FUNCTIONS OF SEED MARKETING

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Because good seed of superior varieties must be used by many farmers to impact agricultural productivity, the focal point of seed marketing is upon the user - farmer - rather than the product - seed. The establishment of a program that is effective in bringing together the product and consumer, marketing, is one of the most challenging tasks of a seed program.

The establishment of a successful marketing program requires personnel with specialized training and expertise which are not normally a part of the background of agricultural technicians responsible for the other phases of the seed program. Because of the interface between the marketing phase and the consumer, personnel assigned to the marketing program should have an effective knowledge of human relations, communications, marketing techniques, logistics, and business management. The failure to appreciate the differences between the technical requirements for varietal development, production and regulation and those of the marketing phase is the reason for an estimated 90% of the seed enterprise failures in the more developed countries.

If marketing is so different, what are the functions of seed marketing? It is a continuous and systematic: (1) determination of consumer needs, (2) accumulation of the seed and services to satisfy these needs, (3) communication of information to potential consumers about the seed and services available and from the consumers concerning the results of having used the seed and services, and (4) distribution of seed to the consumers. Fulfilling the responsibilities of these four functions of seed marketing requires specialized training and expertise.

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seed marketing require year around action by managers of a successful seed program. A fifth factor, pricing, is a concern of not only marketing managers but the entire seed operation. The components of pricing are also discussed.

A. Functions of Seed Marketing

The definition of seed marketing given above clearly identifies this activity's four major functions; determination, accumulation, communication, and distribution. Each of these functions, as they relate both to the farmer-consumer and the other technical activities of production and processing, will be discussed.


The perceived demand and the real demand for seed are not the same. Frequently, the originator of a new variety, information and promotion personnel, and administrators establish a perceived demand for seed without sufficient reliable information. When seed production is undertaken without an unbiased assessment of real demand, serious overproduction or underproduction can result. Seed enterprises, other seed sellers, and governments need information provided by seed market research to plan and implement effective seed programs.

Market research is the systematic gathering of information concerning (a) the consumer's needs, desires, and buying habits; (b) the numbers of potential consumers with the needed buying power, and (c) the alternatives available to each of the potential consumers. The information gathered through market research activities is analyzed to predict current and future needs of the consumers and the organizational activities necessary to meet their needs. Every successful seller whether
at a local market or with a multinational corporation, continuously conducts market research.

The ultimate purpose of market research is to establish a realistic, specified set of goals or sales estimates. Having established the sales estimates, planning for accumulation of stocks, communication and promotion, means of distribution, and the budget for each activity is based upon attaining the goals. The primary goal of each organization marketing seed might be expressed as follows: "To sell "$X" tons of seed of varieties A, B, and C". The success of both the production and marketing phases depends upon the accuracy of the sales estimates.

a. Market Demand

Market demand is the total volume of a product class which will be bought by consumers using specific technology in a defined location, within a specified time period, and with a certain marketing effort. This definition places restrictions upon the concept of market demand. These restrictions are:

(1) Product Class - refers to the specific item for which the demand is determined i.e. crop, variety and quality level of the seed. For example, a difference exists between the demand for all seed as compared to the demand for Certified Seed. Applying the demand relationship for all seed to sales estimates for Certified seed leads to serious overproduction of certified seed.

(2) Bought - refers to the desires of the consumer who will pay for the seed. In marketing, nothing happens until the consumer buys the seed. In this paper, the word "buy" implies an exchange of goods, services or cash, not simply cash, in exchange for seed.
(3) Technology - dictates that the concept of demand must consider the situation in which the seed will be used. For example, changes in demand for seed of one variety may occur because of the availability of newer varieties, other inputs or other technical advances.

(4) Location - imparts a geographic dimension to the concept of demand and contains the assumption that demand for the product class will vary geographically. Varieties that are popular in one zone may have little consumer appeal in other areas. Demand is specific for each location.

(5) Time period - relates to the length of time that an effective demand will exist. The dates for planting some improved varieties or new crops may be restricted when compared with older varieties or other crops. Rainfall and temperature patterns establish the range in days that crops can be planted or grown with success in many areas.

(6) Marketing effort - recognizes the fact that market demand can be influenced by promotion campaigns, distribution efforts, and price. Practically stated, farmers only buy a variety of seed when they know the variety exists, seed are available, they have the resources to buy the seed, and they believe the variety will benefit their operations.

b. Forecasting Market Demand

Forecasting market demand for individual seed enterprises takes three forms, each having a common base--people. What people say, do, and have done form the bases of estimating the real demand for seed.

(1) What people say.

The methods used to determine the demand forecast from what people say are: (a) a survey of buyers intentions, (b) the composite opinion of
the seed dealers, and (c) the "expert" opinion.

Since buyers actions are what a demand forecast attempts to measure, one method is to ask the potential buyers. Buyer surveys identify all or a portion of the known and potential buyers and each is asked directly about his or her intentions. This method is practical for a farmer-seed grower who sells to his neighbors, other retail seed dealers and seed wholesalers.

The composite opinion of seed dealers for making demand estimates is based upon judgment of what each dealer believes can be sold in his local area. This method readily provides estimates separated into the kinds and varieties of seed, the time they are needed, the area of use, customer characteristics, and level of marketing effort—the components of market demand. Seed dealers have more knowledge and insight of the real market conditions than any other small group. Because marketing personnel (dealers) participate in this forecasting process, they have greater confidence in the estimates and this increases their incentive to make the estimates, realities.

Utilization of this technique during the early stages of a seed program's development depends on the extent to which: (a) the marketing personnel are the most knowledgeable source of information and are willing to cooperate, (b) the estimates are unbiased or biases can be corrected, and (c) the personnel involved recognize the need for forecasts.

The "expert opinion" method works only after marketing activities and organizations specializing in public opinion surveys are well developed. It is essentially a poll of informed people which uses few
facts, places little responsibility on the estimator and is most reli­able when used for forecasting total needs rather than those of indi­vidual operations. This method is best used to determine trends in crop acreage and yield levels. Unfortunately, it is the method most often used for establishing specific goals in developing seed programs since more reliable data are rarely available.

(2) What people do.

The test of what people do is a most useful technique applicable to demand estimates for services. This method measures buyer reaction under actual marketing conditions. Its primary utility rests with the acceptability of the seed or service to be marketed rather than the kind or variety of seed. For example, market tests may be conducted to determine consumer preference for (a) type of container i.e. paper bag or plastic bag, (b) unsized verses size graded maize seed or (c) en­closing seed treatment materials in each bag.

(3) What people have done.

This method is based primarily upon historical data and is the most widely used method for forecasting demand by established seed enter­prices. It is not applicable for a beginning seed program or operation, but it becomes increasingly useful as the background data are accumu­lated.

Two techniques are used to develop forecasts from data of past performance--time series analysis and statistical demand analysis.

In a time series analysis it is assumed that what people have done in the past is an expression of what they will do in the future. In the most simple form, this analysis requires that at the end of each selling
season someone determine the actual quantity of each kind, variety and quality class of seed sold. This information can be accumulated from sales invoices or inventory records. After data from three or four years of sales has been accumulated it is relatively easy to determine the trend for each kind, variety and seed class. Two major limitations weaken the reliability of this technique: availability of historical data and the high probability of change when new varieties are introduced.

Statistical demand analysis attempts to determine the direct relationship between use and the components of market demand. This technique can identify the relationships among the various demand factors, i.e. "What effect will the introduction of a new variety at a higher price have on the use of the current variety?" It is centered around a statistical technique called regression analysis. A major advantage of this method is that it will predict the probability of occurrence, i.e. sales of variety "A" will be 5,000 kgs, and the probable error from the estimate will be provided i.e. total sales of variety "A" may vary by 1000 kgs.

Indiscriminate use of this technique can lead to problems because of known statistical limitations. To be effective as a forecasting tool, a reliable, quantifiable pool of data concerning each demand factor must exist. Because of the large amounts of data required for analysis, a computer is almost a requirement for the development of timely estimates using this method. The primary application of this method relates to larger, well organized companies or marketing groups rather than to the needs of smaller, individual seed enterprises.
c. Use of the Demand Forecast.

Everyone responsible for producing or marketing seed needs reasonably accurate forecasts of the seed demand by varieties for planning purposes. During the initial five to ten years of operation, demand forecasts are most accurately determined by one of the techniques described under the method, "What people say".

Persons selling seed, informally and continually, survey the consumers buying intentions and accumulate stocks to supply their needs. Independent seed dealers who have several sources of supply can be effective by forecasting their needs a few days or weeks ahead of the actual sale. On the other hand, seed marketing groups and individuals closely linked to the production phase must make demand estimates at least one season ahead of the planned sale. The longer range forecasts are generally less accurate. Effective organizations, selling in more than one locality, tend to develop more intensive and formal means of making the demand forecast to minimize risks.

When competition among sellers exists at the retail level, the importance and needed accuracy of the demand estimate increases as each of the competitors attempts to gain an increasing percentage of the market. A gross under- or over-estimate of either the demand or sales will quickly eliminate the poorer estimator when total seed supplies are adequate. Demand estimates are assigned a lesser importance when a public or private monopoly exists. However, this lack of competition often results in decreased efficiency of marketing operations.

The demand forecast should indicate what kinds, varieties and seed classes are in demand, how much, where, by whom, when, and at what price
the demand exists. With this information it is possible to organize production and marketing simultaneously and provide specific answers to the following questions:

a. What varieties to produce?  
g. What to promote?
b. Where to produce?  
h. How to promote?
c. How much to produce?  
i. When to distribute?
d. When to produce?  
j. How to distribute?
e. Where to store?  
k. At what price to sell?
f. How much to store?

Both the production and marketing phases of seed operations are necessary. Initially, the production phase activities must receive priority since seed must be available before they can be marketed. A major responsibility of the leadership in seed enterprises is to determine when and how rapidly emphasis is shifted toward marketing activities. Market research is an effective tool when these decisions are made.

II. Accumulation of Seed Supplies:

The second major function of seed marketing is to determine where, how much, and by whom the estimated quantity of seed to be sold can be obtained. Only Certified and other commercial seed planted for crop production are considered in this discussion. Two sources of seed exist.

(a) Seed produced by the seed enterprise to which a marketing section belongs, or

(b) Seed produced by or imported from suppliers not associated with the marketing group.
Marketing often involves a combination of these two sources of supply depending upon the crops involved.

a. Production and Marketing within a Seed Enterprise.

There are several different organizational infrastructures which include both production and marketing activities within the same organization. Whether private enterprises with their own research, private enterprises with governmental assistance, enterprises owned jointly by public and private sector, or totally owned and controlled public sector enterprises, each could have seed production and marketing units. Under these situations, the accumulation of stocks rests primarily with the production section. However, the marketing section needs to communicate anticipated requirements - kind, variety, quantity, and quality of seed needed - to the production section sufficiently in advance of the production season to permit the seed to be produced and prepared for marketing. As the seed are made ready for marketing, the production section must inform the marketing section of the exact quantity and quality of each variety available.

An effective internal communication system between the production and marketing sections is essential to all seed enterprises - small or large. The successful manager places a high priority on this link. This communications task is more difficult when several locations are used for growing and storing seed supplies.

b. Production and Marketing by Separate Organizations.

Companies not organizationally linked to production may obtain seed from many sources - private seed growers, government farms, seed enterprises which wholesale seed, and suppliers from outside the country.
The individuals and organizations marketing seed may also include a wide range of possibilities: (1) farmer seed sellers, (2) other individual seed retailers--dealers and merchants, (3) input supply organizations, private or public, (4) government institutions or agencies primarily concerned with activities other than seed supply, and (5) wholesale seed distributors.

In a free marketing situation various formal and informal linkages often develop between production and marketing organizations. Generally, this stimulates suppliers to produce seed efficiently and marketing groups to purchase and sell at prices attractive to the buyer.

In some situations government farms or public enterprises control all production, but seed are marketed through all available channels. The reverse combination is also possible with all or most seed produced on private farms with the marketing under public sector control.

The marketing section of a seed enterprise often sells imported seed. Thus, importation of seed is a normal function of marketing. When a government becomes involved in a massive importation for a particular purpose, it is desirable to use established marketing channels for distribution and sales when the government is interested in developing an on going seed industry.

Just as in the situation where production and marketing were in the same organization, communication between production and marketing groups is vital to a successful program. Administrators, production managers, marketing managers, and others with responsibility for these activities must concentrate on ways to achieve this objective. Seed wholesale distributors and seed brokers are successful and justify their
existance primarily through providing this communication service.

III. Market Communications.

Seed marketing organizations must develop and maintain continuous, two way communications with the seed consumer. Seed can be of high quality, a superior variety, priced right, and distributed through an effective channel, but still lie unsold because of ineffective communication with potential buyers. Seed marketing organizations need to establish their name or trademark with buyers. Even when a company trademark or a variety is well known, persuasive communication to the existing and potential customers is essential. When effectively planned and coordinated, marketing communication vitalizes the sales effort. Market communications is a 2-way street from the seed seller to potential buyers and from the buyers to the seller. When effectively planned and coordinated marketing communications changes to meet the desires expressed by previous buyers of the seed, builds the morale of salesmen and dealers, and encourages more farmers to buy more seed. Market communications are divided into four activities; promotion, public relations, selling, and dealer development.

a. Promotion.

Promotion is the creation of demand for the seed to be sold. Specialized personnel who can transfer technical information into clear, understandable practical terms for potential customers and encourage them to react in the desired manner are required for promotion. Consumer demand for good seed and improved varieties is largely dormant in most developing seed programs. The creative use of promotional materials and publicity is vital to the success of each seed enterprise.
Promoting the brand name or trade mark and the superior qualities of the seed on all promotional materials is a normal practice. Organizations large enough to have dealers usually share in the dealers' publicity efforts. Dealers can adapt materials supplied by the wholesale organizations to their specific needs. Some organizations share in the costs of promotional efforts initiated by their dealers.

Seed enterprises which sell varieties developed by public research groups need close links with research and educational activities. Informational material prepared by the public agencies can be used by all. The effectiveness of the total effort is increased when the public educational activities and the promotional work of marketing programs complement one another.

b. Public Relations.

Public relations are those activities designed to create a favorable impression of the organization and the individuals who work for it. Such an impression should be reflected by everyone in the organization. Honesty and friendliness are key characteristics.

Repeat sales are an absolute requirement for the success of all business enterprises. Results from several studies have revealed that over 80% of repeat sales are attributed to the organization's reputation, employee morale, and public confidence in the company; technical attributes of the seed accounted for only 20% of the repeat sales.

All personnel, play a critical role in building and maintaining good public relations. The courtesy of employees and their use of efficient procedures are vital. Support of service and community improvement projects, informal meetings with public officials and business
leaders, and a cooperative attitude in meeting various requests are all part of the public relations effort. Cleanliness and maintenance of facilities and surrounding grounds help establish the desired favorable image.

In successful organizations, policies concerning public relations are established and rigidly enforced.

c. Selling the Seed.

The ultimate objective of all activities in a seed program is to get the seed used. No country can continually provide its farmers seed free of charge; all seed must be "sold". However, there is a significant difference between selling seed and having seed for sale. Selling is actively searching for a buyer, convincing him of the value of the seed, and exchanging seed for money or other goods and services.

The art of selling and successful techniques are described explicitly in many publications. Some of these publications are included among the references. Excellent examples of successful selling can be observed in every village market. The five essential characteristics of selling used by each vendor are: (1) attract potential buyers, (2) appeal to the buyers' need for the product available, (3) establish direct contact, in this example verbal, (4) make the sale through knowledge of the product, and (5) help the buyer recognize the product's value. Marketing managers should stress these characteristics of selling with all sales and key personnel of the organization and as well as dealers. Administrators, working to get more seed used, must establish policies and programs to assure that sales personnel understand and effectively use these five "key" characteristics which are discussed in greater detail below.
(a) Attraction - Efforts to attract buyers includes information about what seed is available, where it can be purchased, and, usually, why it should be purchased from a particular seed retailer. Attraction is the objective of most promotion and public relation activities.

(b) Availability - The physical presence of the seed within the transport range of the buyer assures availability. The widely used proverb, "You cannot sell from an empty basket", is specifically applicable here. A subsequent section discusses distribution in greater detail because lack of availability is a major impediment to increased seed use in most developing seed programs.

(c) Direct contact - Rarely are seed purchased without the consumer talking to the sales person. (The sale of vegetable and flower seed through catalogues is the primary exception). Direct contact permits the farmer to establish the degree of confidence he will place in the seller. Farmers often prefer to buy seed from a relative or neighbor rather than from someone they do not know, even at a sacrifice in value. Many seed enterprises utilize local people, often leading farmers, as sales representatives in their local communities.

The need to know the salesman often works to the disadvantage of city reared, government employees involved in the sale of seed. The technician's economic and social interests are frequently not associated with those of the rural people they are trying to serve. This fact is readily recognized, though rarely stated, by farmers.

(d) Knowledge of the product - A major constraint to seed sales is the lack of the salesman's personal knowledge of how each variety performs under local conditions. The two most important characteristics of
any seed—genetic potential and viability—cannot be readily determined by a farmer when trying to determine whether the seed are worth the price requested. The buyer will not know the full value and quality of the seed planted until the resulting crop is ready for harvest. If the seed didn't have the qualities hoped for, it's too late. Thus, the seed seller must be well informed concerning performance characteristics of each variety or the farmer will plant his own seed (variety) because he knows how it will perform.

The marketing manager and sales personnel who contact potential customers should attend crop demonstration field days, consult research and extension personnel, and ask users of each variety about its advantages and disadvantages. This personal knowledge of performance characteristics of each variety is a service to the person interested in buying. Generalities will not suffice!

(e) Value - The price and value of a bag of seed are in reality contrasting opinions of the seller and buyer, respectively. Price is the seller's concept of the value of the seed and services offered. Value is the buyer's perception of the benefits he will realize in exchange for his money or goods. A sale is made only when the consumer perceives the seed's value exceeds the price.

Farmers often save seed or buy from their neighbors because they are not convinced of the benefits to be derived from using good seed of superior varieties sold by persons they don't know. For many years the opinion prevailed that the "poor, traditional farmer" could not pay for "high priced" seed. "Seed must be given away or at least the price subsidized", was the theory of many planners. Extensive purchases of
seed of many high yield cereal varieties at prices two to ten times those of the traditional varieties destroyed this theory. Of greater significance, these events vividly demonstrated farmer understanding of "price-value" or "cost-benefit" ratios regardless of their level of income or formal education.

Value benefits derived from using good seed of superior varieties include: increased knowledge of purity and germination, better stands, less contaminating weed seed, reduced susceptibility to insects and diseases, higher and/or more nutritious food quality and increased yield potential. When competition exists, value is also influenced by: (1) price (2) the seed seller's availability in cases of buyer dissatisfaction, (3) the associated services before and after the sale, (4) the association with persons the farmer knows and can trust, (5) the technical competence of the seed enterprise.

d. Dealer Development.

Seed wholesalers market all or a portion of their seed through dealers and undertake special programs to develop and assist these retail dealers. Basic to the establishment of an effective system ofdealerships is selection of the dealer. Identifying individuals or agri-business enterprises which are already selling other production inputs is frequently a successful approach. Effectiveness in the local community and fiscal responsibility are the two primary requisites sought in dealers.

The specific responsibilities a marketing manager would assign to a seed dealer are:

(1) actively sell seed;
(2) write orders for seed in advance of the planting season;
(3) receive the seed from the supplier and keep it in good condition;
(4) arrange for the farmer to pick up the seed at a designated location;
(5) complete the sale and collect for the seed when the farmer receives it;
(6) provide continuous service to the farmer throughout the growing season;
(7) maintain year around communications with the supplier concerning local conditions, customs, complaints and compliments about the seed, and services supplied; and
(8) pay for the seed according to the agreed policy.

To attract the kind of individuals desired to serve as dealers, the seed supplier should assume the responsibility to:

(1) provide advertising and promotional materials, and prepare technical information about the varieties and seed quality for sale;
(2) conduct dealer training schools to provide all sales personnel with the technical information about each variety and its use in combination with other production inputs, plus guides for effective selling;
(3) send technical personnel to assist dealers in the investigation of major complaints;
(4) inform dealers of government programs which influence sales; such as credit for farmers and farm suppliers, educational-
promotional activities, and research and development;

(5) supply order books, price lists, and related operational materials and forms;

(6) develop, maintain, and assure a complete understanding of specific policies concerning credit, seed return privileges, pricing, and related matters;

(7) refer inquiries received by mail or personal contact at fairs and exhibitions for follow-up contact by the dealers in their sales areas; and

(8) avoid underpricing the dealers.

IV. Distribution.

Economically, distribution completes the process through which the physical and biological properties of seed produced and marketed are converted to economic units for the seller. Distribution as part of seed marketing includes marketing channels and logistics.

a. Marketing Channels.

The system through which the seed passes from the producer to the user is the marketing channel. It bridges the gap between the producer and consumer and may include many different technical and economic activities. The question is, "Who will perform these activities?"; all of which have two things in common; they cost money, and they are usually most efficiently done when performed by specialists.

A number of alternatives are available through which seed producers can reach prospective customers. They may reach them directly, through retail dealers, or through accumulator-wholesalers who in turn distribute to one or more intermediate-wholesalers and retailers. The above
are known as single-, two-, and multi-tier marketing channels respectively.

The figure on the following page illustrates some of the alternative marketing channels used in marketing seed.

Why should a producer market seed through a chain of intermediaries rather than directly? Intermediaries are used because they: carry some of the financial load of distribution, especially when many outlets are necessary, and they expand the skill, experience, efficiency, and consumer contacts needed when marketing outside of the areas of production.

The answer to the question, "Who should perform the activities in the marketing channels?", is dependent upon the relative efficiency and effectiveness of those involved. To the extent that intermediaries operate more economically than the producer; because of their scale of operations, knowledge of local needs, and customer contacts, both the producer and consumer benefit.

The widespread use of seed, necessary to make an impact upon a country's agricultural productivity, is most often achieved by using a decentralized or multi-tiered distribution channel. Wholesalers and retailers are close to the consumer and are in the best position to determine his reactions to the seed and services offered. They can render pre- and post-sales services to the customer and valuable information to the producer.

The characteristics of seed and its attributes such as total volume, perishability, bulk, unit value, and customer service requirements have an important bearing on the marketing channel used. An an
Marketing Channels for Seed.

Seed Grower-Seller → Accumulator Wholesaler → Intermediate Wholesaler → Retail Dealer → Seed Consumer
example of bulk and unit value, one farmer could produce 10 tons of rice seed and deliver it all to his neighbors. A neighboring farmer could produce only one ton of onion seed, but would have to depend upon many others to distribute them because onion seed are required in much smaller quantities by most farmers, are priced higher/kg (unit value) and require fewer kilos to plant a hectare than rice (bulk). Thus, a more extended marketing channel would be required to market the onion seed, although the volume of onion seed is only one-tenth that of the rice seed.

Selection and establishment of the "best" marketing channel is crucial to the success of the total seed program and of each enterprise in it. The channel or channels chosen should (a) complement the promotional and communication efforts of the seed enterprise, (b) act as a feedback mechanism for establishing market demand, and (c) serve the needs of both the seller and buyer at the least possible cost to both.

b. Logistics.

Logistics are the activities necessary to assure that needed quantities of seed of the desired varieties are moved from the place of storage to the place of utilization so they are available when required. Because having seed of improved varieties available to consumers when they need them is an absolute necessity, logistics are a major concern of marketing managers.

Logistics functions include the following activities: (a) packaging, (b) storage, (c) inventory, (d) transport and handling--primary and secondary, (e) customer services, (f) financing during storage and movement, (g) an information system supporting logistics, (h) insurance against losses, and (i) invoicing and collecting for the seed.
2. Improving Logistical Efficiency.

Marketing managers concerned with increasing seed supplies to consumers are in a good position to improve logistical efficiency. This can be done in several ways, including inventory management, customer coordination, and an effective internal information system and reduced operating costs.

a. Inventory management - Producing more seed than can be marketed is a common problem in many developing seed programs. Costs of maintaining inventories are the highest of all logistical inputs because of the seed's perishable characteristic. A direct relationship exists between size of the seed inventory and marketing expenses. Every demand for seed can be met, but at a cost. To maximize efficiency and, thus, reduce costs, the alternative to having seed for "every one" is to decide upon lower than maximum inventory levels or to carefully select marketing areas. However, as inventory levels are decreased to reduce costs, the number of farmers actually served may also be reduced. The marketing manager often has to decide on a balance between people served and inventory costs. Market research plays a significant role when making this decision.

Seed wholesalers can reduce inventory carrying costs by encouraging dealers to accept seed ahead of the sales season. This step transfers a portion of the inventory investment from the wholesaler to the retailer but does not increase the total cost for the seed. However, dealer resistance to an increased inventory rises as his supply on hand approaches his anticipated sales. Thus, the wholesaler may have to either accept responsibility for the increased inventory and construct
additional storage warehouses or increase the economic incentives to the dealers who purchase early.

b. Customer coordination - Steps can be taken to reduce logistical costs with cooperation from the farmers and dealers. Better coordination of logistical activities has been effected by:

(1) modifying the farmer's ordering patterns with more advance bookings,

(2) improving the handling system by shipping seed at the same time as other inputs,

(3) transferring seed stocks more carefully to avoid over- or under-stocking, and

(4) altering ordering and delivery procedures.

When one organization controls all levels of the distribution system, the temptation is to order or decree the changes listed above to take place. However, ordering customers--dealers and farmers--to take a certain action they do not desire is generally counterproductive and often damaging to the entire program. Before instituting changes in an established pattern of distribution, as many customers as possible should be contacted to obtain their reactions and ideas concerning the proposed changes.

c. Internal information system - The customer's order is the single most important document affecting distribution. Where the order originated, what it contains, and when it should be filled sets the entire logistics system in motion. When the order is anticipated and filled promptly, the logistics system functions properly. Logistics fail when the order is not anticipated and no seed or an insufficient
Design of an internal information system should stress the following principles:

(1) Market research information should be obtained rapidly from customer orders,

(2) Information flow must start when the order is taken,

(3) Priority must be given to actions required to fill the order.

d. Operating Costs - Transportation is a major expense item of marketing seed of most food and feed crops. It is less a factor for vegetable seed, than for field crops, because smaller amounts of seed are needed per customer and the price per unit has a higher margin. The magnitude of transport costs are directly affected by distance, quantity, and means of transport. Adding production areas, processing centers, and/or storage warehouses reduces distances, but it increases the investment in facilities and labor costs. Farmers and dealers differ greatly in accessibility. Seed can be delivered to some by truck, to others by animal power, and to many only by portage. Transportation costs vary greatly and can cause the price within every country to be prohibitive to some farmers.

Large volume seed operations often can reduce costs by increased mechanization of handling in warehouses and the necessary invoicing and office communications. Mechanization may be socially unpopular in some countries because jobs are needed, but it is readily justified economically. Other factors which may result in decreased operating costs are improved technical operations and increased "off-season" use of labor to perform other tasks.
IV. Establishing Prices

The price that a farmer will pay for seed is determined by his perception of its benefit to him. The price established by the seller normally includes all direct and indirect costs of production and marketing; profit, if any; and an estimate of what the buyer will pay. Thus, pricing is one of the manager's most delicate instruments for influencing a seed marketing organization's effectiveness in attaining its goals.

The price of seed cannot be arbitrarily established because, in addition to direct and indirect costs and profits, other factors express considerable influence. The most important of these factors are: the total supply of seed available, the price farmers receive for their produce, the availability of production credit, the real market demand for the seed of the varieties to be sold, and competition, when the competitors operate under the same economic premise.

a. Components of Price

The price of each bag of seed is based primarily upon the interaction among four components of price: direct costs, indirect costs, returns above costs (profit) and market factors. Each of these components are discussed briefly.

(1) Direct costs - these are the costs directly associated to the volume of seed marketed. Typically direct costs include such items as cost of seed stocks, cost of processing, cleaning loss, cost of bags, temporary labor costs, and transportation costs. Other than striving for operational efficiency, little can be done to reduce direct costs. Some examples of means to increase operational efficiency are: tem-
Temporary labor can be released as rapidly as work loads permit; grower premiums can be minimized, in-service training of personnel, processing equipment should not be allowed to run unnecessarily, the cost of different packaging materials can be continually evaluated and purchased in volume, new bags should not be used to handle screenings, greater care in handling packaged seed to prevent bag breakage and seed spillage, etc.

(2) Indirect costs - are those costs of operation which are incurred without direct regard to the class of seed or volume of sales. Indirect costs include expenses such as promotional activities, taxes, insurance, building maintenance and repair, depreciation, and salaries of all permanent employees. The above expenses all occur regardless of whether a company sells 100 or 1000 tons of seed. Unlike direct costs, the indirect costs per unit of seed sold can be reduced by increasing the volume of sales. In general, private sector enterprises, including farmers, operate with lower indirect costs than comparable operations in the public sector, because of greater efficiency. On the other hand, many government enterprises do not include indirect costs when pricing seed because these expenses are budgeted from government revenues or, as in the case of taxes, they are exempt. Such competitive advantages are often reflected in the price of seed.

(3) Returns above total costs (Profit) - are an essential part of the price of seed marketed by private sector enterprises, including farmers. Individuals and organizations which have accumulated sufficient monies to invest in a seed enterprise normally have several alternative opportunities for their investments. To attract the monies
necessary to pay the direct and indirect costs, as well as for the land, buildings and facilities necessary before operations begin, the investor must believe that the return from the money invested will be equal to or greater than the alternatives. Thus, for example, the minimum return above total costs to the investors should be equal to the interest paid on money placed in a savings account at a local bank. Investors anticipate an even greater return than that given in the example above because they assume a risk of losing part or all of their money if the business fails.

On the other hand, public sector seed enterprises may operate on a profit paying, break even, or subsidy basis depending upon the philosophy and policies of the government. The basis of financial operations selected directly affects the price of seed. For example, public sector enterprises that do not have to pay interest on invested funds, or on short term loans, can price seed at a lower level than private sector enterprises. However, an increasing numbers of public sector seed enterprises are being established and operated on a profit paying basis, the profits, if any, are returned to the national treasury. The later approach is recommended for countries in which the government wants to encourage development of the private sector.

Regardless of whether the seed enterprise is operating in the private or public sector, when a return on investment capital is anticipated, the seed price must reflect the relationship between all costs incurred by the vendor and the potential benefits to the farmer-user. Thus, seed of a new or distinctly superior variety may be priced at a level significantly higher than an older variety, because of the in-
crease in value as perceived by the farmer, although, the direct and indirect costs per unit of seed for both new and old varieties may be equal. This method of establishing the price level permits seed enterprises to offer a wider range of seed and services than, for example, when price ceilings for seed are based upon the price of grain or a non-competitive social basis.

(4) Marketing factors - are defined as the interaction between the seller (supply) and the consumer (demand). The major components placed into this interaction by the seed enterprise are (a) the amount of money available to the consumer, (b) the availability, variety and class of the seed marketed in relation to the demand, and (c) the per unit marketing costs (direct and indirect costs plus profit). The major components placed into this interaction by the farmer - consumer are (a) the perceived average price of the seed plus or minus the value of the seed to the farmer (b) location of his markets, (c) quality of the seed, (d) amount of supplementary services, and (e) his alternatives.

Price competition for seed of the "basic" food crops in most countries is much keener than for seed of hybrid varieties, forage species, vegetables, and flowers. Indeed, one characteristic of a basic crop is that its seed, or regenerative part, can be maintained from harvest to the next planting season by the farmer. Thus, the major price competitor for most seed companies is the farmer who saves his own 'seed' and assigns it a value only slightly above that price he received for grain of the same crop. As a result seed prices of many of the basic crops are left to the vagrancies of the local grain market. The grain market does not have as high a level of direct or indirect costs as those
encountered by seed operations and it can operate at a lower level of profit per unit because of the much larger volume.

Seed which cannot be readily saved by the farmer due to environmental conditions, because they are consumed before maturity i.e., many forages, and vegetables, or loss of productivity attributable to genetic breakdown i.e., hybrid varieties, tend to eliminate farmer competition and the wide price fluctuations common to seasonal markets for farm produce. The comparative stability in the price of such seed is a major factor which promotes private sector participation in the development of comprehensive seed program. While it is true that seed companies which market seed of hybrids varieties of basic crops, forage seed and vegetable seed normally are more profitable, because of the increased spread between costs and selling price, the farmer who purchases these seed also places a higher value on such seed or he would not pay the price established by the seed company.

To further complicate pricing, governments often establish programs and activities which influence the price of seed. Fees of certification programs and seed analysis tags increase direct costs. Costs of licenses and taxes increase indirect costs. The establishment of price controls, phytosanitary controls, etc. all increase the cost therefore, the price of seed.

In summary, marketing is the most difficult segment of a comprehensive seed program to develop effectively. A majority of the developed and increasing numbers of developing countries have the technical capability and capacity to produce and process seed of a much higher quality level than that which can be saved by the farmers. On
the other hand, marketing the seed produced is a continuous problem to seed enterprises in all countries.

The manager of each organization involved in a comprehensive seed program exerts an influence on the success of the marketing program. To have a successful seed marketing program, a clear focus must be kept, first on the needs of the farmer-consumer and then the product-seed. Success should be measured in terms of the number of farmers planting increased quantities of high quality seed of superior varieties.