the industry is distributed in an optimum manner. There cannot be any further improvement, i.e. a decrease in costs by a shift of the factors of production from one firm to another.

It was observed in Fig. 14 that the marginal costs were greater than the average costs at the level of output for maximising profit. This was because the firm increased its output beyond the point of optimum level of production (i.e. beyond the point where the average costs are a minimum) because of the price attraction. When such a situation persists, i.e. when the demand is greater than the optimum output from existing capacity of the firms within the industry, production capacity can be increased by two ways:-

1) New firms attracted by prospective profits will enter the industry
2) The existing firms will increase their plant size.

The second case leads to situations which are worthy of further discussion.

Consider fig. 14.

The optimum level of production is Q, i.e. where average cost per unit is a minimum (MC=AC). But because of profit attraction, the actual output is Q_o where MC = MR = Price, and average cost greater than the lowest which corresponds to output Q. The profit equation is given by; (Price less Average Cost per Unit) x Quantity.

To increase the overall profit by a reduction in the average cost per unit, the firm expands its production capacity, i.e. it increases the size of the plant. Its new average cost (NAC) and marginal cost (NMC) curves are shown on fig.15.

This change results in:

(a) average costs being lower than previously for higher outputs

(b) average costs being higher than previously for lower outputs

(c) average costs for the required output being lower than previous ones.

The line which joins the lowest point of average cost curves, i.e. the maximum efficiency points for various sizes of plant is known as the long-run cost curve.

Long-run costs are what the firm considers when new plant is planned - by estimating the likely levels of output and then planning the plant for maximum efficiency. Short-run costs help to determine how much the output from the fixed plant should be for maximum profit.

In some industries this curve is a horizontal line and such industries are known as constant long run cost industries. If the curve slopes upwards, it applies to the increasing long-run cost industries and the downwards sloping curve refers to decreasing long-run cost industries.

In the constant long-run cost industries, fig.16, there is no increase or decrease in maximum efficiency of production (i.e. the minimum average cost per unit is the same for various plant sizes).

The curve for increasing long-run cost industries if given in fig. 17. Such industries may be mining, etc. where the whole plant is increased to work on less rich veins. It may also arise in some industries or firms where the increase in size of the plant creates problems of co-ordination, resulting in an overall drop in efficiency.

In the decreasing long-run cost industries (fig.18) there is a definite advantage in increasing the size of the plant, since the maximum efficiency is increased. Such a situation arises where mass-production technology offers substantial advantages, viz. motor-car industry, chemical/process plants, etc. The structure of the market or the industry breaks down from competition into oligopoly and perhaps eventually to monopoly - these are the topics of discussion in the following pages.

COMPETITIVE MARKET OR PERFECT COMPETITION

For this market structure to exist, certain basic requirements must be met:-

1) The product of all sellers must be homogenous and easily divisible.
2) There must be a large number of independent buyers and sellers, each one when acting individually, having little influence over the total market supply or demand or the price.
3) Each buyer and seller being fully informed of the prevelant market conditions and the price, would act rationally.
4) Market price changes with the level of supply and demand.
5) The resources for manufacturing, selling, etc. can be easily moved in and out of the industry.

With perfect competition there is no demand curve for individual firms; it forms a horizontal line, with each seller being a price taker. This can be illustrated by the following example.

Consider a market where there are already 100 firms. The $\xi = 1$ and PQ = £5,000.

Assume each firm supplies 5 units

$\therefore$ Total number of units = 5 x 100 = 500

$\therefore$ $P = \frac{£5,000}{500}$ = £10 per unit

Now a new firm enters into the market

The demand schedule for the new firm will be as follows:

Q	Price
2	£5,000/502 = 9.96
3	£5,000/503 = 9.94
4	£5,000/504 = 9.92
5	£5,000/505 = 9.9
6	£5,000/506 = 9.88

Arc elasticity of the new firm's demand at an output of 5 units is

$$= \frac{4 - 6}{4 + 6} \times \frac{9.92 + 9.88}{9.92 - 9.88}$$

The elasticity of demand for a firm in a competitive market is nearly equal to the elasticity of the market demand multiplied by the number of firms in the market.

The price is also the marginal revenue for the firm. The individual firm's supply curve is really its marginal cost curve. The industry's supply curve is derived from the individual firm's supply curve, in fact, it is the sum of all the firms's supply curves.

In practice, such a market rarely exists and the nearest approach to it is the commodities market.

Variations to perfect competition are imperfect competition and monopolistic competition.

Imperfect competition arises because of the lack of information between groups of buyers and sellers, differentiation of products, and the difficulty of entry and exit from an industry because of capital committments.

Monopolistic competition is a form of imperfect competition, with the firm having a monopoly within small limits because of brand loyalty or when selling spare parts, etc. Beyond those limits it is imperfect competition.

MONOPOLY

(From the Greek words MONO=One; POLIEN=To Sell)

This is the opposite of perfect competition. The monopolist is virtually the sole supplier of a product which has no close substitutes (perhaps because he holds patent rights or controls some essential factors of production and/or distribution).

The monopolist's demand curve is the same as the industry's demand curve. He sets the price, an increase in price lowers his volume, which is also the volume for the industry, and vice-versa; he choses his optimum price-volume combination by the now familiar process of equating his marginal costs to his marginal revenue - bearing in mind that his marginal revenue is not equal to his price.

Consider the demand curve for the monopolist given in fig.19.

The monopoly price-volume combination is P_0Q_0 while the competitive equilibrium is at P_1Q_1. In effect, the monopolist restricts his output in order to maintain the price. This will be better illustrated by the following example.

Number of Units	Price	Total Revenue	M.R.	Average Costs	Total Costs	M.C.	Total Profit
700	13.0	9,100	10.0	7.7	5,390	9.2	3,710
750	12.8	9,600	9.6	7.8	5,850	9.4	3,750
800	12.6	10,080	9.2	7.9	6,320	9.6	3,760
850	12.4	10,540	8.8	8.0	6,800	9.8	3,740
900	12.2	10,980		8.1	7,290		3,690

Marginal revenue equals marginal costs when the number of units is 800. Therefore the price - volume combination for maximum profit is £12.6 - 800 units.

The buyers are prepared to pay £12.6 for the 801st unit of the product whose cost is only around £9.6. Therefore, by holding down the production to the level at which marginal cost equals marginal revenue, the monopolist has barred some resources from their most productive employment.

The nearest examples of pure monopoly in practice, are the nationalized industries, viz. electricity, post office, etc.

The monopoly situation can take advantage of economy of scale in production, distribution, etc., while the government controls can deter the exploitation of the customers. Once a firm becomes a monopolist, then it may lack the stimulus to efficiency; the result is that the loss of efficiency in the form of say increase in costs - would be passed on to the customers who would not have much choice but to pay the increased prices.

OLIGOPOLY

(From the Greek words Oligo = Few; Polien = To Sell)

An oligopoly is something in between competition and monopoly, though it is not a compromise. The market is shared fairly evenly between a few sellers.

In practice, oligopoly is a market condition where there are a few large sellers, irrespective of the number of small ones, and where the marketing activities, including pricing, of one seller have an important effect on the other sellers. Any marketing action taken by one seller, say altering the price or product characteristic which will affect the demand for the product of the competitors is likely to be retaliated by other sellers.

There are different kinds of oligopoly, but in the main they can be classified into two categories, pure oligopoly and differtiated oligopoly and it is the latter that is of concern to this work.

In differentiated oligopoly there is apparent or real product differentiation and the seller is not required to price at the same level as his competitors. Therefore, prices of the firms involved vary in this oligopoly and the extent of variation in prices is dependent upon the degree of product differentiation.

Prices of firms are established in the market place, and each firm has a specific share of the market. Changes in the price by one firm will alter its own share of the market as well as that of its competitors. This is illustrated by the kinked-demand curve on fig.20 which, it must be noted, does not apply to price leaders in the industry.

The Kinked-Demand Curve. The concept behind the kinked demand curve is that:

1) there is a current market price or a cluster of market prices established in the industry.
2) if one firm raises its prices, competitors will not follow the price increase and so the firm will suffer reduction in demand for its products, and

3) on the other hand, if the firm lowers its price, it will be matched by the competitors in order that they retain their share of the market. The firm will increase sales only to the extent of aproportionate share in the increase in total demand shown by the segment GD.

(A firm's demand curve DGD is just as inelastic as the whole industry's demand curve.

The flat dGd straight line generates the flat marginal revenue line; the steeper DGD line generates the steeper marginal revenue line; between these marginal revenue lines comes the vertical 'kink' EC. For a wide range of cost conditions, represented by MC_1, MC_2, etc. , the firms will tend to keep the price at prevailing level rather than change it.)

Oligopoly is found in many industries, viz. chemical, electrical, mechanical engineering, etc..

Summary on the Pricing Theory

The short-comings of a theoretical approach to pricing are that:-

1. It assumes that the demand and cost functions can be determined to a sufficient degree of accuracy for the principle of marginalism to be applied.
2. It does not take into account the competitors' reaction.
3. It does not take into account the different impact of price on the different channels of distribution.
4. It assumes that the only pricing objective is to maximize short-run profits.

However the major contribution from pricing theory to pricing in practice has been in the area of demand analysis and in the application of concepts of elasticity and cross-elasticity of a product. The other contribution from the theory is by way of illustration of the effects on the short-run and the long-run costs due to changes in the size of fixed plant; this is also in the area of demand analysis - the businessman forecasts demand for his product and then plans the size of his fixed plant.

AN EFFECTIVE APPROACH TO PRICING

The approach takes into account all the factors - demand, cost, competition and firm's objectives - which influence pricing decisions. It also takes into account the different types of products, standard, special or custom built, new brands* and new* at different stages of their life cycles and marketed in different environments, internal and/or external to the firm.

Because this study is concerned with an oligopolistic market, it is necessary for the firm to develop a pricing strategy, and the complexity of the markets within which the firm operates with a diversity of products makes it necessary for it to have a pricing organization.

All these are discussed and, in some cases, illustrated diagramatically, graphically or numerically. However, it is also felt necessary to examine the traditional methods of pricing to show their advantages and the drawbacks and how these drawbacks can be overcome.

* In this part of the work, a new brand means a product which is new to the company but not new to the market; and a new product is one which is a major technological innovation in the market.

TRADITIONAL METHODS OF PRICING

Traditional methods of pricing are in the main cost-oriented. (In situations where a firm prices to meet competition or to follow the price leader, there is no method involved, in the real sense of the word.) The traditional methods are, in fact, simple extensions of costing methods described earlier under costing. They are known as Full-Cost Pricing or Total Cost plus Mark-up Pricing and Marginal Cost Pricing or Variable Cost Pricing.

Full-Cost Pricing or Total Cost plus Mark-up

In this method, the price is arrived at by adding a certain profit mark-up either as a specific figure or as a percentage to the unit total cost of the product. The firm decides or estimates the total cost per unit perhaps on the basis of historical costs or standard costs for a certain level of output. It then decides on the amount of profit mark-up to be added. The profit mark-up may take into consideration the economic conditions, competition, customary profits in the particular business, etc. The sequence of steps would be as follows:

1. How many units can be produced with a certain production capacity.
2. What will be the costs or unit total cost.
3. What should be the profit return - and from this, what must be the unit price.

It should be noted that there is no evidence that the demand for the product has been estimated. The whole process has been started from the production end rather than the customer end, hence, the full-cost pricing method is almost exclusively cost oriented.

Consider a firm's plans to manufacture say, product Delta with a fixed plant valued at £X.

The number of units which can be produced with this plant, with utilization of a certain level of its capacity and with no limitation from other resources, viz. labour, material, etc. is Q units in a given period of time.

Assume the working capital required is a function of expected revenue, say C %

The firm's objective is to achieve a stipulated return on capital employed, say M% on fixed capital and N% on working capital, for the period under consideration.

If the estimated fixed and variable costs are F and V respectively, then

$$\text{Total Costs} = F + V$$

$$\text{Unit Total Cost} = \frac{F + V}{Q}$$

To achieve the stipulated return on capital employed, the total revenue should be $F + V + MX + N \times C \times$ total revenue

But total revenue = Price per Unit x Number of Units

$$= P \times Q$$

$$\therefore P \times Q = F + V + MX + NC \times P \times Q$$

$$\therefore P(1 - NC)Q = F + V + MX$$

(1) .... or $$P = \frac{F + V + MX}{Q(1 - NC)}$$

But $\frac{F + V}{Q}$ = unit total cost.

(2) $$\therefore P = (1 + M)\left(\frac{F + V}{Q}\right)$$ where M is the percentage mark-up on unit total cost.

$$= (1 + M) \times \text{Unit total cost}$$

In equation (1), price has a relationship with capital employed and in equation (2), it is an outright function of turn-over.

The mark-up M could be rigid or flexible; a rigid mark-up implies that all products in a product line carry the same mark-up, irrespective of other marketing factors, viz. competition, etc., while a flexible mark-up implies a varying profit margin on all products in a product line. It will be obvious, since prices in this method of pricing are functions of total costs, that variation in costs could result in varying prices, irrespective of whether mark-ups are rigid or flexible.

As the unit total cost is a function of the number of units involved (i.e. produced and sold) the price will vary with changes in the total number of units, decreasing with an increase in the number of units and vice-versa.

Consider fig.21 which is a graphical representation of product 'Beta'

discussed earlier under 'Costs'.(page 22).

For a price, say £23, represented by OP, the greater the number of units manufactured and sold, the higher is the unit profit. For a quantity (i.e. total number of units) represented by ON, the unit total cost is OA and AP is the mark-up (or $\frac{AP}{OA}$ x 100 is the percentage mark-up), and the nett total profit = ON x AP. This is the full-cost pricing method; an expected or required total profit is added to the expected total costs and then divided by the total number of units to arrive at a final unit price; or a profit mark-up, usually in the form of a percentage is added to the unit total cost to arrive at final unit price.

For a price of £25, and 80,000 units the nett total profit is £400,000.

Now assume that the price in the market is £18, which is lower than unit total costs at the output of 80,000 units. What does the firm do? Does it discontinue production in the short run* because the sale of each unit results in £2 loss? (Bearing in mind that the allocation of fixed costs is an approximation if not an arbitrary action - if the allocation of constant and general programmed costs was revised such that these costs were now £350,000 and £100,000 respectively, the consequent unit total cost of Beta would be £17.5 and the sale price of £18 would be yielding a net profit of £.5 per unit sale, i.e. by a re-allocation of fixed costs, some marginal products can be made to show that either they are profitable or unprofitable.)

If the firm discontinued production, in the short run it would still incur a cost of £800,000 per period - unless these resources could be directed to the manufacture and sale of more profitable products.

Consider the case for rigid mark-up. Assume that the firm became less efficient; the cost per unit at any specific level of output will increase shown by the dotted line in fig.22. For a given number of units represented

* Price is a short-run decision. In the long-run the firm may modify the product to enable it to price competitively, or the firm may use the existing capacity to manufacture different products.

by OQ, not only the price but also the profit margin will increase - in other words, at least theoretically, the firm will be in an enviable position of making greater profit by virtue of becoming less efficient. On the other hand, if due to improvement in general economic conditions the demand increased to OT, the profit margin per unit sold will be lesser than that when the output was OQ (though the total profit will increase slightly). But by sticking to a rigid profit margin, the firm would lose the opportunity of increasing its profits in booming economy; i.e. the firm will have shown poor business acumen.

The pricing process has not taken into consideration the demand for the product and the price-volume relationship, and how this relationship may be altered by changes in the elements of marketing mix, viz. promotion, product features, etc. Nor is any account taken of the strategy of competitors. Therefore, once the product is manufactured and put on to the market, there is no adequate degree of probability that the firm, by sticking to the profit margin, rigid or flexible, would be able to sell the number of units produced, at that price. This pricing process is a hit or miss method; it does not necessarily lead to maximization of profit in the long or short-run; nor does it consciously lead to optimization of other major objectives of the firm.

The full-cost pricing method may have some justification if applied in situations where it is known that:-

1. There is no surplus or shortage of capacity in the industry.
2. The overall efficiency in production, selling, etc. of one manufacturer is about the same as any other in the industry.
3. The economic power and the requirements of the buyers are such as to enable them to manufacture the product themselves - if it need be.

However, this method has drawbacks which can be summarized thus:-

1. It ignores demand for the product and therefore, does not permit an estimate of nett total profit with changes in price and other elements of the marketing-mix.
2. It overlooks the action of competition.

3. As there is no distinction between out-of-pocket costs, such as variable costs, and the sunk costs, i.e. constant and programmed costs, orders whose price does not cover total costs are likely to be rejected.
4. Because of the lack of distinction between out-of-pocket costs and sunk costs, there may be a tendency to perpetuate existing inefficiencies by incorporating them with the price structure.
5. Considerable clerical effort may be required to sort out and to allocate the constant and the general programmed costs in a firm manufacturing complicated, diverse or inter-related products.

Some of these drawbacks are partly overcome in the Marginal Cost Pricing method.

Marginal Cost Pricing or Variable Cost Pricing

This is a similar method to the Full-Cost Pricing, but in this method there is a segregation between the out-of-pocket costs (viz. variable costs) and the constant and programmed costs. Because of this segregation of costs, it is easier to examine the effect of changes in price and in other elements of the marketing-mix on the profit contribution. The price is set to cover the out-of-pocket costs and to make a contribution towards recovery of constant and programmed costs and towards profit. The criteria for mark-up on out-of-pocket costs would be on similar lines to those discussed earlier. The mark-up could also be based on the limiting or critical resource of production.

Contribution per Unit = Price - Variable Costs per Unit.

Total Contribution (towards Fixed Costs and Profit) = Contribution per Unit x Total Number of Units.

Consider fig.23 which is the graphical representation for product 'Beta'. CP is the revenue curve for a price of £22 and OP_1 and OP_2 are revenue curves for prices £25 and £20 respectively. The shaded area between OP and OV is the contribution zone; the vertical ordinate between the two curves is the total contribution for the corresponding number of units produced and sold. The nett profit (assuming that the allocation of fixed costs is fairly)

accurate) is the vertical ordinate between OP and AF, on the right-hand side of the point of intersection between these two curves. The point of intersection between these curves is known as the Break-Even-Point, i.e. the point where the number of units sold at a certain price does not make a profit nor a loss. The vertical ordinate between these two curves on the left-hand side of the break-even-point is the nett loss* made by the firm when it is manufacturing and selling the corresponding number of units at a specific price.

Effect of changes in price on the total contribution can be easily seen here; so also, when changes in other factors of marketing-mix, viz. changes in promotional costs, product features, etc. are carried out (which will affect the OV and AF curves).

It will also be noted from the figure that, if the firm discontinued production and selling in the short-term, it will incur a cost represented by OA, which are the fixed costs.

A very useful concept available in marginal cost pricing method is the profit-volume ratio, known as PV ratio.

PV ratio indicates the contribution made towards recovery of fixed costs and towards profit by every unit (£) of revenue that the firm receives from the sales of that product at each price.

$$PV = \frac{\text{Contribution per unit}}{\text{Unit price}}$$

On the 'Beta' product, for a price of £25

Contribution per unit = £(25 - 10) = £15

$$\therefore PV = \frac{15}{25} = .6$$

When the sales price is £25, 6/10 of the sales revenue contributes towards fixed costs and profits. For the firm to make a total contribution of say £1,200,000, its sales revenue must be $£\frac{1,200,000}{.6}$ = £2,000,000 and the number of units produced and sold at £25 per unit = $\frac{£2,000,000}{£25}$ = 80,000

* So long as price is greater than unit variable cost, there will be a contribution towards recovery of fixed cost and towards profits.

For the firm to break-even, the number of units sold

$$= \frac{£800,000}{.6} \times \frac{1}{25} = 53,300 \text{ units.}$$

A graphical representation of this exercise is given on fig.24.

PV will change with change in price; it will also change with change in variable costs. The effect of price reduction is generally the same as the increase in variable costs and vice-versa on unit contribution - this is a very important factor when considering price changes.

The marginal cost-pricing method partly eliminates some of the drawbacks inherent in the full-cost pricing method; but it is a static measure of a dynamic process - it shows a cost and profit structure of a firm at a specific time, and is therefore, difficult to apply in situations where wide fluctuations take place. Hence its application is confined to short-term planning. Lastly it is a cost-oriented method; therefore the method does not provide a guideline to decide on the correct mark-up when computing price; such a guideline is provided by the demand-oriented method of pricing which will be discussed in the following pages.

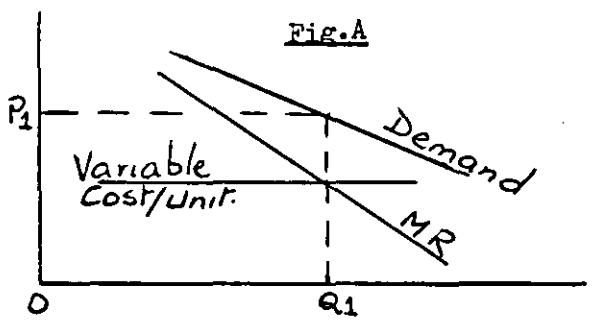
DEMAND-ORIENTED METHOD OF PRICING

Consider a firm's product whose demand, marginal revenue and variable cost curves are shown alongside on fig.A (for simplicity, these curves are shown as straight lines).

For maximization of profit, the optimum price-volume relationship is given by P_1 and Q_1 respectively. The profit 'mark-up' or margin is the difference between P_1 and the variable cost at volume Q_1.

If variable costs change, mark-up must change in the reverse direction, for maximization of profit, with demand and marginal revenue curves remaining unaffected.

Fig.A



Price Equation with Variable Costs

$P = V + M_1$ or $V + M/V$

Where P is Price for Profit Maximization.
V is Variable cost/unit
M_1 is Markup
M is Markup as % of V

Consider 10 units are sold @ £10 per unit

Total Revenue = 10 x £10 = £100

Now assume the firm wants to sell 11 units and the price it can fetch is £9.5 per unit.

∴ New Total Revenue = 11 x £9.5 = £104.5

Marginal Revenue on the sale of 11th unit = £(104.5 - 100) = £4.5

But Price (or Revenue from sale) of 11th unit = £9.5

∴ Price variation Cost (Cp) on the sale of 11th unit = £(10-9.5)10 = £5.0

∴ Marginal Revenue ... ... = £4.5

Price variation Cost (Cp) is the cost incurred by the firm to sell one additional unit of the product.

(Price Variation Cost must not be confused with Variable cost. Cp is the cost incurred by the firm in varying his market offer, i.e. more total volume for a lower unit price.)

$\therefore$ Marginal Revenue (MR) = Price - Cp and Cp = $\Delta P \times Q$

$MR = P - Cp$ or $Cp = P - MR$

But Variable Cost/Unit (V) = $MR = P - Cp = P - \Delta P \times Q$

Coefficient of Elasticity (E) = $\frac{\Delta Q}{\Delta P} \frac{P}{Q}$ + when $\Delta Q = 1$

$$E = \frac{P}{\Delta P \times Q} = \frac{P}{Cp}$$

or $Cp = P/E$

and $Cp = P - MR = P - V$

$\therefore P = V + Cp = (V + P/E)$

$\therefore P(1 - 1/E) = V$

or $P = V(\frac{E}{E-1})$

This equation gives the relationship between Price, Variable Cost and the Coefficient of Elasticity. If E = 2, P = 2 x V for maximum profit.

$P = V + M = V (\frac{E}{E-1})$

$\therefore \frac{M}{V} = \frac{1}{(E-1)}$

This equation gives the relationship between coefficient of elasticity and mark-up, where mark-up is a % of V.

The table below gives the mark-up as % of V for various values of E.

E	Mark up as % of Variable Cost
.5	- 200
1.0	undefined
1.5	200
2.0	100
2.5	66
3.0	50
4.0	33.3
5.0	25

For a profitable pricing policy, the firm must always operate in that segment of the market where demand is elastic, i.e. E is greater than 1.

Where variable costs are used as a basis for pricing, the mark-up for maximum profit depends upon the price elasticity of demand; therefore, the firm may find that more useful results would be yielded if it devoted greater

attention to assessment of its demand curve than purely to reduction in costs and to the allocation of fixed costs.*

For a linear or roughly linear demand curve, E will be greater at the higher price end than at the lower price end and therefore the mark-up should vary inversely.

Even if E is not known precisely, the mark-up expression is a useful guide for changing the nature and direction of mark-up percentages, with changes in costs. At least it enables the validity of proposed mark-ups to be checked, even if it may not give the amount of the change required. If variable costs increase, the mark-up must be lowered and vice-versa, unless the elasticity of demand is constant, i.e. represented by a hyperbolic curve.*

Consider a new product whose variable cost is £10 per unit and the proposed mark-up is 100% of variable costs (assumption that E = 2). Check if a 5% reduction in price will cause a 10% increase in revenue. If the answer is NO, then mark-up should be altered. ✓

While it is the correct method of arriving at a right price for the product, to maximize profit in the short-run, it does not simplify the understanding of a situation where firms are interested in other objectives than the maximization of profits. The firm may not have a precise knowledge of the demand and marginal revenue for its products, particularly where changes in the elements of the marketing-mix can affect demand.

* Since a mark-up based upon Variable cost is a function of $(\frac{1}{E-1})$ a constant mark-up % regardless of changes in variable cost implies that the demand curve for the product has a constant elasticity.

✓ Demand curve may be modified by sales promotion, etc. and the action of competitors.

A PRACTICAL METHOD OF ESTABLISHING PRICE

The most important pricing objectives for a firm are the profit (as a return on capital employed or as a specific figure) and the turn-over (as a percentage of the share of the market). Adequate pricing of the product would help in the achievement of these objectives, individually or jointly, so long as these objectives are realistic and compatible.

Take product 'Beta' as an example and assume that, after taking competition into account, the demand for it is as represented by the curve on fig.25.

From the demand curve a total revenue curve for some likely prices and also the cost curves for the product are drawn on fig.26.

A vertical ordinate between the total revenue curve and the cost curve represents the total contribution of the product at the specific price and quantity. In the figure the optimum profit/contribution area is shown shaded,* the maximum being £12×10^5 when the price is £25 and the number of units is 80,00

Consider the shaded area: in fig.26:

1. If the firm wishes to maximize profit then it must choose the price volume relationship of £25 - 80,000 units.
2. If the firm wishes to have high profits but also wishes to have a greater share of the market, then it may opt for price volume relationship of £21.5-100,00
3. The firm can then assess whether it would have the necessary resources and at the right time to produce and sell the particular volume; alternatively, the firm could choose a more compatible volume of output.
4. If necessary, the exercise can be repeated by making changes in the elements of the marketing-mix; these changes could cause changes in the total revenue curve, the cost curve and the capital employed. In the alternative, the firm could or may have to revise its objectives.

At the product planning stage, it may be desirable for the manufacturer to estimate the effect of a specific price of a product on the profits, and to weigh the risks he has to undertake. Such an exercise can be conducted by

* Double shaded area indicates nett profit by the traditional method of arriving at a profit.

the break-even analysis and also by the application of statistical probability techniques. Both these techniques are discussed.

Take a product 'Gamma'. Assume that for a price of £10, there is a good probability (say 75%) that the demand will be (10,000 $\pm$ 2,000) units.

Say variable costs are £6 per unit and
fixed costs are £20,000.

Application of Break-Even Analysis (see fig. 27)

Total Sales Revenue = £10 x 10,000 = £100,000

Contribution/unit = £4

Break-Even Point = $\frac{100,000}{4}$ = £50,000

Margin of Safety = (£100,000 - £50,000) = £50,000

Margin of safety as %age of sales = 50% (sufficiently large safety)

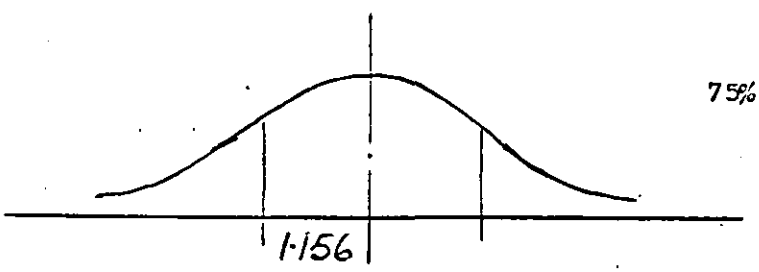
Application of Statistical Probability to estimate the effect of a specific price on profits (or losses)

$\therefore$ Estimated Sales Revenue with a 75% probability = £100,000 $\pm$ £20,000

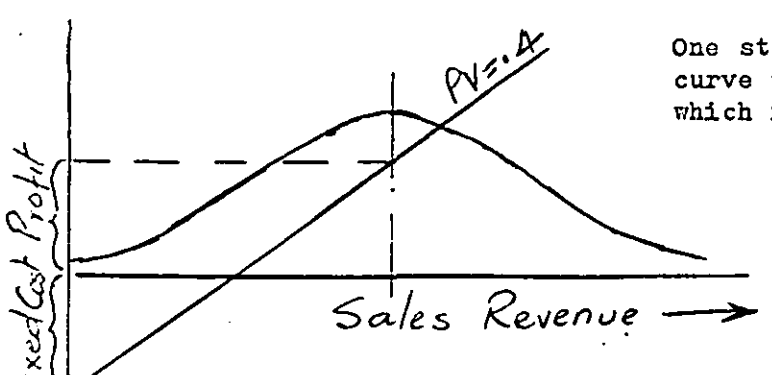
PV Ratio: = $\frac{10 - 6}{10}$ = .4

Break Even Revenue = $\frac{£20,000}{.4}$ = £50,000

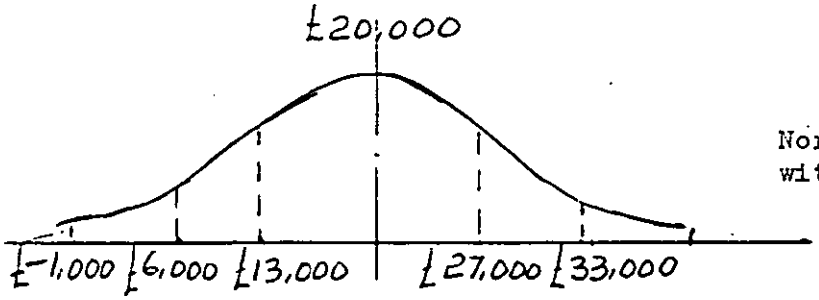
Estimated Profit = (£100,000 x .4) - £20,000 = £20,000



75% probability of Revenue being (£80,000 (£120,000 mean £100,000



One standard deviation (σ) on a normal curve with a mean of £100,000 is £17,500 which is a standard deviation on Revenue.



Normal curve for profit with mean of £20,000

σ Profit = σ Revenue x PV

= £17,500 x .4 = £7,000

From the above curve the probabilities for various profits (or losses) can be estimated.

For example:

The probability of making £25,000 Profit is about 76%

The probability of making a £1,000 Loss is (1.0 - .99) ≏ Nil

Consider a case where the firm has the production capacity. Now assume that the demand for the product is as indicated by the curve on fig.28. The total revenue curve, and variable cost and the total cost (variable + fixed costs) curve are represented on fig. 29. Clearly the price at any level of output does not cover the total costs per unit. The optimum level of production to minimize costs is at volume OQ ; if the firm had discontinued production, i.e. had kept the production capacity idle, it would have incurred a cost represented by OS which is greater than the loss represented by PT This clearly illustrates the justification to accept orders at prices below the full cost per unit; or, to put it in another way, the criterion should be to achieve maximum contribution towards recovery of fixed costs and towards profits from the use of an available resource.

Consider the case where the firm contemplates a change in price, say a reduction in price from £50 to £47. Suppose the volume involved are 100 and 110 units respectively.

If the variable cost per unit is £30, then in the first case the contribution = 100 (50-30) = £2,000, and in the second case the contribution

= 110 (47-30) = £1,870).

The change in price caused an increase in revenue from £5,000 to £5,170 with a corresponding decrease in contribution from £2,000 to £1,870.

If increasing the turnover by 3.4% is not as important as the consequent decrease in contribution by 6.5%, then a move to reduce price is not worthwhile. This example indicates that price reduction need not necessarily result in increased profitability.

Consider the case where the firm anticipates change in demand due to changes in the elements of marketing mix. Assume these changes result in the following:

1. Demand increases from 100 to 120 units for a constant price of £50.
2. Variable costs increase from £30 to £31 per unit.
3. Specifically programmed costs are incurred and made up of £50 interest and £150 for depreciation and obsolescence for the period under consideration.

The new contribution = 120 (50 - 31) £ = £2,280

an increase of £(2,280 - 2,000) = £280

But the specifically programmed costs = £200

The Nett increase in contribution = £80

hence the change is worthwhile.

Specifically programmed costs, like any fixed costs must be taken into consideration in order to make the decision whether they should be incurred or not. Once they are incurred, then they become sunk costs and therefore irrelevant for subsequent pricing decisions.

Consider a third case of the same example where the firm was able to segment the market into two groups, one group being offered the product at a price of £60, and the other group at £50 per unit. Suppose the demand from each segment was 50 units each.

Then the total contribution = 50 (60-30) + 50 (50-30) = £1,500 + £1,000

= £2,500.

Therefore, by dividing the market into effective segments, the firm was able to increase the total contribution of the product from £2,000 to £2,500.

In effect, this was a price discrimination by the firm and was possible only where the firm was able to identify and separate groups of customers and serve them in the way that suited them.

There may be instances where a product can make a positive contribution only when it is sold at different prices to different groups of customers.

PRICING NEW PRODUCTS

Dean suggests, in the skim the market policy, a price of 3 to 4 times the cost of the product, particularly where demand is not clearly known or can be presumed to be inelastic. Such a policy permits gradual reduction in price in order to tap the lower segments of the market. A high initial price would help the manufacturer to offset the costs of any subsequent design changes or product modifications.

Welsh gives seven steps for pricing a new product. They are:-

1. Approximate the impact of price on the volume that might be expected to achieve.
2. Appraise marketing requirements and broadly define marketing plan.
3. Plot projected growth curves at several selected price levels.
4. Approximate cost data.
5. Appraise capabilities of competitors, including timing.
6. Estimate competitors' costs.
7. Decide on the price.

The approach suggested by Dean is unimaginative (why 3 to 4 times, and not more nor less?) and 'safety first' oriented. It does not cater for penetrate the market policy. The cost of the product at that stage would be difficult to be estimated because of the incurrence of development and promotional costs - these costs could be recovered immediately or over an extended period. On the other hand, Welsh's approach is very logical but overlooks the first essential element, the need to estimate price; his approach would be ideally suited to pricing a new brand rather than a new product.

An effective method of pricing a new product.

It is through a systematic evaluation,* from a certain datum - the datum is generally the leading substitute product already existing in the market

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* Adoption costs, associated with new products are not discussed.

and which the new product is expected to displace* - carried out with the co-operation of selected customers who are experts in the field, and who are truly representative of the market or the segment of the market for the new product.

The evaluation takes into account every performance feature of the products under consideration and makes use of a rating scale, whereby the features are evaluated according to their quality and their degree of importance to the customers.

The method of pricing is described in the following steps:

1. Make the expert fully acquainted with every performance feature of the new product.
2. Make the expert aware that he is required to compare the features of the new and the substitute product/s for the quality and the degree of importance to him. In effect, the expert will be making a comparative value-analysis of the features in the products.
3. Choose a simple rating scale, say 0 - 10 points.[1] The object is to give points to the performance features in the products, for their quality and the degree of importance to the customer. The important features score high marks and vice-versa; similarly high quality features score high marks and vice-versa. For instance, if the expert gives high marks, say 8, for a certain feature in product X, then an identical feature but of an inferior quality, or the performance is not as good in product Y would score, say 5 marks, and vice-versa. On the other hand, had this feature been totally lacking in product Y, then product Y would have been given exactly the same number, but negative, marks, i.e. -8 marks.
4. Ask the expert to select the single most important feature (or features, if more than one) in the new product and to give it 10 points. Then ask the expert to examine the substitute product for similar feature and to

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* Where the new product is a convenient substitute for say two types of products which the customer has to use for the performance of certain functions, then the leading product from each product category should be used collectively for comparison.

1 Points and Marks mean the same thing.

give it the points it merits - bearing in mind that inferior or lower performance features receive fewer points and absence of the feature receives negative points or penalty points of equal value.

5. Ask the expert to continue this exercise with the second next important feature and so on until all the features in the products are evaluated.
6. Add up the points to arrive at a total for each product; divide the total for the new product by the total for the substitute product/s. This is the performance index; there will be a performance index from each expert. (Similarly, the price index is the ratio of the price of new product and the price of substitute product/s.)
7. Draw a graph to plot performance index as ordinate and price index as abscissa, the scale being the same for both. Draw 45° reference line through the origin. Any point on the line corresponding to a certain performance index implies that, in the opinion of the expert concerned, the price is just right. A point on the left-hand side or right-hand side of the reference line will imply that the product is underpriced or overpriced, respectively. (See Fig.30).

Suppose that the performance indexes arrived at through the evaluation of four experts A, B, C and D were 1.8, 1.8, 2.0 and 2.2. Now, if the price of substitute product/s was say £10, then the price of the new product of say:

a) £18 (Price index = 1.8) will be correct for experts A and B, but low for experts C and D.
b) £20 (Price index = 2.0) will be correct for expert C, low for expert D and high for experts A and B.
c) £22 (Price index = 2.2) will be correct for expert D, but high for experts A, B and C.
d) £16 (Price index = 1.6) will be low for all the experts.
e) £24 (Price index = 2.4) will be high for all the experts.

The price which is nearly right for the market or its segment which is being considered would be between £18 - £22. The firm could place greater

emphasis on the opinion of one expert and thereby reduce the price range.

There are three points in this exercise which should be observed carefully:

1. Ensure that the substitute product chosen for comparison is the present leader in the industry and that the claims made on its features and the price at which it is sold are true.
2. Ensure that the pricing exercise deals with the required market or segment of the market - a product could have different values to different segments of the market, resulting in different ranges of performance indexes.
3. Obtain the information through personal interviews but avoid discussion on price.

The ideal time to conduct this exercise is when the prototype is made. Having estimated the price level, the next step is to predict the growth rate of the product for the different prices, the demand and cost schedules for various marketing efforts and the efforts of potential competitors, in order to deduce the nett effect on the profitability. A typical exercise is illustrated below:

Say the new product is 'Omega' with an estimated life cycle of 5 years and the price range is £18 - £22.

Pick a certain price from the range, say £20, and after taking the competition, existing and potential, into account, estimate the annual demand for Omega for the 5 years. Estimate the total out-of-pocket costs, viz. variable costs and specific programmed costs which would be incurred annually to meet the demand. Where capital expenditure is involved, the fixed costs arising out of the capital expenditure must also be taken in account. Assume that for the price of £20 the demand and cost schedule is as given on the table

Year	1	2	3	4	5	Total
Demand (Units)	8,000	12,000	12,000	7,000	3,000	42,000
Sales (£) Revenue	160,000	240,000	240,000	140,000	60,000	840,000
Out of Pocket (£) Cost	120,000	180,000	180,000	105,000	45,000	630,000
Contribution (£) towards profits	40,000	60,000	60,000	35,000	15,000	210,000
Net Present Worth (£) @ 10% interest	36,000	50,000	45,000	24,000	9,000	164,000

Conduct a similar exercise (only simulation will be necessary) for prices of £22 and £18 and for change in prices in the intermediary years - it is generally believed that as the product ages and comes nearer deletion, there could be advantages in reducing its price, if the latter can be carried out without retaliation from the competitors.

These exercises indicate the size of production capacity required, the costs which would be incurred and the profitability which will result from the choice of different prices and marketing efforts.

If the result from the exercies do not indicate an adequate return to the manufacturer on the capital to be invested, then before deciding to drop the venture (i.e. before the decision is taken that there is no point in throwing good money after bad money) the following steps could be taken:-

1. Review every feature in the product and the value given to it by experts.*
2. Examine the cost of each feature in relation to the value given to it.
3. Where possible, modify the features to optimize cost-effectiveness.
4. Re-appraise the profit situation with the modified product and if necessary, with changes to the elements of marketing-mix.
5. Go ahead with the product, viz. product promotion production, sales strategies etc. or delete the product as the case may be.

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* The expert is in an advisory capacity; the decision whether to accept the expert's advice or not rests entirely with the manufacturer.

It will be noted that there is no relationship between the costs of the product and the price the customer is prepared to pay in exchange for the value/utility he expects to get from the product. In fact, it is the price which determines the costs which the manufacturer can incur, and not the other way about, of costs determining the price.

From these simple examples, it will be clear that demand is the primary factor in the pricing, and for that matter, in the marketing of the product. Every contemplated change in the elements of the marketing mix must be analysed in conjunction with the changes in demand, which, in turn, may be affected by competitors' actions, by economic conditions, through legislation and social and ethical considerations. If the demand is sufficiently inelastic, an increase in price could result in improved profitability or improved contribution (i.e. reduced loss) and British Railways, the Theatre, etc. are good examples of this - contrary to some writers, who seem to suggest that prices must not be increased in situations where demand is shrinking. On the other hand, a decrease in price even where the demand is elastic, may not result in improved contribution, because the rate of decrease of unit cost may be inadequate to match the rate of price decrease, i.e. where decremental revenue is less than escapable costs.

A price which is computed entirely on the basis of some historical or anticipated costs, such as a mark-up added to total unit cost, i.e. a certain percentage profit on unit £ of sales revenue, has in the first place, no relationship to the customer requirements (and it is the customer who pays the price, not the manufacturer) but also is a misnomer if the firm was able to sell only a proportion of what it had produced and offered for sale.

PRICING POLICIES

(Policies provide guidelines within which decisions are made to achieve the pre-determined objectives)

A firm operates in various markets. If it is a multi-product firm then the number of markets it operates in would be greater. These markets (assumed to be oligopolistic) could be different from each other as a result of the economic conditions, social, political and ethical factors, the activities of the competitors, the technological developments, the actions, attitudes and the economic power of the customers (contrast the buyers who have the economic power to manufacture the product within their organization and therefore the power to control the price of their purchases, to the buyers who are at the mercy of the sellers.).

To achieve the overall objectives of the firm such as a stipulated return on investment, a specific share of the market, or an improvement in liquidity, would require from the firm a series of pricing decisions to suit the individual situations. The situations will be determined by the competitive position of the firm in each market or industry, the product technology and the product category (viz. standard products or special products, new products or new brands), the channels of distribution or selling, and the sales promotion involved. The situations will also be determined by factors within the firm, say shortage of liquidity, under-utilization of existing resources, etc..

Take a firm manufacturing five products, Alpha, Zeta, Lambda, Theta and Kappa, with a total turnover of £2m. The turnover and the out-of-pocket costs associated with each product are as follows:

Product	Out-of Pocket Costs £000's	Sales £000's	% of Total Sales	Rank by Revenue	Contribution £000's	% of Total Contribution	Rank by Contribution
Zeta	600	800	40	1	200	30	2
Theta	400	700	35	2	300	46	1
Alpha	250	300	15	3	50	8	3
Lambda	50	100	5	4	50	8	4
Kappa	50	100	5	5	50	8	5
Total	1350	2000	100		650	100	

On the basis of contribution towards fixed costs and profit, product Theta is the most important for the firm at present. Therefore pricing decisions affecting product Theta and say even Zeta need not necessarily be the same as those of other products.

Where the firm's pricing objectives include a target share of the market, perhaps product Zeta may be more important. On the other hand, product Theta might have reached the saturation stage, while product Alpha is still in the growth stage, with huge market potential for the future. Or some factors of production for one of the products may be in short supply, thus limiting the product's growth, and at the same time, a few other factors of production and/or selling may not be fully utilized. There could be the inter-linkage (i.e. complementary and substitute effects) between the five products. Therefore, any firm, and certainly a multi-product firm could hardly fit into one pricing policy classification.

Pricing policies could be classified as general and specific. General pricing policies are applied across the whole firm or whole product/product line, irrespective of conditions in individual markets - geographic price policies, discount policies, etc. come under this classification. Specific pricing policies deal with individual situations; new product pricing policies, etc. come under this classification.

General Pricing Policies

1. Pricing Policy to achieve a Specific Rate of Return on Turn-over

This policy, unfortunately, finds application in some large manufacturing firms* and almost all small ones*; therefore it is discussed in greater detail.

Take product 'Beta' as an example.

Assume the firm plans to sell 100,000 units @ £20 per unit. The total cost per unit is £18.

$$\text{Average return on turn-over} = \frac{20-18}{20} = 10\%$$

$$\text{Total Profit to the firm} = \frac{10}{100} \times £20 \times 100{,}000 = £200{,}000$$

* Studies conducted by Brookings Institution, Backman, Haynes, Lanzillotti, Barback and Fog.

Now assume that the firm is able to sell 120,000 units @ £18.41 per unit. The total cost per unit is £16.66

Average return on turn-over = $\frac{18.41 - 16.66}{18.41}$ = 9.5%

Total profit to the firm = $\frac{9.5}{100}$ x £18.41 x 120,000 = £210,000

(a profit increase of £10,000)

Despite the decrease in percentage return on turn-over of 5%, there is an overall increase in profits to he firm; the decrease in unit total costs was sufficiently low to permit a reduction in price which combined with an increased volume of production and sales, resulted in an increase in overall profit to the firm (in addition to the increase in the share of the market). Say the firm is a manufacturer. His working capital will have increased because of the additional output of 20,000 units.

Assume that the working capital is about 20% the total cost of product.

Increase in working capital = 20,000 x .2 x £18 = £72,000

(Fixed capital remains unaltered)

If the manufacturer's objective is to achieve say 10% return on working capital, then expected profit = .1 x 72,000 = £7,200

But the increase in profit = £10,000

Percentage increase in profit = $\frac{10,000 - 7,200}{7,200}$ = 40%

The manufacturer exceeded the expected rate of return on working capital by 40% as a result of planned decrease of 5% on the rate of return on turn-over.

The example clearly indicates the deficiency of the pricing policy which stipulates a return on turn-over for a manufacturer. Such a policy does not lead to maximization of total profits or the rate of return on capital employed nor to the improvement in the share of the market.

Now consider the policy for a wholesaler or retailer.

If the wholesaler buys 100,000 units of Beta @ £18 per unit and sells @ £20 per unit.

Total cost to the wholesaler = £1,800,000

Total profit = £200,000

Return on investment = $\frac{£200,000}{£1,800,000}$ = 11%

If the wholesaler buys 120,000 units of Beta @ £16.66 per unit (he is unlikely to be given such price reductions) and sells @ £18.41 per unit

Total cost to the wholesaler = 120,000 x £16.66 = £2,000,000

Total Profit = £210,000

Return on investment = $\frac{£210,000}{£2,000,000}$ = 10.5%

If the wholesaler's cost of stocks is a major proportion of his investment, then clearly a decrease in percentage return on turn-over leads (at least, in the case of product Beta) to a decrease in rate of return on his investment. Therefore, a pricing policy which stipulates a return on turn-over is applicable to a retailer/wholesaler. (The wholesaler will increase his return on capital employed over a period if he can increase the rate of turn-over in that period; if he can turn his capital over twice in that period his return on capital is doubled.)

Having laid to rest the pricing policy of 'expected rate of return on turn-over' which unfortunately, seems to find application in a few large manufacturing firms and almost all small ones*, other pricing policies applicable to manufacturers of industrial products will be discussed in the pages which follow.

2. One Price Policy The firm will sell at the same price (and with the same discount, where discounts are given) to all the customers. Such a policy builds customer confidence in a seller, saves time of the buyer and does not place weak bargainers at a competitive disadvantage.

3. Variable Price Policy The firm would, if necessary, sell at different prices to different customers. Such a policy provides flexibility to the seller to make price concessions in order to woo customers but requires seller's representative at the point of sale. On the other hand, this policy can lead to ill will among customers, trigger a price war and provide the salesmen with an easy way out in order to close a sale.

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* Studies conducted by Brookings Institution, Backman, Haynes, Lanzillotti, Barback and Fog.

4. Geographic Price Policies

(a) F.O.B. factory or Warehouse Pricing. This is the only one of the five policies where the seller does not pay any of the freight costs; nor does he accept any responsibility once the goods are handed over to the transportation medium. The policy is simple to operate, with the seller netting the same amount each time a sale is made. The disadvantage of this policy is that it creates a geographic monopoly for a particular seller while he is priced out of distant markets.

(b) Freight Equalization Pricing. Under this policy, the buyer in a distant market area is quoted a freight charge that is equal to the freight charge of the competitor located closest to that buyer. Such a policy strengthens competition and breaks down localized monopolies and barriers.

(c) Freight Allowed Pricing. This is also called Postage Stamp Pricing Policy, whereby all the customers are charged the same price, irrespective of their location, within a country. Actually it is F.O.B. at buyer's location and economically feasible where the transportation costs are a small proportion of the total price of the product. The buyers located near the plant subsidize those away from the plant. However, it is a more convenient method of pricing and lends better to national advertizing.

(d) Zone Pricing. This policy is similar to the one above, but the price is the same within a zone - the total market area in a country being divided into zones.

(e) Basing-Point Pricing. This method of pricing may be regarded as an extention of the geographical methods outlines above. It involves the selection of a certain point by the industry, known as a basing-point. To the F.O.B. factory or warehouse price is added the cost of carriage from the basing point to the buyer's address, irrespective of the actual place from which the goods were dispatched. In effect, this means that all freight quotations to a single buyer will be identical. This system is only found in industries where the product is of a homogeneous, bulky nature, and the

number of producers are few and widely dispersed. The use of zones within a country leads to a multiple basing-point system.

The objections to this policy are:

i) self-justification of panthom freight charges,

ii) collusion between firms necessary to make the policy or system work, i.e. there is a freight-rate book for the industry,

iii) eliminates price competition.

5. Discount Policies. These are discussed under Distribution in Section 'B'. Prompt Payment Discount Policy finds major application when the firm wants to impove its liquid funds.

The specific pricing policies are as follows:

Pricing Policy for New Products

Assume that the new product is a major technological innovation in its function and superior in performance over the existing products.

After the initial hesitation from the user-industries, during which period design changes and modifications to the product are made to overcome the customers' attitudes and needs, there would be a rapid sales expansion as the product is accepted in the market. The manufacturers of old (i.e. existing) products, finding their share of the market erroded by the newcomer, will retaliate by price reductions and by sales promotion campaigns as a stop-gap measure; at the same time, they would encroach on the new product by by-passing any patent barriers which may exist, and develop their own products, perhaps with certain distinctive features (i.e. product differentiation) to compete with the former. These products, by the time they arrive in the market, will be basically new brands, i.e. products new to the manufacturers but not new to the market. The distinctiveness of the original new product will now decrease, which in turn, will reduce the pricing autonomy enjoyed by the manufacturer. Gradually the product will lose its novelty and become a commodity with specific brand differences being

associated with the respective products manufacturers; and eventually the product will be deleted. The whole process is cyclic and known as the life-cycle of the product (fig.31). The cycle is a function of the rate of development of technology and the economic climate. There is a continuous change in promotional and price elasticity and also in the costs of production and distribution; therefore, out of necessity, there will be a change or a modification to the pricing policy at the various stages of the cycle.

The elements of the cycle can be summarised in the following steps:

1) The product reaches technical maturity; the rate of product development declines, there is increasing standardization in the product features of various brands and in the manufacture of the product.
2. The product reaches market maturity; the customers accept the product as performing the required functions satisfactorily and compare the various brands for product differentiation.
3) The product reaches competitive maturity; this is indicated by increasing stability of the share of market and price structures.

There are two pricing policies applicable to new products, pricing to skim the market and pricing to penetrate the market.

Skim the Market. This policy is applicable where competition cannot make a fast entry into the market because of technological or patent barriers or where high initial capital outlay is involved in the manufacture of the product and in the development of the market. Through the application of this policy the manufacturer can recover his research and development costs and the capital outlay costs, sooner. The policy is also applicable where initial demand is not high or where the demand can be presumed to be inelastic, and the initial production capacity is low. It is basically a safety-oriented policy which permits the firm to lower prices later on, if it 'boobed' on price, or in order to tap the lower segments of the market.

Pentrate the market. This an aggressive or adventurous policy, requiring foresight and courage, the objective being long-run profits and entrenching in the market with a large share of the latter. It is priced to keep the potential competition out of the market. Where the product meets a long-recognised need of the customers, has a high price sensitivity with no elite segments in the market, offers economies of large scale production, and does not provide barriers for competitors to enter the market, this is an optinum policy.

(The method for pricing new product has been discussed earlier.)

Pricing Policy for New Brands.

A new brand is a 'me too' product (i.e. functionally identical to a new product already in the market) or a product to fill the product line; it could be both.

Take the 'me too' product. The major objective of the manufacturer to come into the market with a 'me too' product is invariably to improve his competitive strength which is probably being eroded by the new product from the competitor. Other objectives which the 'me too' product would achieve are the use of available resources for production and selling, the entry into a new market for itself and also for other existing and prospective products, and the creation of complimentary demand.

The pricing policy must be focussed on the attainment of the major objective, the improvement of competitive strength; therefore the pricing policy must place emphasis on the attainment of a larger share of the market or a deeper penetration into the market, rather than the achievement of immediate profitability*

The price for the product is dictated by the first-in-the-market product; depending upon the degree of product differentiation (which includes service, sales promotion, manufacturer's reputation for say, quality products, etc.)

* Brand preferences cost less at the outset, than after the competitive promotional clamour has reached its full maturity.

the manufacturer will have the choice to price his brand in relation to i.e. above, below or equal to, the price of the first-in product.

While the size of the total market for the product as a whole could be estimated, it would not be easy for the manufacturer of the new brand to predict accurately his share of the market; therefore he has to use price as a weapon to achieve his major objective. Costs would have been taken into account at the planning stage, and long before production could start; cost would have determined the lowest price for the product at which the company could come into the market and whether it would be worthwhile coming into the market with the new brand.

Take the product to fill the product line. The major objective in this case is to fill or to round up or to broaden the product line and thus providing a variety or a choice to the customer, which is a case of creating a complementary demand; but the product may and often would be in competition with the other products in the line, i.e. there is an inter-linkage in the product line or the firm's products. There will be some difficulty in identifying the costs of each product in the line, where the marketing channels, the production methods, materials, etc. are the same, and where the promotional efforts benefit every product in the line. The price of a product in a product line must be within the price range of two adjacent products; say the price of a 10 H.P. motor would be greater than the price of a 5 H.P. and less than that of a 15 H.P. motor. Whenever a product is added to the line, the pricing policy must be such as to ensure that there is an increase in profitability for the whole line rather than for individual products. (Specific return on investment does not necessarily imply a proportionate profit from each product in a product line.) Other objectives of adding a product to the product line are to enable the entry into new markets, to make greater utilization of production and selling resources, to increase profits, to enlarge the share of the market, etc.. (Loss Leader pricing policy is to price a product sufficiently low and create customer traffic for other profitable products.)

Pricing Policies for General Products

General products of a firm may be classified as either standard or special products. Standard products [1] are those which the firm manufactures to its own standard specifications on performance, features, quality, shape, size, etc.; such products are always listed on the firm's catalogues and often manufactured on a large scale. Special products [2] are those specially manufactured by the firm to meet certain requirements specified by the customers; though many standard items or products from the firm may be incorporated into the special products. A general product could be new or new brand; but for the purpose of this discussion, it will be considered as being neither new nor new brand but a commodity in the market with certain distinctive features (product differentiation).

Pricing policies for general products will vary with the objectives of the firm and the market conditions which prevail from time to time. The factors which influence decisions on price, viz. contribution towards fixed costs and to profit, the complementary and substitute effects, goodwill of customers, utilization of available capacity for production and for selling, entry into a new industry or a new market, etc. will be generally common for both classes of products. However, there will be a difference in pricing policies for the two classes of products because the degree of influence exerted by some pricing factors varies with the two classes of products.

Consider pricing policies for standard products.

The firm may have some latitude in pricing its standard products. This latitude, to price higher or lower than its competitors, will depend upon the promotion policies of the firm and its product differentiation (i.e. the extent of difference which groups of customers perceive between the various brands available). A much higher price than that permitted by

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1. Standard products are manufactured, often in advance to meet the needs of potential customers.

2. Special products are manufactured to meet the requirements specified by real customers, after the receipt of individual orders.

the promotion and product differentiation would shrink demand for the product to such an extent as to make the manufacture of product economically not a viable proposition; on the other hand, a very low price for the product may compel the competitors to lower the price of their product, in retaliation, the nett result being reduced profits to all the firms in the industry - unless a low price results in the product finding application in new industries.

There are two basic pricing policies which find application with pricing decisions on standard products.

1. Pricing to follow the market or to meet competition. The firm prices its product in relation to i.e. a little higher or a little lower or equal to, the major competitors' prices for their product. Such a policy will be applicable where the product differentiation is small, market highly competitive, and buyers and sellers are well-informed of market prices and market conditions. Costs play an indirect role in this policy; the manufacturer checks on the going price in the market, and after allowing for the distribution and other related costs, and the profit he expects, he arrives at the price he must be able to sell and tailors the product to meet the price.

2. Pricing to lead the market. The firm leads the industry in introducing price changes. These changes may be to bring the price in line with general economic conditions or with the change in cost; the rest of the firms in the industry follow the price changes introduced by the leader. Price leadership generally exists in the industries where there is stability of the share of market and price structures for the firms involved. To be a price leader, the firm is expected to have a substantial share of the total market, say about 1/3, is known for sound pricing decisions, is regarded as a product innovator and efficient and is known to maintain the balance between the needs of the customer and the needs of the weaker (i.e. higher cost) firms in the industry. Incidentally, price leader need not be the highest priced nor the largest firm in the industry.

Between these two pricing policies, to follow the market or to lead the market, a manufacturer could follow a middle course, depending upon the product differentiation, the marketing conditions or his competitive position. A smaller firm may find 'follow the market pricing policy' useful.

3. Pricing policy for special products. Price becomes the most important criteria for the customer of special products because he has specified, at least broadly, his requirements on the performance, delivery, quality, features, etc. of the product. The manufacturer has little scope for product differentiation and he is faced with pricing problems because the price for the product is not standardized, there being a different price for each special product; and competitors' prices which can provide guidelines in arriving at one's price, are not known beforehand. Costs, therefore, play the most important role in determining the price for the product, the lower the costs of the product, the greater is the flexibility to establish a price on the product. The reputation of the manufacturer in the industry, his past trading record with the customers concerned, and his need to obtain the order for the product, at the moment in time, are other factors which would influence pricing decisions. Where there is a prospect of obtaining 'repeat' € orders, the pricing decision could take into consideration the reduction in the cost of manufacture which would occur on each subsequent 'repeat' order due to the 'learning curve' effect.

Where special products are not the main activity of a manufacturer, pricing policy should be such as to ensure that any idle capacity in production, which arises due to fluctuations in the demand for standard products, is taken up by special products, so long as each product makes some contribution towards recovery of fixed costs and profits.

€ 'Repeat' orders are almost exact duplicates of earlier orders.

PRICING AS A COMPETITIVE STRATEGY

The use of any form of strategy must be preceded by a clear definition of objectives, and the establishment of the standards to measure the performance against the objectives.

A manufacturer has three marketing areas, inter-related to each other, on which to base his competitive strategy. They are price, product and promotion (including channels of distribution), and the relative importance between them will depend upon the nature of the product, the marketing conditions and the characteristics of the buyers.

A study was conducted among large numbers of manufacturers of industrial products to examine the role of each of the three marketing areas in the manufacturers' competitive strategy (Appendix III). The conclusion was that price was not the most important marketing area in the manufacturers' competitive strategy.

Pricing as a competitive strategy must be directed to specific market targets, co-ordinated with promotional strategy and geared to face competitors' action or re-action. There must be an adequate system to gather all the relevant and valid information on the competitors' activities, on market conditions and trends, and to provide a feed back on customers response, competitors' reactions, in order to measure the effectiveness of each pricing strategy.

It would be useful to the firm to be fully aware of the pricing policies and methods generally used in the industry* in whcih the firm is a member. Where the pricing methods are cost-oriented, viz. full-cost pricing, it will be worthwhile for the firm to have some knowledge or a fair idea of his major competitors' cost stractures and costing practices and to keep a record of these competitors' reactions, in the past, to price changes. Such information could provide guidelines to their (the competitors) future actions or reactions to price changes.

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* The role of prevailing price becomes less improtant when an aggressive firm steps in the market.

Price can be used as a competitive strategy in the following ways:

1. Price changes. Price changes must be applied where they would be most effective, say at distributor level or at customer level. The reasons for price changes, the long and the short term effects on the customers (including distributors) the reaction of competitors, and the results expected must be fully analysed beforehand. A price change by a small firm may result in a massive retaliation by the larger firms, and ruin to the small firm; while a price increase by a large firm may create a public outcry and a price-cut may bring Government intervention to protect the smaller firms.

2. Price discrimination. To be able to apply this policy, the firm must segment the market into economically viable units and then to meet the needs of cutomers from each segment. It must be ensured that there is no inter-connection or leakage between segments to avoid problems and reprecussions between the customers from various segments and the manufacturer. Price discrimination may be illegal in some countries (Robinson-Patman Act in U.S.A.).

3. Price-lining. This is another arm of pricing strategy. The firm maintains a high price for its quality product and manufactures a cheaper product to match competitors' price-cuts or cheap products.

4. Others. A firm may maintain a constant price for its standard or original product but change the price of the 'extras' which go with the product. Many manufacturers price differently to the original equipment manufacturers and to the ultimate users or when selling the product as spares.

Where competitive bidding is involved, pricing strategy can be aided by the application of operational research techniques. An example of its application is given below.

Pricing Strategy in Competitive Bidding

Operational Research techniques can be used by firms for pricing an order where competitive bidding is involved. In this case, it is important to anticipate the strategy of competitors participating in the bid and a

useful guide is their past actions in similar situations.

Assume the out-of-pocket costs for fulfilling the order are £80,000 and after estimating the competitors' probability for bidding at various prices, the firm came to the conclusion that the probability of its own bid being successful is as follows:

Bid Value	Probability of Firm's bid being successful.
£70,000	1.00
£80,000	.95
£90,000	.85
£100,000	.60
£110,000	.30
£120,000	.10

If the bid was made at £90.000 the contribution (to fixed costs and profits) to the firm is (£90,000 - £80,000) = £10,000. But the probability of the bid being successful is .85. Therefore, the expected contribution = .85 (£90,000 - £80,000) = £8,500. (The criterion is the largest <u>expected contribution</u>. The firm must aim for the highest profit (i.e. Price less Costs) and at the same time ensure that the bid is successful.)

Bid £000's	Contribution £000's	Probability	Expected Contribution
£70	(70 - 80) = -10	1.00	- £10,000
£80	(80 - 80) = 0	.95	0
£90	(90 - 80) = 10	.85	£8,500
£100	(100 - 80) = 20	.60	£12,000
£110	(110 - 80) = 30	.30	£9,000
£120	(120 - 80) = 40	.10	£4,000

From the above exercise, the firm has the optimum prospect of maximizing contribution (i.e. optimum mix of contribution x probability of achieving it) when the bid is priced at £100,000. However, other factors should be taken into consideration. Where excess production capacity is available and there is little prospect of its being made use of in the near future, the firm may opt for £90,000 price, if there are no other implications involved. The firm may even bid for £80,000 if the successful bid would

suit its plans, such as, obtain a foot-hold in a new industry, build up prestige, etc. On the other hand, where the firm's production capacity is almost full and little additional benefits are to be gained besides profit-contribution, the firm may bid for £110,000 or even more.

Pricing strategy involves conflicts with competitors. The situation is similarto games and games theory may find some use in such situations.

Foot-note: A major difficulty with the operational research technique is the estimation of probability. Operational Research provides methods of handling some of the uncertainities which occur in real business situations. For further details see 'Insights into Pricing' by Oxenfeldt, Miller and Others.

ORGANIZATION FOR PRICING

Price plays a very important role in the marketing of a product and consequently, in the survival and/or growth of the firm. Therefore, every firm could achieve substantial benefits by having a separate organization under the top-marketing executive, be it a department or even a single individual, solely responsible to carry out the process of pricing, to make decisions or recommendations on price and to review prices as necessary. Where the pricing organization makes recommendations on price, it must provide information on the relationship between the important determinants which would be affected or would affect price decisions, to the individual responsible for making the decisions, say a marketing executive or a product manager.

The size of the pricing organization or the number of individuals directly involved in the process of pricing will depend upon the factors listed below:

1. The size of the firm.
2. The number of products, product lines and the complexity and/or inter-relationship between them.
3. The range of autonomy or discretion over price which the firm may possess (dependent upon the market conditions, competitors and buyers, the product, the technology, etc.)
4. The speed with which the decisions on price are required to be made - and where tactical pricing decisions at operating levels are necessary.
5. The overall organization of the firm - whether it is centralized or decentralized - though pricing organization could be centralized.

The organization, in order to be effective, must have autonomy or must not be under the control of the financial and the sales organizations, though it should seek guidance from both the organizations. It must carry adequate status and authority to enable it to collect all the necessary information, viz. information on costs, on customers' response, competitors' prices and

activities, estimated demand and market trends, etc. It must also have the authority or the power to use field resources to pretest price decisions. Foremost of all, the pricing organization must be made understood fully, the valid pricing objectives and the scope within which these objectives must be achieved.

Fig. 1

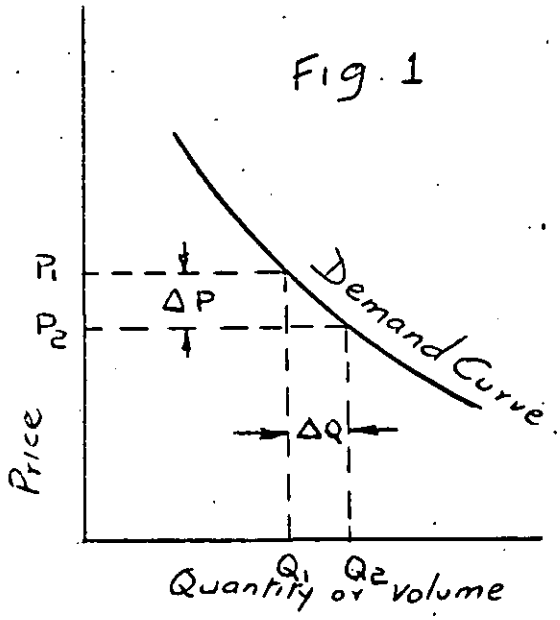


Fig. 2

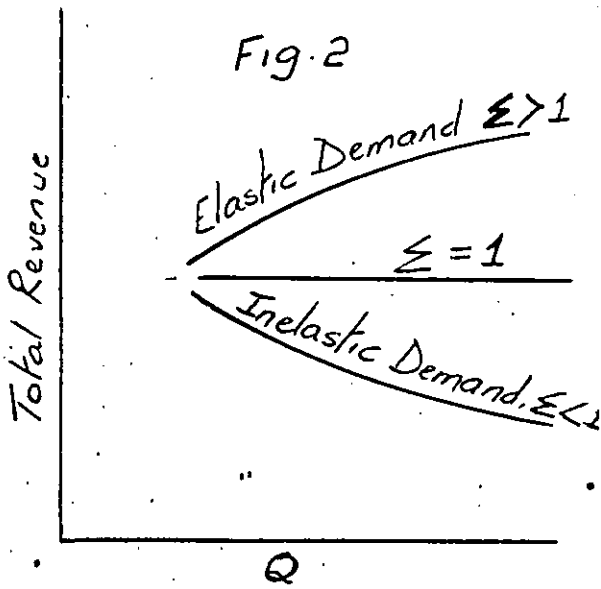


Fig. 3

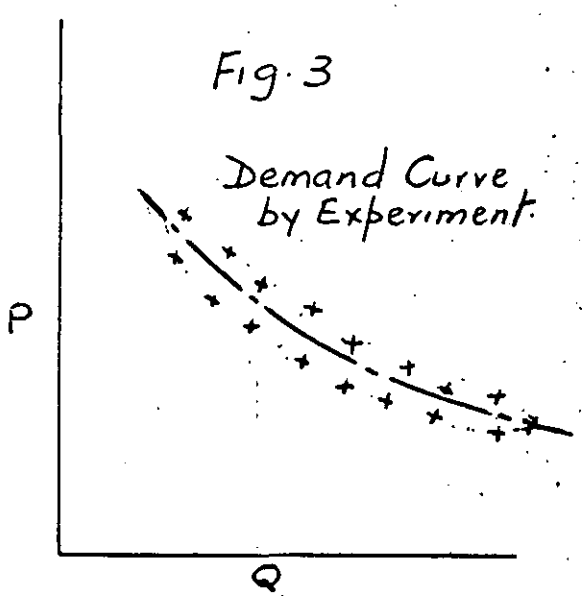


Fig. 4

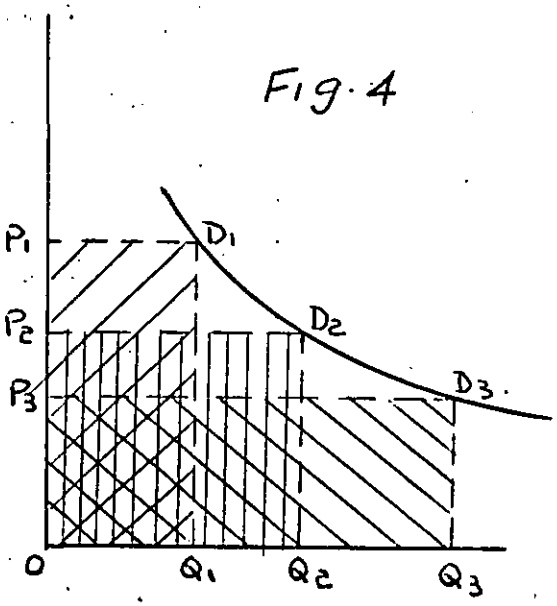


Fig. 5

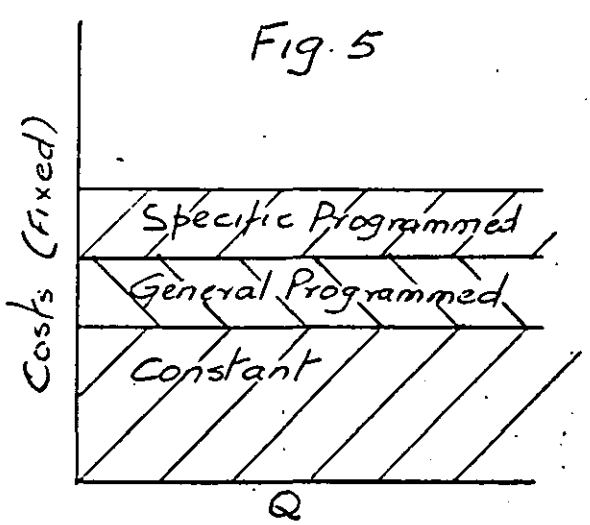


Fig. 5a.

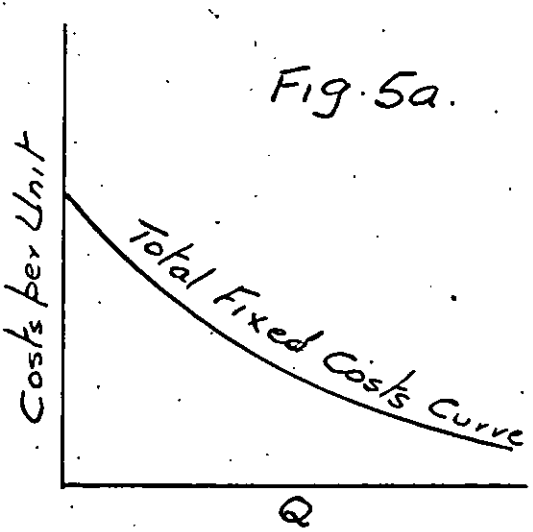


Fig. 6

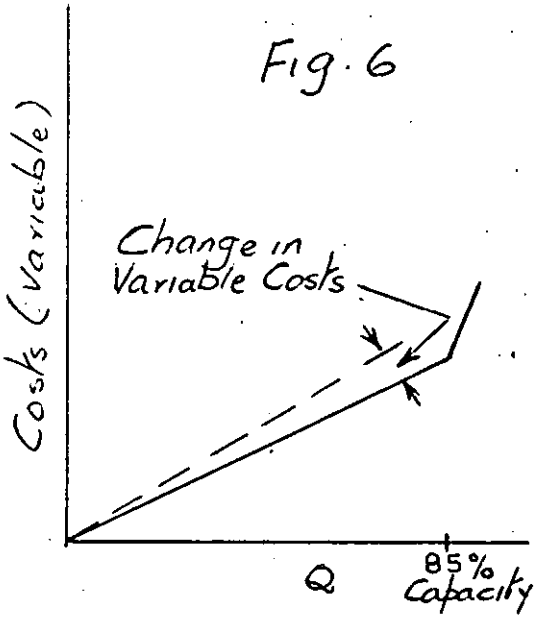


Fig 6a.

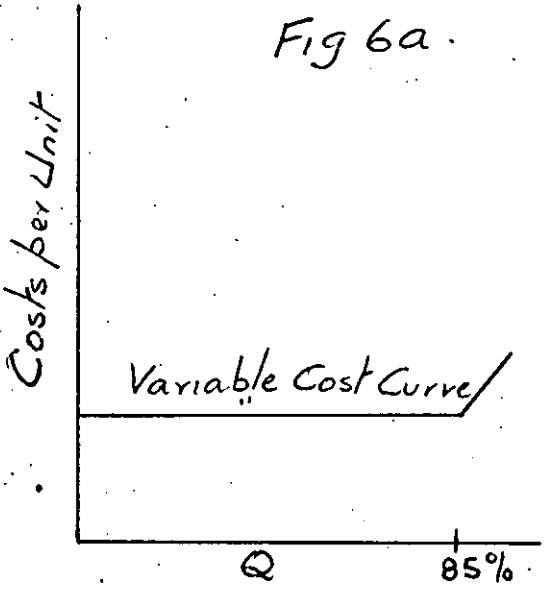


Fig. 7

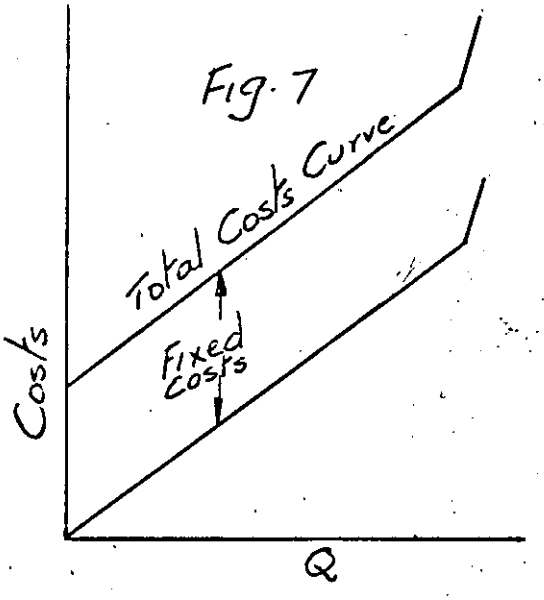


Fig. 7a.

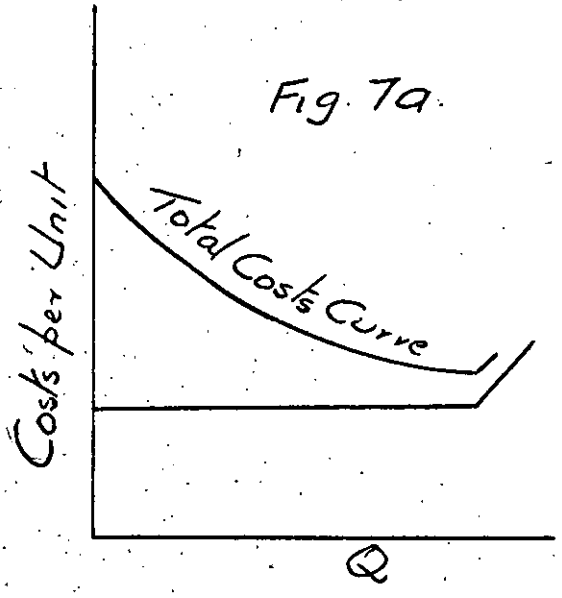


Fig. 8

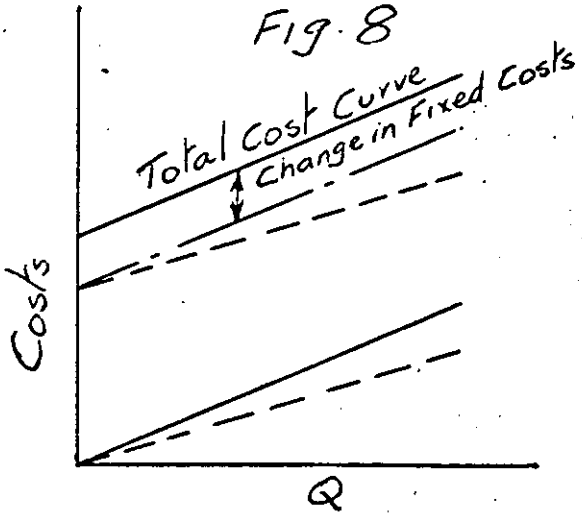


Fig. 8a

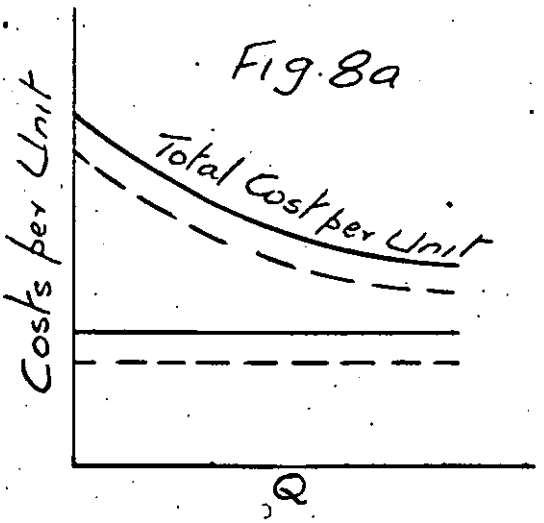


Fig 9

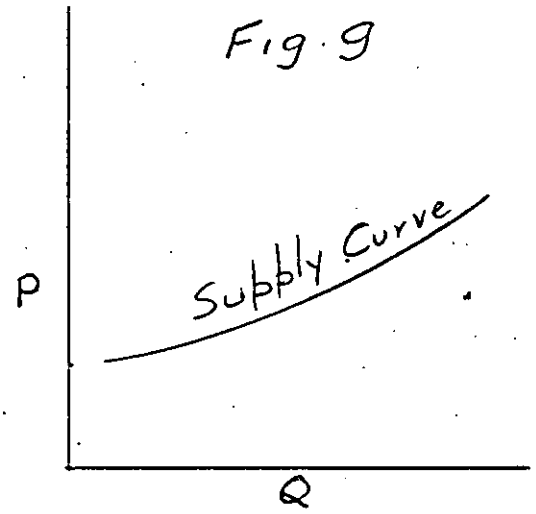


Fig 10

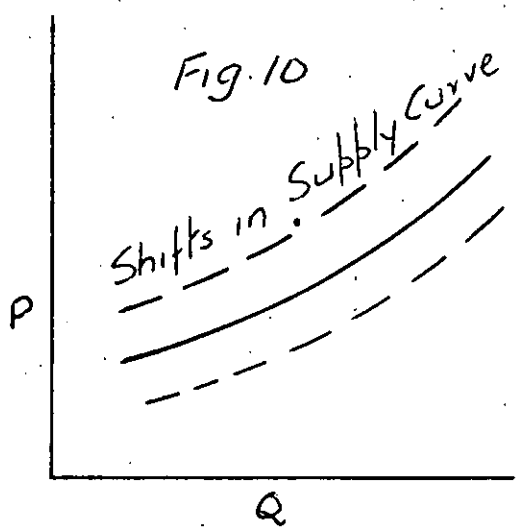


Fig 11

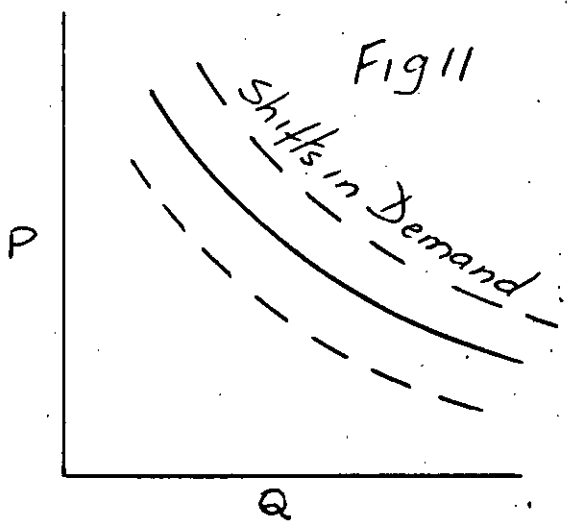


Fig 12

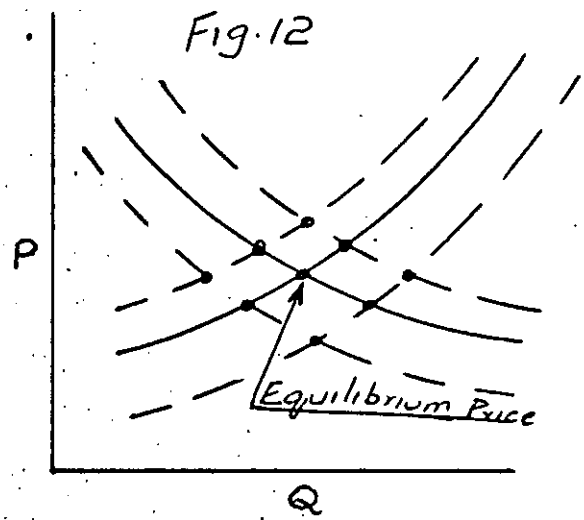


Fig 13

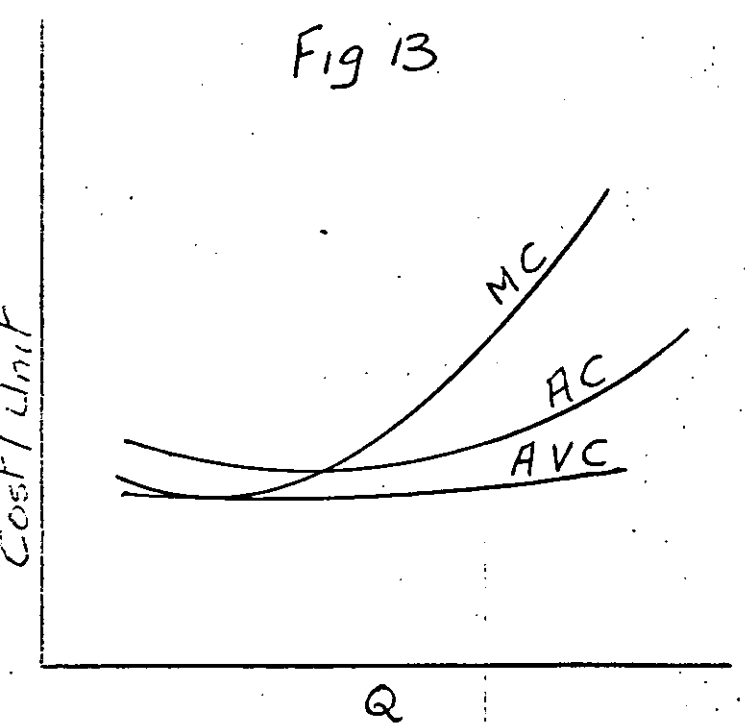
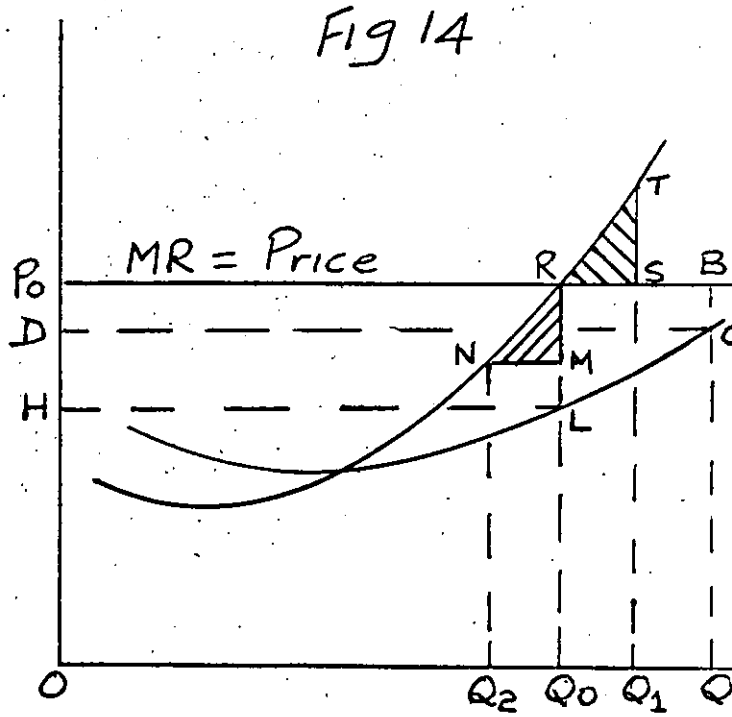


Fig 14



Long-run Cost Curve Fig. 15

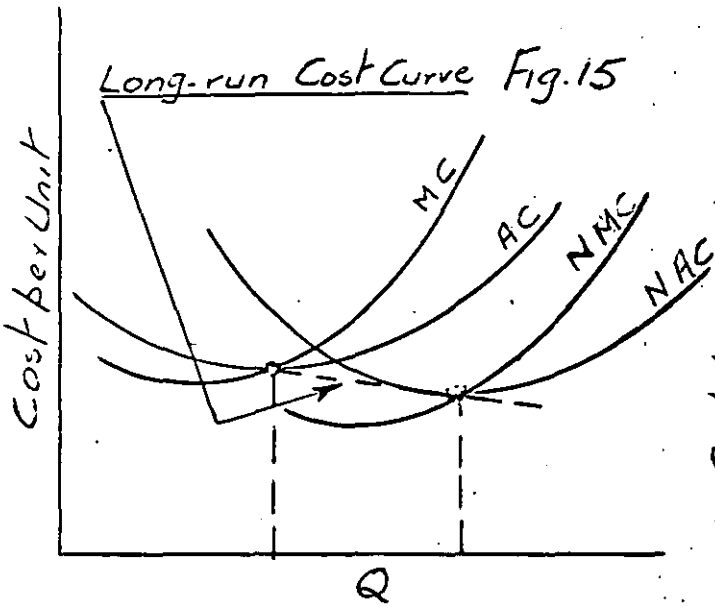


Fig. 16
Constant Long-Run Cost

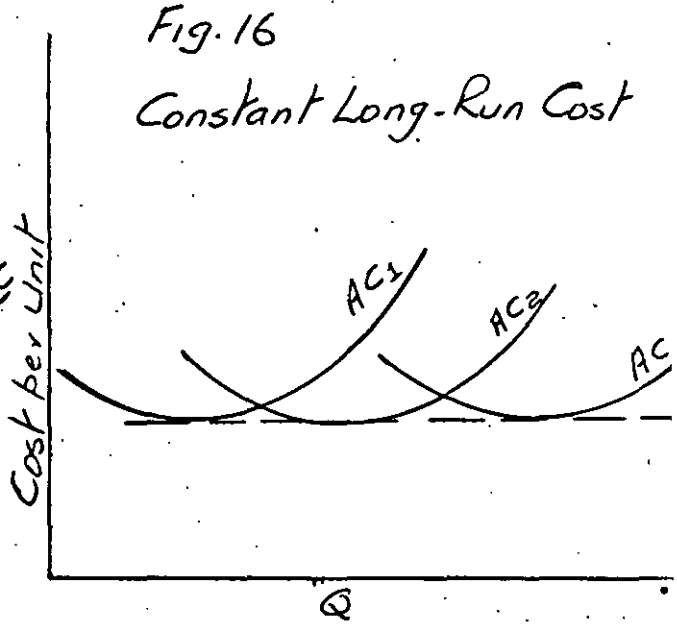


Fig. 17
Increasing Long-Run Cost

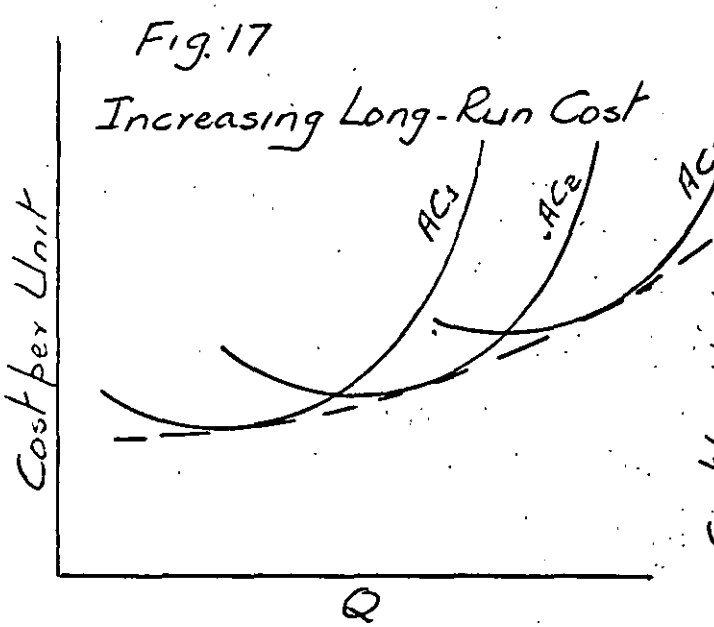


Fig. 18
Decreasing Long-Run Cost

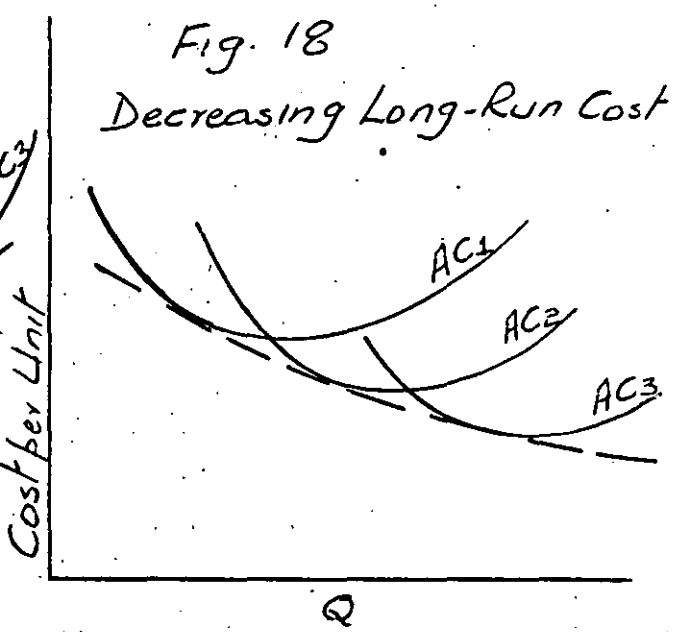


Fig. 19
Monopoly

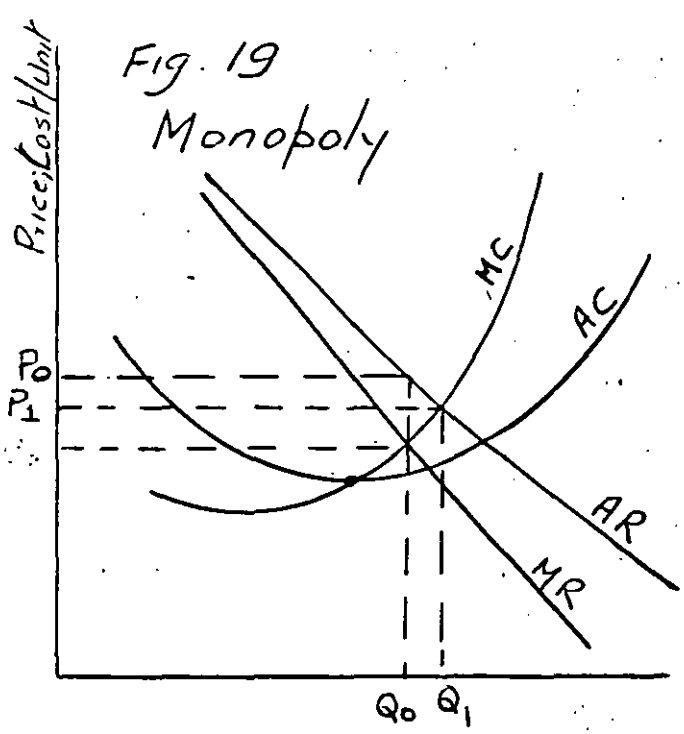
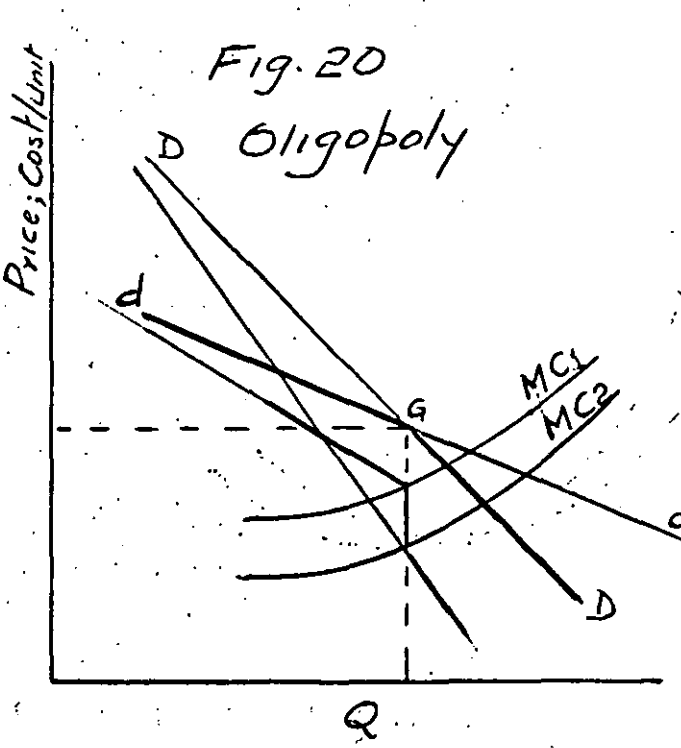


Fig. 20
Oligopoly



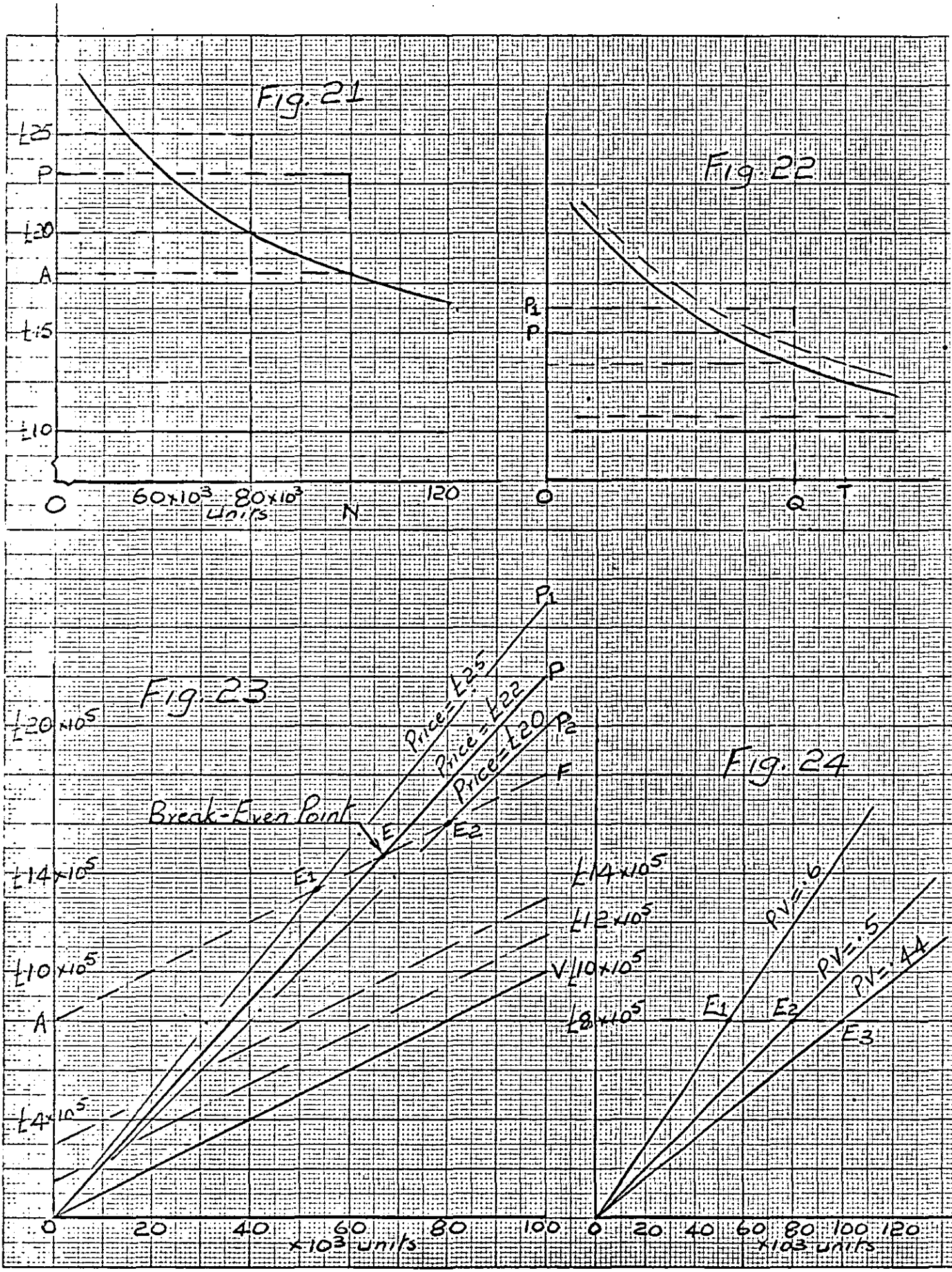


Fig. 21
£25
P
£20
A
£15
£10
0
60×10³ 80×10³
Units
N
120
Fig. 22
P₁
P
0
Q
T
Fig. 23
£20 ×10⁵
£14×10⁵
£10×10⁵
A
£4×10⁵
P₁
P
P₂
F
Price=£25
Price=£22
Price=£20
Break-Even Point
E
E₁
E₂
0
20
40
60
80
100
×10³ units
Fig. 24
£14×10⁵
£12×10⁵
£10×10⁵
£8×10⁵
PV=.6
PV=.5
PV=.4
E₁
E₂
E₃
0
20
40
60
80
100
120
×10³ units

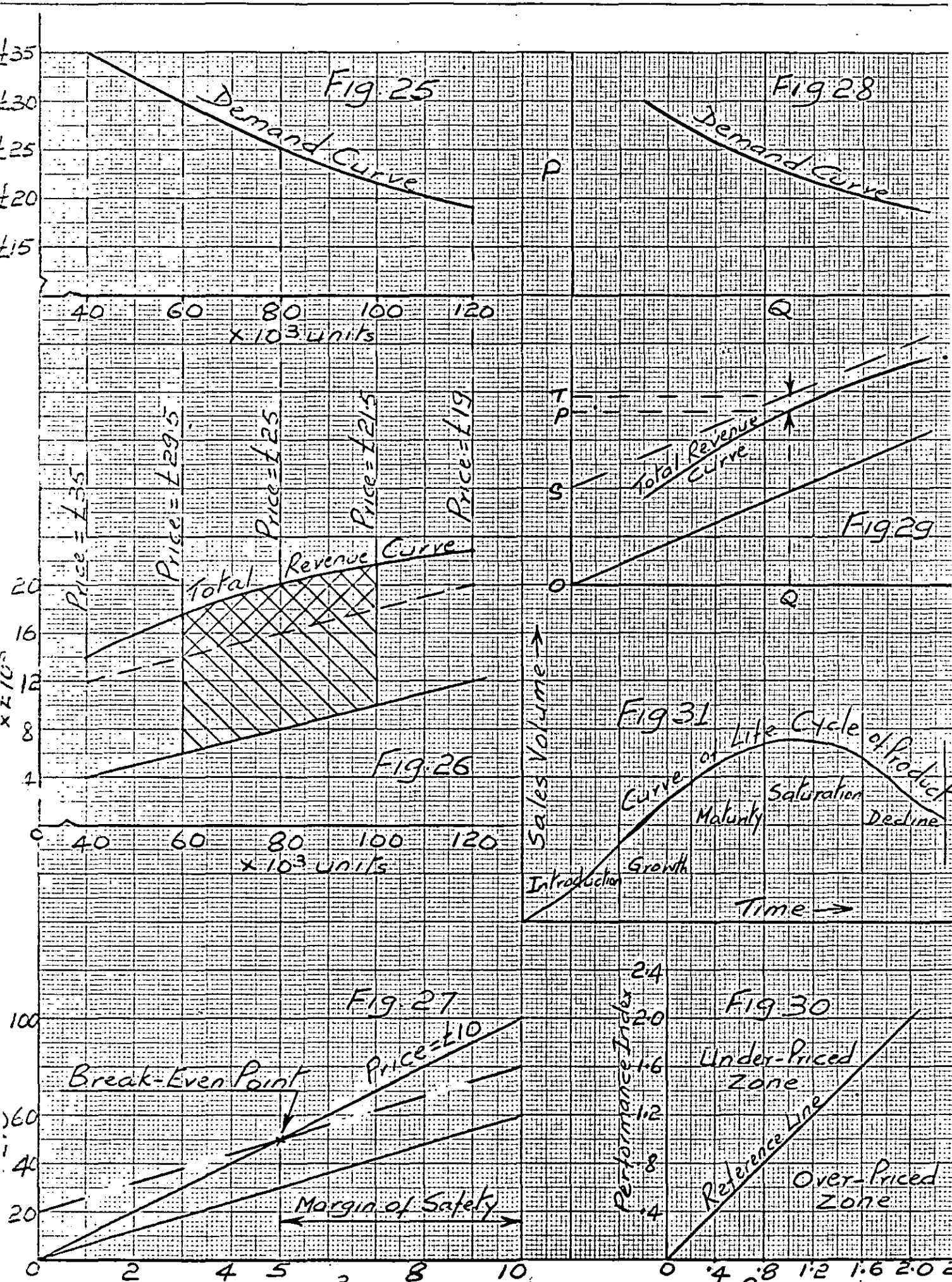


Fig 25
Demand Curve
£35
£30
£25
£20
£15
P
40
60
80
100
120
×10³ units
Q
Fig 28
Demand Curve
Price=£35
Price=£29·5
Price=£25
Price=£21·5
Price=£19
Total Revenue Curve
Fig 26
20
16
12
8
4
0
Fig 29
TP
S
Total Revenue Curve
O
Q
Fig 31
Life Cycle of Product
Sales Volume
Introduction
Growth
Maturity
Saturation
Decline
Time
Fig 27
100
60
40
20
Break-Even Point
Price=£10
Margin of Safety
0
2
4
5
8
10
×10³ units
Fig 30
Performance Index
2·4
2·0
1·6
1·2
·8
·4
Under-Priced Zone
Reference Line
Over-Priced Zone
0
·4
·8
1·2
1·6
2·0
Price Index

SECTION 'B'

DISTRIBUTION

Figs. Nos. 1 - 6 are given at the end of the Section

DISTRIBUTION

Distribution is an important part, and sometimes the last part, of a manufacturer's marketing activity. It is the physical movement of the manufacturer's products in order that they are available to the customers in the right quantity and at the right time and place. An effective distribution system can play a major part in the manufacturer's competitive strategy.

Distribution can be divided into two sections. Physical distribution, which is concerned with availability of products in the right quantity and at the right time, and distribution channels which are concerned with availability of products in the right place.

The physical distribution system is shown diagramatically on Fig. 1. The system can be broken down into two separate circuits; the external, or customer service circuit and the internal circuit. Five steps are usually identified in the external circuit between the stage when the customer places his order and the time that he receives the order; this is known as the order cycle. The first step (0 - 1) is the placing of the order by the customer: the second step (1 - 2) is the handling of the customer's order by the manufacturer's office: third step (2 - 3) is passing the information to the warehouse: the fourth step (3 - 4) is the preparation of the order for shipment: and the fifth and final step (4 - 5) is the shipment of the order to the customer. The first three steps are concerned with movements of information and the next two with movements of goods. The internal circuit comprises of three steps. The first step (A - B) is the placing of the order with the plant; the second step (B - C) is the preparation of the factory order; and the third step (C - D) is the shipment of goods to the warehouse.

The channels of distribution generally used by the manufacturers of industrial products are shown diagramatically in Fig. 2. A manufacturer can have his own selling organisation/network in the form of manufacturer-owned distribution outlets located at strategic points and commonly known as sales offices. Distinction must be made here between such a selling network and the direct selling, particularly of tailor-made or custom-made products, to the customers/users; in the latter distribution channel the products are moved generally from factory or warehouse straight to the customers. Alternatively, or in addition to the above channels of distribution, the manufacturer can make use of distributors.

There are two classes of distributors; wholesalers, who take title to the goods and carry an inventory, and agents, who are paid a commission by the manufacturer on the value of sales made or some similar arrangement. The distributors take over the manufacturer's marketing function of selling the product to the customer and or user and have their own sales force to do the selling.

PHYSICAL DISTRIBUTION

In essence, physical distribution is the science of business logistics whereby the proper amount of the right kind of product is made available at the time and place where demand exists.

Physical distribution has been described by Drucker as "The Economy's Dark Continent" and the last frontier of cost reduction is U.S. business." Another writer has said "you can't cut prices, labour or material. The only fat left in the business is (physical) distribution."

Mckinsey & Company conducted a study on distribution economics and distribution management in 26 large and profitable companies from various industries in the U.S.A. The companies were ranked good, average or poor on 4 basic criteria of distribution management:-

1) generation and use of meaningful and timely control information,
2) Aggressiveness and overall competence of distribution personnel,
3) awareness and concern with distribution economics on the part of top management, and
4) capacity to deal with the overall distribution problem.

The conclusion from the study was that only 5 companies qualified as good on all four rating factors. It was also clear that there was a great deal of interdependence among these factors, companies doing well in one tended to do well in other factors as well and vice-versa; and that no company with a good rating on one factor was below average on other factors. Another important conclusion was that, with a single

exception, no company which failed to rank good in control information received a top rating on the other three factors.

Also significant was that the 5 companies with good rating factors were among the top in the return-on-investment performance - a top executive from one of these five companies claimed that "the excellence of its distribution system had played a key role in the company's competitive success."

COSTS

The costs of physical distribution of 10,000 companies from 6 major industries, according to a survey conducted by 'Distribution Age' in 1960-62 are reproduced below:

Industry	Average physical distribution cost as a percentage of manufacturer's sales price
Machinery (electrical)	9.8
Wood products and furniture	16.1
Paper and paper products	16.7
Chemical, petroleum and rubber products	23.1
Primary and fabricated metals	26.4
Food and food products	29.6

Take the fabricated metals industry. Assume that the pricing method in this industry is "total cost plus mark-up" and say mark-up is 20%

$\therefore$ Price (P) = 1.2 x total cost per unit (C)

But C = Cost of manufacture (M) + Cost of Physical Distribution (D)

$C = M + D$

$P = 1.2 \times C = 1.2 \times (M + D)$

But $D = .264P$

$\therefore D = .264 \times 1.2 (M + D) = .3168 (M + D)$

$D(1-.3168) = .3168M$

$\therefore D = \frac{3168}{.6832} M = .46M \simeq \frac{1}{2}M$

Cost of Physical Distribution is nearly half the cost of Mamufacture, or one third the total cost.

Profit/unit $= .2C = .2 (M + D)$

$\simeq .2 \times 3D$ where $M \simeq 2D$

$\simeq .6D$

Now say the cost of physical distribution is reduced by 20%.

$\therefore$ new D (D') = .8D

Price remains the same $= 1.2C = 1.2 \times 3D$

But new total cost $= M + D' = 2D + .8D$

$= 2.8D$

New Profit $= (1.2 \times 3D - 2.8D) = .8D$

$\therefore$ Increase in profit $= \frac{(.8 - .6)}{.6} = \frac{.2}{.6} \simeq 30\%$

With an unchanged price, a reduction in physical distribution cost of 20% will yield the manufacturer a 30% increase in profits.

Physical distribution costs comprise of total transportation costs and warehousing and inventory-carrying costs. (Fig. 3).

Total transportation costs consist of:-

1) Special packaging (for the particular means of transportation) costs,
2) Total physical handling costs involved when transferring from one means of transportation to another.
3) Transportation or freight costs.
4) Time costs.

In general, packaging and total physical handling costs would be almost constant, whatever the means of principal transportation chosen; freight (or transportation) costs vary according to the means of transportation, viz. road, rail, sea or air, and also according to the size of the load carried. Generally, the larger the load, the lower the average unit cost.

Time costs are incurred due to:-

1) physical deterioration of goods,
2) technological obsolescence of products,
3) interest paid on the capital tied to the cost of goods in shipment, and
4) other sources, such as pilferage, time-based insurance rates etc.

Therefore, the optimum means of transportation is one which minimizes the total transportation costs, i.e. the sum total of freight and time costs, bearing in mind that these costs may vary with different situations.

Warehousing and inventory-carrying costs arise due to rent of storage space and taxes, rates, salaries to employees working in the warehouses (commonly known as overhead costs), the interest on capital tied to the inventory, and the obsolescence, deterioration, and other losses of the

products. It should be noted that any risk of loss covered by insurance transforms into a cost element.

From Fig. 3 it will be noted that increasing the number of strategically located warehouses, lowers the overall average transportation costs of goods from warehouse to customer but increases the total warehousing and inventory-carrying costs because of the duplications of overheads and the reduction in total inventory utilization. It also increases total costs of plant to warehouse transportation, because smaller shipments to a larger number of locations costs more than transporting the same volume in larger shipments to relatively fewer locations. Therefore the optimum number of warehouses is one where the total distribution costs are a minimum.

Inventory-carrying costs may often be a sizable proportion of the total costs of a business for both a manufacturer or a customer. The manufacturer will aim to reduce his inventory-carrying costs by keeping a close control on his total inventory, and at the same time optimizing his production runs. The customer, on the other hand, will aim to minimize his inventory-carrying costs; depending upon the costs of clerical work and material handling involved in placing and receiving each order, he will order smaller quantitites more frequently, unless induced by the manufacturer's (or the supplier's) discount structure, to place larger orders less frequently. The discount structure will be discussed separately towards the end of this chapter.

Consider the customer service circuit in the physical distribution system (Fig. 1). Two factors are involved which can play an important role in the manufacturer's competitive strategy; the order cycle time and the reliability of delivery of the order.

Any normal reduction which can be achieved by the manufacturer with the time element concerned with the movements of information denoted by the first three steps (0 - 1; 1 - 2; 2 - 3) by some means, say, by computerising the system (whereby the customer's order is received straight into the computer in the manufacturer's order-receiving or order-processing department) will lead to a quicker delivery of the order, a reduction in the size of the inventory to be carried by the customer and an increase in the flexibility of his inventory control system. Any increase in the reliability of delivery (i.e. an increase in the degree of probability that the order will be delivered at the required time - not earlier, which may be inconvenient in terms of storage facilities available, nor later, because of the consequences which could arise, e.g. stoppage of an assembly line) - will lower the customer's level of inventory; it is the degree of reliability which determines the amount of extra inventory or buffer stock that must be carried to avoid a stock-out due to any delay in the delivery of the order.

If the customer runs out of stock due to the faulty service from the distributor or from the manufacturer, he may take any one of the three courses of action depending upon the importance of the product at the situation:-

1) buy the product from another distributor,

2) forego purchase, or

3) substitute a competitor's product.

In addition to creating a dissatisfied customer, in the first course of action the distributor loses his sales, in the second, both the distributor and the manufacturer are the losers, and in the third the manufacturer and even the distributor are the losers, with the probable long-term effect of the customer changing brand loyalty.

To mitigate the situation which could result in the loss of a customer due to a stock out, the manufacturer may decide to rush an order to the customer. This could affect his production schedules, and require re-routing of normal deliveries and sub-optimization of transportation system, thus normal costs would change for a change in customer service provided. The problem here is to decide when, and by how much, a change in customer service which affects normal costs is justified, bearing in mind that in a commercial undertaking generally 20% of its customers provide 80% of the business and profits to the firm (Pareto-Lorenz law of concentration). A similar problem arises when the manufacturer plans to increase his marketing effort/or customer service in order to win new customers, or to increase sales volume; the criterion to be applied here is whether the additional total costs to be incurred would be in accord with the manufacturer's long-term objectives.

It is obvious, therefore, that an effective distribution system should have the following characteristics:-

1) an optimum number of warehouses located strategically,
2) a transportation policy which is arrived at by taking into consideration freight and time costs,
3) close control on the inventory,
4) an up to date information on actual distribution costs for individual products or product groups delivered to individual markets and individual customers (thus placing the manufacturer in a position to quote competitive prices in most situations), and
5) a broad knowledge of change in costs for the changes in the level of customer service provided.

Last but not the least, the system must make use of the most efficient channels of distribution - which is the subject of discussion in the following chapter.

CHANNELS OF DISTRIBUTION

The customers, the product and the manufacturer's marketing policy play an important part in determining the channels of distribution.

An analysis of customers' buying habits, viz. the place where and the time when he buys, the service he requires, and the financial terms he needs will indicate which channels would be preferred. A direct channel will be an advantage to the manufacturer where the potential customers are few, or are concentrated in some areas or where the order size, i.e. the volume of purchase from individual customers, is large.

The nature of the product often decides, almost automatically, the choice of channels. A large, bulky product, whose cost for physical handling and transportation is high in relation to the total value of the product, will demand the shortest channel; as will a perishable product, which must be speeded to reach the final outlet or the place with proper storage facilities. A standard product, or a catalogue item, can be sold easily through the distributors, while a special or custom-built product which is sophisticated and expensive, which has a diversity of customer requirements and involves an exchange of technical information, will require a direct channel. The lower the unit value of the product, the longer are the channels. Where a product is required by the customer at short notice, the channel is through the distributor.

The channels are finally determined by the manufacturer's marketing policy, which surely will include minimization of overall distribution costs. Where one of the objectives is the provision of an excellent and quick service to thecustomer, perhaps becuase of the technical nature of the product, or where the manufacturer wants to retain control of the channel, then it is the direct channel to be used. Lack of financial resources, selling know-how and management ability may restrict the manufacturer from chosing the optimum channels, and thus resort to the use of distributors. Also, the use of reputable distributors, at least

initially, would be an advantage to a manufacturer who is as yet unknown in the market or industry.

New products may create problems in the choice of optimum channels of distribution. Wholesalers may not be keen to take the product depending upon how new the product is, and to what extent the customers realise they want this product. Promotional requirements for new products are particularly high, and require aggressive selling, a task which the wholesalers do not generally perform, unless offered larger margins which later can create complications. Alternatively, the manufacturer could employ the services of manufacturer's agents, who do not have to carry an inventory, and thus will be in a position to provide better service, including for custom-built products.

Some products lend themselves to more than one channel of distribution. Where customers can be separated into different groups, it is possible, or even necessary for the manufacturer to make use of more than one channel of distribution, the typical case being where the manufacturer sells directly to large OEM, and through distributors for his other customers/users. Therefore the manufacturer must retain flexibility in the use of channels, and the use of one channel must not preclude the use of other channels, for the present, or for the future.

Having established the channels, the manufacturer must review the situation periodically to assess whether he is getting his adequate share of sales from each territory, product line and customer group, and to examine for any trends in customer buying habits; if necessary, he must develop new and more efficient channels which would be advantageous to the customers and to himself.

Where the manufacturer decides to make use of distributors, he has to determine two further, but to some extent inter-related aspects of distribution. They are:-

1) the type of distribution, and

2) establishing the areas of distribution.

TYPES OF DISTRIBUTION

There are three basic types of distribution:-

1) intensive or saturation distribution,

2) selective distribution, and

3) exclusive distribution.

Intensive distribution is applicable where the products are sold through as many outlets as possible, and very often such products are pre-sold through advertising or other sales promotional media. The major characteristics of these products are:-

a) convenience goods with little brand loyalty,

b) goods bought at frequent intervals in relatively small quantities,

c) goods which do not require specialized technical knowledge to sell or to operate, and

d) goods which do not require specialized after sales service, and stocking of special replacement parts (other than cheap ones, viz. batteries).

Selective distribution requires almost the opposite characteristics of intensive distribution. Further, it requires or demands a reasonable investment by the distributor in stocks and spare parts, and the provision of adequate or special storage facilities. The distributor is expected to do a more thorough selling job.

Exclusive distribution is carried out where the product has a very high prestige value and also a relatively high unit cost.

ESTABLISHING AREAS OF DISTRIBUTION

Basically there are two ways of establishing areas of distribution:-

1) industrial coverage, and

2) geographical coverage.

Industrial coverage is the basis where the area is divided in terms of types of industry or customers served by the particular types of distributors.

Geographic coverage is the basis where the area is divided into separate selling territories and allocated to the distributor.

Industrial coverage basis is often the more appropriate approach from the marketing point of view because the distributors' sales force is better acquainted with the particular industry/customer. On the other hand, the geographic coverage is an easier approach from the control view point and could reduce any friction and conflict which can arise amongst the distributors themselves.

A manufacturer could use a combination of both bases to establish areas for distribution. Where the distributor is given exclusive rights to sell the manufacturer's products within a specific area, it is known as area franchise for the distributor.

DISTRIBUTORS

The use of distributors relieves the manufacturer of a direct control over the selling of his products to the ultimate customers or users. The greater the proportion of his products sold through the efforts of distributors, as opposed to the pre-selling done by the manufacturer by means of advertising or other forms of sales promotion (particularly in the case of consumer goods) the more important is the role of the distributors in the manufacturer's ultimate marketing success.

In such a situation two basic requirements must be fulfilled:- the first is the close co-operation and team-work between the manufacturer and his distributors, and the second is the exercise of indirect control by the manufacturer over his distributors.

Co-operation and team-work between two different parties can be achieved when either party is aware of the needs and problems of the other, is interested, willing to help, is sincere and fair in dealings with the other and is conscious of the mutual benefits available.

A formal statement of policy from the manufacturer, describing in broad terms, what his distributors can expect from him and what he, in turn, expects or requires from his distributors can be very useful, particularly when appointing new distributors; so long as this statement is flexible enough to take individual factors into consideration, and to avoid the creation of a strictly formal relationship between the two parties.

The manufacturer can take the initiative in such areas as providing technical training to the sales force of the distributors, helping the distributors in their problems of inventory control, co-operating with them in their own planning by keeping them informed as necessary about the market potential and trends, about his own marketing plans, viz. expansion of his capacity, about newproducts or product lines, etc. and

about their progress.

The manufacturer may go even a step further, purely as an interest and not as an intrusion, and examine the factors under the control of the distributors which can influence the sales of his products. These factors are the services, the credit and financial terms, offered by the distributors to the customers, the motivation system used by the distributors for their sales force and the nature of approach made by their sales force to the industrial users and the customers. Such practices from the manufacturer as setting a sales quota or a 'target sales' for his distributors, recommending retail prices for his products, and specifying a minimum value of stock which the distributor must carry, have several advantages.

A target sales policy is necessary in order to evaluate performance. It also provides a tangible objective to the distributor, so long as the target is realistic, i.e. it is capable of being achieved with intelligent application of available resources. The recommendation of retail prices*, so long as they are adhered to, helps the manufacturer's image by re-assuring the customers that the prices are being administered uniformly and fairly, avoids or minimizes price wars which would otherwise rebound on the manufacturer to provide larger margins to distributors, and compels the sales force to depend upon superior salesmanship, or other forms of strategy rather than on the easy way out by price-cutting. Minimum value of stocks to be carried involves a certain commitment on the part of the distributors and also covers the manufacturer's costs of handling and transportation of products, particularly where there is no geographic price policy.

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* According to National Board for Prices and Incomes, Report No.55, dated February 1968, price lists are not enforced by the manufacturers. These lists are, it is alleged by the manufacturers, for the convenience of the distributors.

The distributors are in direct contact with the customers. The manufacturer therefore can expect or require from his distributors, in addition to the meeting of their sales quotas, useful marketing information, relating to market conditions and trends, competitors' activities and plans, customers' needs and problems, responses to particular products and reactions to any price changes or other marketing strategies adopted by the manufacturer.

Where the manufacturer has a large number of distributors his own field sales force could play a more effective role of missionary salesmen - developing goodwill, creating or stimulating demand for his products, doing the initial ground work to be followed up by the distributor's sales force, and providing him with useful marketing information - rather than just trying to sell. The role of the manufacturer, in these circumstances, will then rightly be selling through, rather than just to, the distributors.

Control over distributors is exercised, in the first place only indirectly, by having an adequate selection process of distributors, Having selected the distributors, further control is exercised by evaluating their performance, and where necessary, by providing adequate means of motivation. The greater the role of distributors in the manufacturer's ultimate marketing success, the more rigorous would be the selection process, the more stringent the performance evaluation and the more important the provision of means of motivation. All these factors, including the conditions which lead to the selection of distributors, and the criteria used in giving margins and discounts for distributors (a form of motivation) warrant individual discussion.

CONDITIONS FOR SELECTION

The circumstances which arise in the selection of distributors are identified as follows:-

1) new marketing effort,

2) inadequate market coverage,

3) change in distributive process, and

4) outlet turn-over.

New marketing effort. When the manufacturer expands his activities into new geographical areas, new markets or industries, he must have outlets for his products, and the marketing success will depend on the effectiveness of the distributors selected. New distributors may also be required when the manufacturer introduces new products, and the existing distributors are not in a position to market them because either the products do not fit in logically with the type of industry or market covered by the distributor, or because the distributor has been marketing similar products from the manufacturer's competitor.

Inadequate market coverage. The manufacturer may find that the existing distributors do not provide adequate market coverage for his products, and hence the need arises for more distributors. Or perhaps the growth of the market, and the geographical scatter of the market for the product demands an increase in the number of existing distributors to tap the potential volume of business available. (This does not necessarily imply packing of the territory by distributors; before appointing new or more distributors in an area, the manufacturer may consult or inform his existing distributors in that area, in order to maintain good relations with them).

Changes in the distributive process. The manufacturer may change the system of distribution for his products, say, from direct selling to customers to selling through the distributors. Alternatively, the

function of existing distributors may have changed. Also, the manufacturer may decide to change over from functional distributors to specialized distributors or vice-versa.

Outlet turnover. This arises when the inadequate performance of the existing distributors compels the manufacturer to look for new distributors. It could also arise where two or more distributors merge, and while previously they were carrying similar lines from competing manufacturers, they can now take lines from only one manufacturer. Again, it will arise where the distributor closes down his business and the manufacturer has to find a replacement to carry his products.

SELECTION PROCESS

The prospective distributors are initially screened and short-listed for subsequent selection. The screening process can be done through several sources, but the most important and most widely used is the reports and recommendations from a field sales force. Often, one of the important tasks of a field sales force is to be on the lookout for new distributors, where there is no specific individual or department to perform this function for the manufacturer. Other sources used for screening are the information from trade sources, from reseller inquiries, from distributors' customers, from chambers of commerce, banks, classified directories, etc. and the results from direct mail solicitations and campaigns.

The criteria for selection of distributors will vary from manufacturer to manufacturer, but in general, the key attributes sought for in the prospective distributor are as follows:-

a) Management Ability. This surely must be the most important attribute because every other attribute of the distributor, to a large extent, is dependent upon it. However, it will be appreciated that this key attribute is not easily assessable within the short period of time in which the manufacturer gets to know the distributor. For this reason, attention must be directed to other attributes as well.

b) Creditworthiness and financial strength. This is necessary in order to ensure continuity and growth of the distributor. He must be in a postion to extend lines of credit to worthy customers. The manufacturer may even ask for credit references, for information on operations, balance sheets, etc. from the prospective distributors, or seek assistance from certain organizations which provide credit ratings on firms.

c) Distributor sales strength. This refers to the number of salesmen the distributor employs, the specific industry he does business with, the sales and technical competence of the sales force, i.e. whether they are skilled professionals or simply order-takers.

d) Distributor product lines. The certainty that the distributor does not carry competitor's products may be of interest to the manufacturer. The manufacturer may prefer a distributor who carries complementary and compatible lines including products which match the manufacturer's products in terms of quality.

e) Sales performance. Past performance of the distributor on the lines he has been carrying, particularly those which have a relationship to the manufacturer's lines would be a useful guide to the manufacturer in estimating the future performance of the distributor.

f) Size of Distributor. Some manufacturers may want to have distributors who are well-established in the business. Others may prefer a young and dynamic distributor.

g) Market coverage. Because the manufacturers establish the area for distribution on the basis of industrial coverage or geographical coverage, it is necessary to know the industry or the geographic area covered by the distributor.

h) Attitudes of Distributor's staff. It will be of little help to the manufacturer if the distributor meets all the key requirements but the basic attitude of the distributor's staff is not favourable towards the manufacturer's products.

The manufacturer may make use of a form to assist selection. When well-designed, the selection form could yield comprehensive information which would facilitate comparison between several candidates, minimize personal bias in selection, and ensure that no factor of major importance to the manufacturer is overlooked. However, personal judgement has to be exercised in making the decision to select, and a form, however well-designed, is no substitute for, but can usefully aid that judgement.

Where there is no separate organisation to deal with distribution, the authority for selection of distributors must be vested with the marketing executives, as distribution is a part of marketing activity. The greater the importance of the distributors to the manufacturer, the higher the position in the organization hierarchy of the marketing executive vested with the final authority. But the selection of the distributors by executive at lower levels, say regional manager, has some advantages. Being on the spot, and provided he has the capacity, he is in a better position to exercise personal judgement - and after selection, it is he who has to 'live' with the distributor.

EVALUATION OF PERFORMANCE

The fundamental thing in evaluation of performance is to establish standards of performance and then develop methods to evaluate performance against these standards.

There are two types of evaluation, though they are not exclusive of each other. One is the current operating appraisal and the other is the overall performance review.

Current operating appraisal is a short-term or continuous appraisal of distributors' operations carried out by the manufacturerfrom his own record of sales to the distributor, and from the sales analysis or reports contributed by the manufacturer's sales force to the head office. Needless to say, this is almost the situation where the distributor is an extension of the manufacturer's field sales organisation.

The overall performance review is a long-term evaluation and in addition to the distributor's overall sales performance over a period, includes other factors such as information on market conditions, competitors, customers, etc. which the manufacturer expects from the distributors. The scope and the frequency of evaluation depends upon the degree of control or co-operation existing between the two parties, the relative importance of the distributor to the manufacturer and the type of product. The more sophisticated the product and its application, the more comprehensive the inquiry in assessing performance; say, a high volume, low cost item with no after sales service would involve relatively limited evaluation and vice-versa. In situations where the gain or loss of a single order is important, the evaluation of performance will be stringent; and the number of re-sellers the manufacturer has to sell his products to will also determine the scope and frequency of evaluation.

One of the most valid criteria for performance evaluation would be the distributor's performance measured against the salestarget allocated to him, but a major difficulty lies in determining the sales target to be allocated, or the market potential on which the sales target is often based. Other criteria are the performance measured against:-

1) past performance for a similar period, or
2) other distributors' performances and their respective sales potential for their respective areas.

More criteria are:-

1) the information from customers' reports,
2) the success achieved by the distributor in following-up customer inquiries,
3) new OEM and other accounts uncovered by distributor's sales force,
4) the interest shown by the distributor, or
5) even the progress of the competitors' distributors.

Whatever the criteria used in the evaluation of perfofmance, there must be two important elements present; firstly the evaluation must include every task expected of the distributor, weighted in proportion to the degree of priority, and secondly the distributor must be aware of the criteria used in his performance evaluation. In many instances a standard form for performance evaluation is very useful indeed, and besides bringing a certain degree of objective appraisal in evaluation, would permit evaluation 'by exception' particularly where the objectives are quantified.

MOTIVATION

Having selected the distributors, it is the task of the manufacturer to motivate them, in order that the distributors achieve the desired performance.

Motivation can be provided by two forms of incentives, material and psychological; which are not necessarily exclusive - and one can often reinforce the other.

Material incentives means the offer of greater margins, better financial terms in the form of discounts on cumulative orders and for prompt payment. Threat of cancellation of distributionship is also a form of this type of incentive; it is a deprivation of material benefits.

Psychological incentives are provided by such means as the invitation and red carpet welcome from the manufacturer, special treatment and fair and prompt dealings between the manufacturer and the distributor. The interest and participation of the manufacturer into the needs and problems of the distributor are motivators which enter this category.

Technical and managerial assistance, advertisements and other forms of sales promotion from the manufacturer provide both types of incentives. A material incentive, such as fair financial terms can be construed as a genuine interest of the manufacturer in the needs of the distributor and act as a psychological form of incentive.

While the need for financial incentives cannot be ignored, particularly because of the price sensitivity of industrial goods at distributor level, it is often believed that purely additional financial incentives have a strange effect of producing only temporary improvements in performance. The advantages which the manufacturer expects by a cancellation of distributionship must always be weighed against both the long-term and the short-term costs of changing to a new distributor.

Any special terms or treatment given to the distributor must be weighed against the long term effects and consequences.

Whatever the means used to motivate the distributors, the yardstick to measure its effectiveness is the performance achieved against the performance desired.

MARGINS

The major factors which apparently determine the margins for the distributors are:-

1) the existing practice in the industry,
2) the margin given by the competing manufacturers and
3) the degree of importance of the distributor to the manufacturer.

Such a system of establishing margins for distributors does not give due consideration to the costs involved by the distributor in selling, storage etc. of products. A case in point was the effect of devaluation of sterling which resulted in increased costs of manufacture of some products. The traditional or conventional method of giving a specific percentage margin to distributors would result in increased net profit for the distributor per item of product sold, without the distributor being involved in any additional costs. Another case is where some items in a product line sell faster than others and which in turn draw greater effort from the distributor towards the faster selling items. This implies that the margins on these items are too high and do not take into consideration that rate of turnover on these items.

The National Board of Prices and Incomes compiled a report in February 1968, after interviewing 160 manufacturers in various (but principally in consumer-goods) industries - including photographic films, motor acessories, petrol and oil, paint, and hand tools - on margins to distributors. It was found that the conventional method of giving margins (i.e. a percentage of the recommended retail selling price or adding a percentage to the manufacturer's ex-factory price) had remained unaltered where the cost of manufacture of the product had increased because of devaluation. The report concluded: "In general, therefore, we recommend that manufacturers, when increasing recommended

prices to the final consumer because of devaluation, should reduce the percentage margin traditionally allowed to distributors".

If "distributors" is intended to include wholesalers (which the report obviously does) then the P. & I. Board report apparently overlooked the fact that an increase in price of goods from the manufacturer increased the invested capital of the wholesaler. Surely the margin for the distributor covers not only his costs of selling, storage of product, etc. but also his investment and the associated risks (or obsolescence, loss, damage, etc.) involved. Therefore, though it is not proper for the distributor to receive or claim a constant percentage margin in the above circumstances (i.e. due to the effects of devaluation), none of the calculations or tables included in the report provide guidance on how a revised percentage margin should be arrived at.

At the risk of labouring the obvious, the margins should be arrived at on each individual product or at least, on each product line, after taking into full consideration:-

1) the distributor's operating and promotional costs,
2) the demand for the product or rate of turn-over,
3) the distributor's investment, and
4) the risks carried by the distributor.

Consideration must also be given where the distributor provides useful marketing information and/or additional service to the manufacturer, and where the former's reputation is an asset to the manufactufer.

Industfial goods are said to begenerally sensitive to price at distributor level, thus a change in percentage margin to a distributor could result in the latter stocking a competitor's lines. Therefore, the recommended method of giving margins has only a hope of being successfully implemented where there is good co-operation, understanding

and fairness between manufacturer and distributor. Perhaps there is hope for this method when tackled on a wider front - at the level of manufacturers' and distributors' associations - without incurring the displeasure of the restrictive trade practices section.

DISCOUNT STRUCTURE

There are four kinds of discounts offered by the manufacturer to his customers; quantity, cumulative, prompt payment and trade discounts. Of these, only the quantity discount is a part of the physical distribution system.

Quantity discount. The criterion to be applied in offering this discount is the benefit which will accrue to the distributor and to the manufacturer, if the latter can induce the former to increase his order or batch size. Crowther in 'Rationale for Quantity Discounts' and Taylor in 'New Developments in Pricing Strategy' have provided some interesting information.

Crowther discusses the cost to the buyer and to the seller on every order placed and then goes to show that the larger the order, the lower are the seller's costs and the greater (but not in proportion) are the buyer's costs. He then goes on to suggest that splitting of the savings by the seller with the buyer would be mutually beneficial. A summary of his analysis is reproduced here:-

For the Buyer

1. Cost of placing orders per year = $A \times \frac{D}{Q}$

2. Cost of storage per year = $\frac{Q}{2} \times C \times I$

Where A is the cost of placing an order (clerical work etc.)

D is the annual demand of goods

Q is the size of the batch or order

C is the cost of unit product

I is the interest rate and other cost elements

Yearly Total Cost = $\left(\frac{Q}{2} \times C \times I + A \times \frac{D}{Q}\right)$

and for this cost to be a minimum, $\frac{Q}{2} \times C \times I = A \times \frac{D}{Q}$

$\therefore$ Economic Order Quantity = $\sqrt{\frac{2 \times A \times D}{C \times I}}$

For the Seller

Assume that the costs for processing the order obtained are the same as those of the buyer, i.e. $A \times \frac{D}{Q}$

Now comes the important factor of gain for the seller. It is more advantageous for the seller to have 1 order per year than 2 half orders. Similarly, it is better to have 2 half orders in one year than to have $\frac{1}{3}$ of total supply every 4 months.

The advantage to the seller is the profit he makes on these orders wellin advance and the interest he acquires on the profit made.

$\therefore$ Seller's gain = $P \times \frac{Q}{2} \times C \times I$, where P is the %profit.

Total cost to seller = $\left(A \times \frac{D}{Q} - P \times \frac{Q}{2} \times C \times I\right)$

While cost to the seller decreases with a larger order from the buyer, costs to the latter increase when the order is greater than EOQ (the economic order quantity). But, according to Crowther, it is a net decrease in total costs to the buyer and the seller. Therefore, the way to induce the buyer to take larger orders less frequently is for the seller to part with his share or to share his reduction in costs with the buyer by giving larger quantity discount.

Crowther has apparently overlooked three factors:-

1) one of the functions of the wholesaler is to free the working capital of the seller/manufacturer, i.e. to part-finance production,
2) too large an order size from many quarters simultaneously will upset the production schedule of the manufacturer, and
3) the analysis does not take into account the effective cost of a stock-out, loss of customer good-will resulting from delays in delivery, etc.

Taylor approached quantity discounts on the basis of the costs incurred by the manufacturer in servicing a distributor's account and

this seems a more effective approach to be adopted by the manufacturer (Figs. 4, 5 and 6).

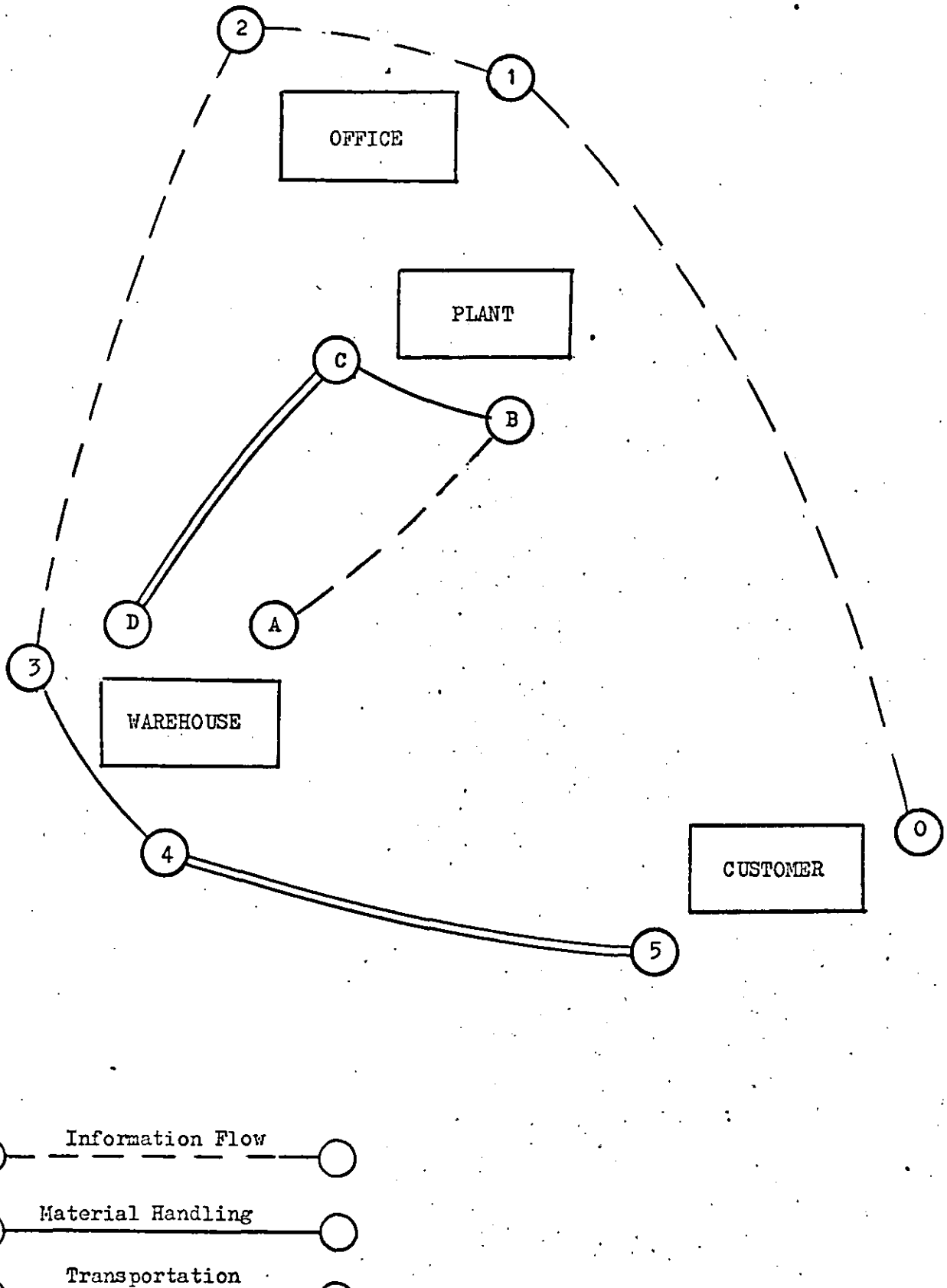
It is obvious, therefore, that the quantity discount schedule should be arrived at after making empirical studies, where each manufacturer analyses his costs for servicing the distributors.

Cumulative Discount. This is really a patronage discount offered by the manufacturer to discourage the buyer from buying competitors products, and thus tying the buyer to the manufacturer's products by means of financial incentives.

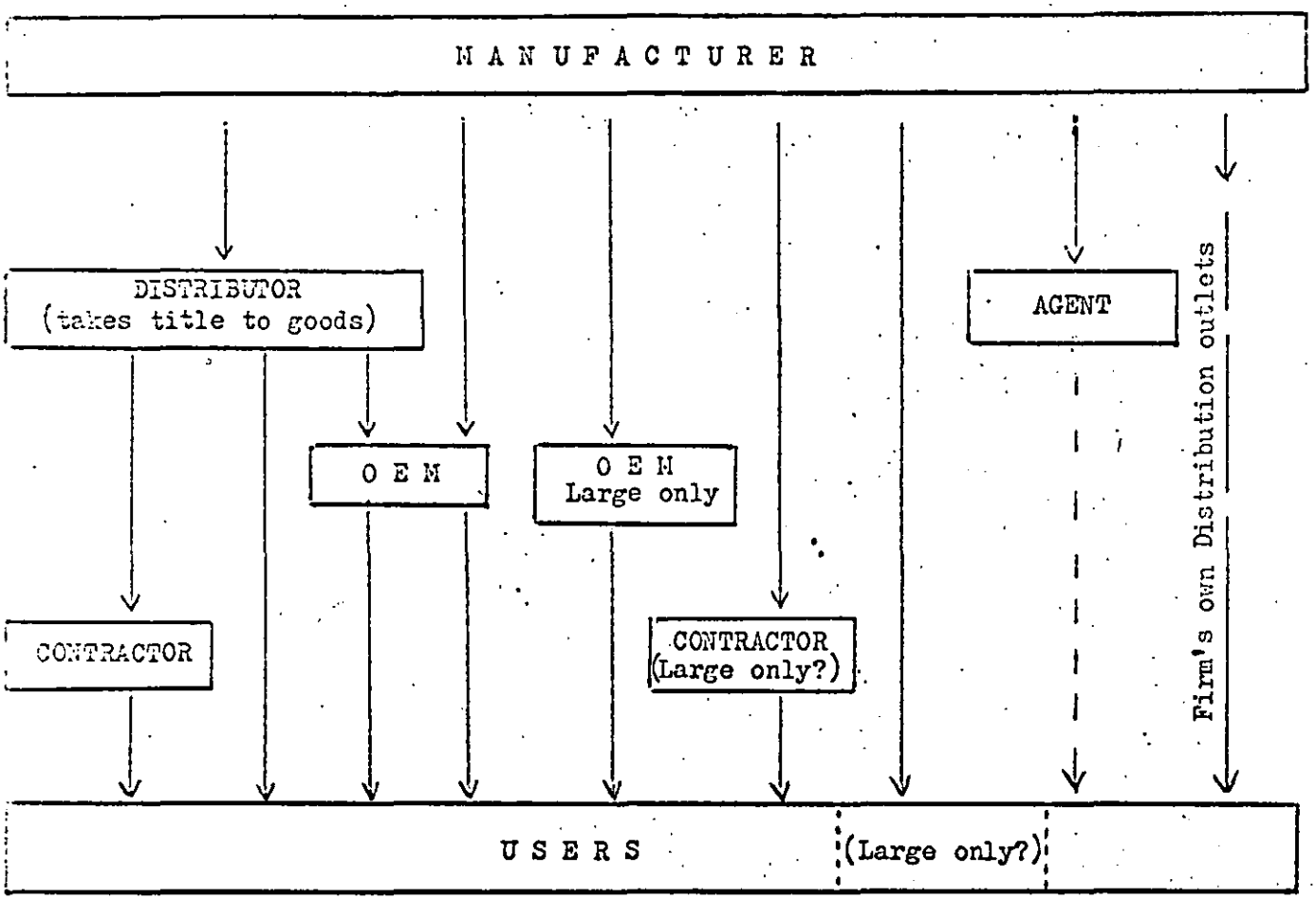
Prompt Payment Discount. Where such discounts are offered by the manufacturer, to be of sufficient inducement they should be not less than the interest rate which the manufacturer would have to pay for borrowing sums for his working capital - say, the interest rate on an overdraft. The advantage to the manufacturer in offering such discounts is the reduction in credit risk and in the costs of sending invoices and overdue notices. Also from the manufacturer's point of view, it is an extra inducement for the distributor to sell the products which have already been paid for.

Trade Discount. These are given in payment for the marketing function which the buyers are expected or presumed to perform for or on behalf of the manufacturer.

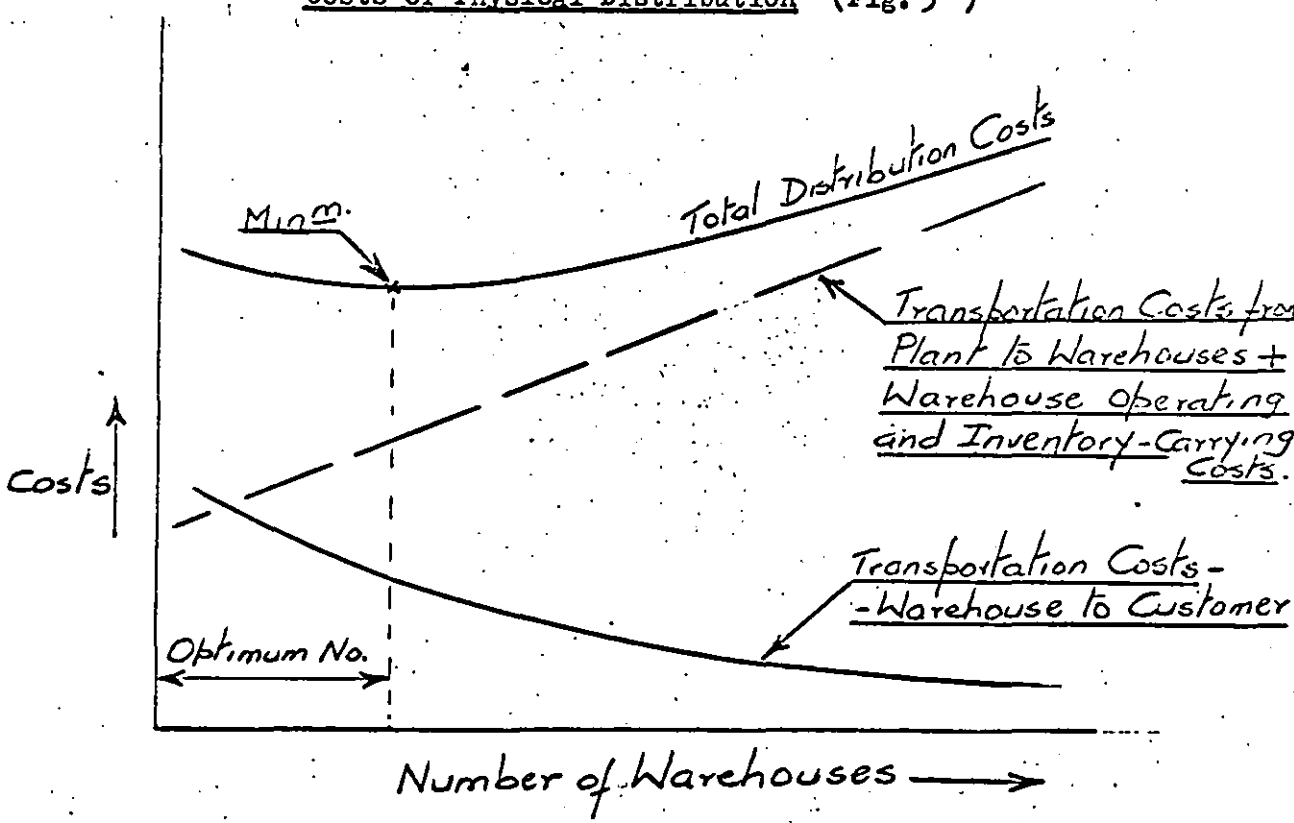
PHYSICAL DISTRIBUTION SYSTEM (Fig.1)



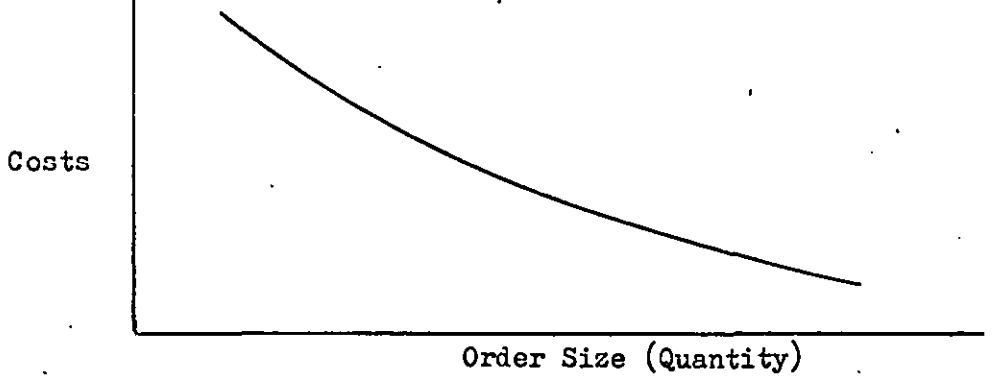
Channels of Distribution (Fig. 2)



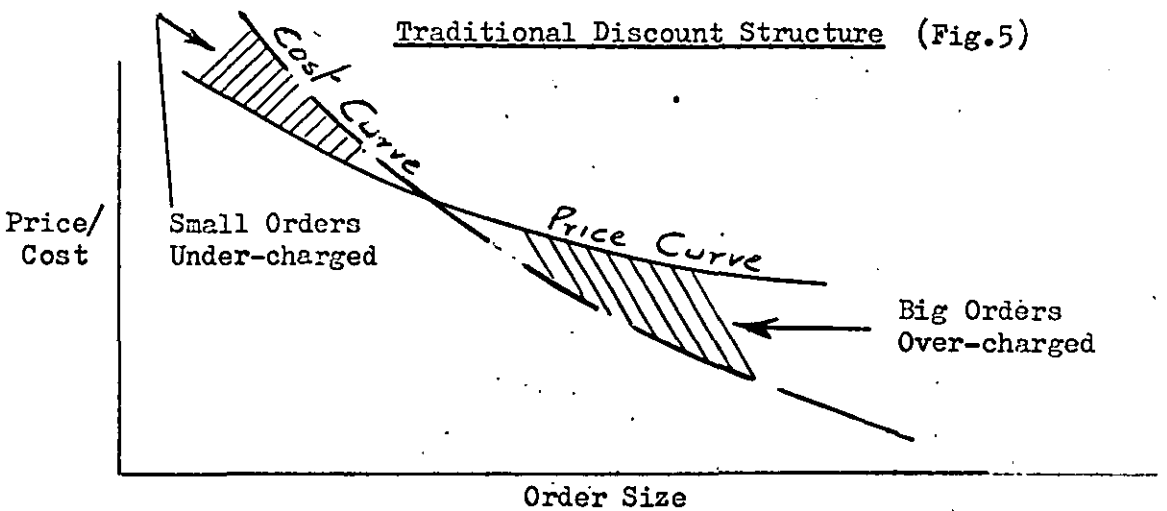
Costs of Physical Distribution (Fig. 3)



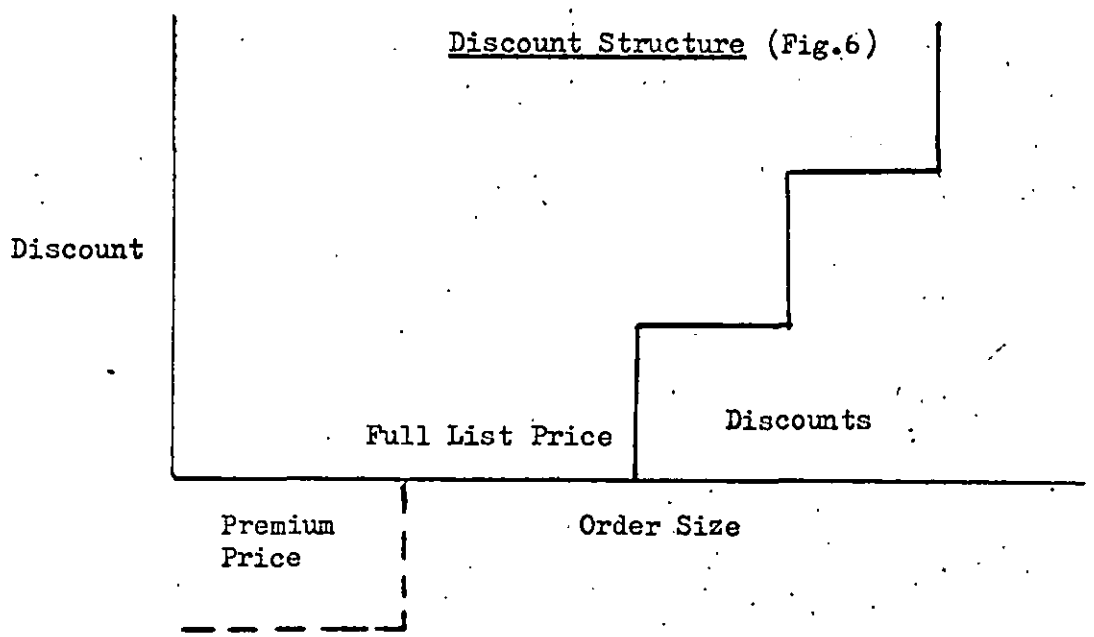
Distribution Costs Related to Order Size (Fig.4)



Traditional Discount Structure (Fig.5)



Discount Structure (Fig.6)



APPENDIX II

PRICING GOALS OF TWENTY LARGE INDUSTRIAL CORPORATIONS

Company	Principal Pricing Goal	Collateral Pricing Goals	Rate of Return on Investment (After Taxes) 1947 Avg.	1955 a Range	Average Market Share b
Alcoa	20% on investment (before taxes); higher on new products (about 10% effective rate after taxes)	(a) "Promotive" policy on new products (b) Price stabilization	13.8	7.8-18.7	Pig & ingot, 37; sheet, 46%; oth fabrication, 62
American Can	Maintenance of market share	(a) "Meeting" competition (using cost of substitute product to determine price) (b) Price stabilization	11.6	9.6-14.7	Approx. 55% of types of cans.d
A & P	Increasing market share	"General promotive" (low-margin policy)	13.0	9.7-18.8	n.a.
du Pont	Target return on investment - no specific figure given	(a) Charging what traffic will bear over long run (b) Maximum return for new products - "life cycle" pricing	25.9	19.6-34.1	n.a.
Esso (Standard Oil of N.J.)	"Fair-return" target - no specific figure given	(a) Maintaining market share (b) Price stabilization	16.0	12.0-18.9	n.a.
General Electric	20% on investment (after taxes); 7% on sales (after taxes)	(a) Promotive policy on new products (b) Price stabilization on nationally advertised products	21.4	18.4-26.6	- e
General Foods	33⅓% gross margin: ("⅓ to make, ⅓ to sell, and ½ for profit") expectation of realising target only on new products	(a) Full line of food products and novelties (b) Maintaining market share	12.2	8.9-15.7	n.a.

Company	Principal Pricing Goal	Collateral Pricing Goals	Rate of Return on Investment (After Taxes) 1947 - 1955 Avg.	Range	Average Market Share
General Motors	20% on investment (after taxes)	Maintaining market share	26.0	19.9 37.0	50% of passenger automobiles f
Goodyear	"Meeting competitors"	(a) Maintain "position" (b) Price stabilization	13.3	9.2-16.1	n.a.
Gulf	Follow price of most important marketer in each area	(a) Maintain market share (b) Price stabilization	12.6	10.7-16.7	n.a.
International Harvester	10% on investment (after taxes)	Market share; ceiling of "less than a dominant share of any market"	8.9	4.9-11.9	Farm tractors 28 30%; combines, cornpickers, tractor, plows, cultivators, mowers, 20-30%; cotton pickers, 65%; light and light-heavy truc 5-18%; medium-heavy to heavy-heavy, 12-30%
Johns-Manville	Return on investment greater than last 15-year average (about 15% after taxes); higher target for new products	(a) Market share not greater than 20% (b) Stabilization of prices	14.9	10.7-19.6	n.a.
Kennecott	Stabilisation of		16.0	9.3-20.9	n.a.
Kroger	Maintaining market share	Target return of 20% on investment before taxes g	12.1	9.7-16.1	n.a.
National Steel	Matching the market - price follower	Increase market share	12.1	7.0-17.4	5%

Company	Principal Pricing Goal	Collateral Pricing Goals	Rate of Return on Investment (After Taxes) 1947 - 1955 Avg.	Rate of Return on Investment (After Taxes) 1947 - 1955 Range	Average Market Share
Sears Roebuck	Increasing market share (8-10% regarded as satisfactory share)	(a) Realisation of traditional return on investment of 10-15% (after taxes) (b) General promotive (low margin) policy	5.4	1.6 10.7	5-10% average (twice as large share in hard goods v. soft goods)
Standard Oil (Indiana)	Maintain market share	(a) Stabilize prices (b) Target-return on investment (none specified)	10.4	7.9-14.4	n.a.
Swift	Maintenance of market share in livestock buying and meat packing		6.9	3.9-11.1	Approx. 10% nationally [h]
Union Carbide	Target return on investment [i]	Promotive policy on new products; "life cycle" pricing on chemicals generally	19.2	13.5 24.3	- [j]
U.S. Steel	8% on investment (after taxes)	(a) Target market share of 30% (b) Stable price (c) Stable margin	10.3	7.6-14.8	Ingots and steel 30%; blast furnaces, 34%; finished hot-rolled products, 35%; other steel mill products, 37%.[k]

a Federal Trade Commission, Rates of Return (After Taxes) for Identical Companies in Selected Manufacturing Industries, 1940, 1947, 1955 Washington (1957), pp. 28-30, except for the following companies whose rates were computed by the author using the methods outlined in the Commission Report: A. & P, General Foods, Gulf, International Harvester, Kroger, National Steel, Sears Roebuck, and Swift.

b As of 1955, unless otherwise indicated. Source of data is company mentioned unless noted otherwise.

c U.S. v Alcoa et al., "Stipulation Concerning Extension of Tables III-X", dated May 31, 1956, U.S. District Court for the Southern District of New York.

d As of 1939, U.S. Department of Justice, Western Steel Plants and the Tin Plate Industry, 79th Cong., 1st Sess., Doc. No.95 p.L 1.

e The company states that on the average it aims at not more than 22 to 25 per cent of any given market. Percentages for individual markets or products were not made available, but it is estimated that in some markets, e.g. electrical turbines, General Electric has 60 per cent of the total market. Cf. Standard and Poor's Industry Surveys, "Electrical-Electronic Basic Analysis", Aug. 9 1956 p. E21.

f Federal Trade Commission, Industrial Concentration and Product Diversificatior in the 1000 Largest Manufacturing Companies; 1950, Washington, Jan.1957 p.113.

g Target return on investment evidently characterizes company policy as much as target market share. In making investment decisions the company is quoted as follows: "The Kroger Co., normally expected a return on investment of at least 20% before taxes." See McNair, Burnham and Hersum, Cases in Retail Management, New York 1957, pp 205 ff.

h This represents the average share of total industry shipments of the four largest firms in 1954. Cf. Concentration in American Industry, Report of Subcommittee on the Judiciary, U.S. Senate, 85th Cong., 1st Sess., Washington 1957, p.315.

i In discussions with management officials various profit-return figures were mentioned, with considerable variation among divisions of the company. No official profit target percentage was given, but the author estimates the average profit objective for the corporation to be approximately 35% before taxes, or an effective rate after taxes of about 18%.

j Chemicals account for 30% of Carbide's sales, most of which are petro-chemicals, a field that the company opened thirty years ago and still dominates; plastics account for 18% - the company sells 40% of the two most important plastics (vinyl and polyethylene); allows and metals account for 26% of sales - top U.S. supplier of ferroalloys (e.g. chrome, silicon, manganese), and the biggest U.S. titanium producer; gases account for 14% of sales - estimated to sell 50% of oxygen in the U.S.; carbon, electrodes, and batteries account for 12% of sales - leading U.S. producer of electrodes, refractory carbon, and flashlights and batteries; and miscellaneous - leading operator of atomic energy plants, a leading producer of uranium, the largest U.S. producer of tungsten, and a major supplier of vanadium. Cf. "Union Carbide Enriches the Formula," Fortune, Feb.1957, pp 123 ff; Standards and Poor's Industry Surveys, "Chemicals - Basic Analysis," Dec.20, 1956, p. C44; and "Annual Report for 1955 of the Union Carbide and Carbon Corporation.

k The range of the corporation's capacity as a percentage of total industry capacity varies from 15% to 54%, as of January 1957. For more details see Administered Prices, Hearings Before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 85th Cong., 1st Sess., Pt.2 Steel, Washington 1958, pp 335-36.

APPENDIX III

The producers of Industrial goods stressed the product facet of competitive strategy.

Two of the policy areas listed in the marketing management study pertain directly to the product - product research and development, and product service. (Product service refers to those activities performed by a manufacturer is the attempt to gurantee that a product gives satisfactory performance to its users.)

Policy Areas Selected by Industrial Goods Producers

Policy Areas	% of Firms Selecting the Policy Area
Product:	
Product research and development	79
Product service	79
Average product selection ratio	79
Sales Efforts:	
Sales research and sales planning	63
Management of sales personnel	49
Advertising and sales promotion	37
Average sales efforts selection ratio	50
Pricing	47
Other Areas:	
Organizational Structure	50
Distrinution channels and their control	34
Financing and credit	18
Marketing cost budgeting and control	12
Transporting and storage	9
Public relations	7

From: 'How Improtant is Pricing in Competitive Strategy' by Udell J. G. (Journal of Marketing, January 1964)

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