

**A THEORY OF ORGANIZATION:
CONSUMER-DESIGN-PRODUCTION-CONSUMER**

by

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ABSTRACT

Communication in its broadest connotation is a challenging subject, and one of vital importance to every industrial enterprise. The increasing trend toward specialization which characterizes industry today has made it mandatory that any industry which hopes to survive must keep a sensitive finger on the consumer's pulse.

The author has undertaken a detailed study designed to highlight the relationship between the manufacturers of wood utilization machinery and their consumer (which is the Southern Pine lumber industry) from the standpoint of both organizational structure and procedure. Against the background of the Forrester and Laitala concepts of information-feedback and the consumer-to-consumer cycle, respectively, this thesis develops the principle of organizational structure as a means of insuring positive communication.

Recognizing that no two industrial enterprises are ever quite alike, this thesis seeks to identify the techniques whereby the producer can develop a positive reaction to the environment and attitude of his consumer. The pros and cons of alternative methods are presented, together with a recommendation as to an appropriate course of action under a given circumstance.

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INTRODUCTION

The objective of this thesis is to investigate the effect which the method used to transfer product ownership will have on the organizational structure of a small manufacturing concern. It is then the purpose of this thesis to explain and show the effects which the method used to bridge the gap between the design and production functions and the consumer will have on the overall objectives of the manufacturer. Working within these boundaries and focusing attention on the lumber industry in particular, this author's theory is:

"If after careful analysis and evaluation, the manufacturer elects to build and operate his own sales organization, the activity of the general specifications and sales functions are fairly well established and recognized. If, however, the manufacturer elects to retain independent sales representation on either a contract or commission basis, there arises a problem of establishing a bridge between the independent sales organization and the design, and production functions of the manufacturer. It is then the contention of this thesis that there must be a function created within the manufacturer's organization that will aid in meeting the manufacturer's objectives in an optimum manner."

The general presentation of this thesis is as follows:

- A. Discussion of the information-feedback system from the viewpoint of an industrial organization.

- B. Discussion of the consumer-to consumer cycle as it applies to an industrial organization.
- C. Discussion of the special configurations imposed upon the consumer-to-consumer cycle by the lumber industry.
- D. Discussion of the alternative methods of closing the loop between design and production, and the consumer.
- E. A theory of organization -- closing the loop in the absence of an integrated sales function.
- F. Recommendations: there is a definite need to insure a closed loop system.

FRAMEWORK OF THESIS

Supply and Demand

During most of the present century, production has found difficulty in keeping pace with consumption. New products have been developed which require new facilities and new methods of production. As a consequence demand has outstripped supply and the new products which have been produced have found ample acceptance and ready consumers. The result has been that manufacturers have given too little thought to the importance of efficient coordination between design, production, and distribution.

It was not until the close of the 1920's when the wheels of production were slowing down, and this country entered what proved to be a major depression that American industry began to realize the real potential in realistic engineering evaluation of consumer needs and desires.

Previously, industrial consumers accepted machinery with open arms in their anxiety to produce. Correspondingly industrial leadership was largely held by those manufacturers who were experienced in mechanical design and the production of sturdy and rugged machines. But, with the depression there evolved a new breed of industrial leaders who have attempted to integrate their

consumer's general specifications with those of their product design specifications. Thus, the period wherein man was trained to conform to any manufactured machine ended; and there emerged a realization on the part of manufacturers for the necessity to design and produce with the consumer's specific need in mind.

Recognition of Consumer's Needs

The importance of ascertaining the consumer's needs in advance of design is well emphasized by Peter Drucker's statement: "It is the customer who determines what a business is....what the business thinks it produces is not of first importance -- especially to the future of the business and to its success. What the customer thinks he buys, what he considers 'value' is decisive; he determines what a business is, what it produces, and whether it will prosper."¹

Drucker's statement does not propose that the customer is necessarily always right, but it does indicate that ".....in a competitive economy the consumer plays the role of final inspector and judge.....therefore, it is necessary to begin with the consumer as specifier and end with the consumer as buyer and user."²

Therefore, if product design begins with the consumer and later returns to the consumer, who evaluates the degree to which his needs and desires have been

interpreted, by his willingness to purchase the finished product, there evolves what Everett Laitala terms a consumer-to-consumer cycle. This cycle emphasizes the effect which the consumer can play in determining the overall success or failure of a commercial organization.

For example, if the manufacturer of a machine for the utilization of sawdust, which is the by-product of lumber production, ignores the consumer's inability to use or need such a machine, then the machine is doomed regardless of its perfection. On the other hand, if the same manufacturer builds conveying systems for which there is a great need and demand the future of this product is bright and promising. Thus, as Laitala points out, the coordination of the consumer's needs, wants and desires with the engineering activities within a manufacturer's organization will determine the ultimate success or failure of the enterprise.

To summarize, if the consumer originates product design by specifying his needs, and later determines the fate of the manufacturer's finished product (which can in turn decide the success or failure of the manufacturer) it becomes apparent that there must be an efficient, fast and economical method of coordinating the manufacturer's design effort with the consumers needs and desires.

The Manufacturer-Consumer Gap

It is the objective of this thesis to focus attention on the methods which a small manufacturing organization can use to bridge the gap between its customers and its design effort. This thesis must, therefore, discuss also the effect which the method used to transfer title in the product will have on the organizational structure of the manufacturer -- with particular reference to the relationship between consumer specification, design, production, and sales.

The ancillary means used to bridge the gap, which will be examined by this thesis, are sharply divided into two basic methods -- i.e., either the manufacturer builds and operates his own sales organization, or he retains independent sales representation on a contract or commission basis. It is not, however, the intention of this writer to infer that a combination of these two basic methods cannot optimize a particular solution. It is rather, the writer's intention to present the two major methods available to a manufacturer and assume that management is capable of selecting the method or combination most suitable for its particular situation.

Information-Feedback

However, the method which the manufacturer elects to use in bridging the gap between himself and his consumers

must have a unifying, fundamental principle if his efforts are to be molded into a single positive, effective and competitive force.

This fundamental unifying principle, for the integration of the separate functions in the manufacturing process, is Forrester's concept of an information-feedback system. Stated simply ".....an information-feedback system exists whenever the environment leads to a decision that results in action which affects the environment and thereby influences future decisions."³

By way of illustration, a manufacturer producing machines in a highly competitive industry is informed by its sales organization of a downward trend in the sales of a particular product. This feedback of information from the sales organization creates an environment of concern, which in turn prompts a market research effort to identify the cause or causes of this environmental change. The results of this research effort provides a basis for corrective action to restore the article to its competitive position. Thus the information-feedback system, as described by Forrester, has come full cycle -- i.e., from initial receipt of information concerning the change in consumer acceptance, through the manufacturer's response to make corrective action, and finally back to the consumer in terms of a modified or new product.

As implied in the foregoing illustration and from Forrester's definition, there are two things which the reader should note and remember. First, ".....in an information-feedback system it is always the presently available information about the past which is being used as a basis for deciding future action."⁴ This statement means that the ability of the system to move the information obtained from the consumer to the producer's organization accurately, completely in a minimum of time is critical. And secondly, ".....in an information-feedback system the cycle is continuous. We cannot properly speak of any beginning or end of the chain. It is a closed loop."⁵

The Closed-Loop Concept

The closed loop concept is portrayed in the foregoing illustration wherein the cycle started with a decline in consumer acceptance and ended with a modified or new product which would find consumer acceptance. This concept of a closed loop information-feedback system is in sharp contrast to the open-loop information-feedback system which may encompass any one or more parts of the closed system, but does not go full cycle to link with where it started.

As information progresses through the organizational structure of the system, all the elements of the

system begin to react to it. If the elements of the system are properly coordinated, the extent and nature of the reaction should be reasonably proportionate to the significance of the information and there should be no amplification. If, on the other hand, the design element unilaterally reacted to reports of technical deficiencies when, in fact, the sales element knew the fault was in the operator and not in the machine, amplification by this one element of the information-feedback system could not only be costly to the company but could set off a chain reaction which would magnify out of proportion a minor problem.

However, properly organized and administered ".....the general concepts of information-feedback systems are essential because such systems exhibit behavior as a whole which is not evident from examination of the parts separately."⁶

Forrester and Laitala

Thus, the theory and concept of Forrester's information-feedback system has been in very broad and general terms. As a converse, Everett Laitala expresses this same theory and concept in terms of industrial organizations in his consumer-to consumer cycle. The basic theory and concepts of both men are the same -- i.e., both emphasize the need for a continuous, self-regulating

closed loop system as the underlying basis for industrial organizations. Both the information-feedback system by Forrester and the consumer-to-consumer cycle by Laitala, emphasize the need for better understanding of the internal structure and interactions of the various activities within the industrial organization.

In as much as Forrester speaks in terms of environment, decision, and action, Laitala talks in terms of specific industrial functions. But beyond this their objectives are essentially the same. They differ only in their descriptive terms, expressions and approach.

Laitala's Concept

Prior to any discussion or examination of Laitala's cycle, which will be in terms of industrial "functions", it is necessary to establish clearly what is meant by the term "function". Laitala defines the term "function" to be ".....an activity related to a specific final purpose. In other words, a function is a group of homogeneous activities contributing to a given end."⁷ The end toward which these functions are directed is the satisfaction of a consumer need. Therefore, the consumer-to-consumer cycle is said to originate with the consumer as the specifier and to return to the consumer as the buyer, user, and judge of how well his desires were met by the manufacturer.

Laitala identifies seven functions in his breakdown of the consumer-to-consumer cycle as follows: (1) General Specification; (2) Design; (3) Production; (4) Evaluation; (5) Sales; (6) Buying; and (7) Maintenance. While a case could be made for considering Evaluation, Buying and Maintenance as comparable to the remaining four functions, this author considers that the functions of General Specification, Design, Production, and Sales adequately describe the complete spectrum of activities germane to this thesis, and to the industry on which this thesis focuses.

A breakdown of the consumer-to-consumer cycle into functions permits a convenient means of separating activities for the purposes of discussion and investigation. The breakdown is not intended to be the basis for any given organizational chart. But it is rather intended to emphasize that the term "function" refers to the activities which must be performed and not with the people who perform those activities. This means that in any given industrial organization the various activities significant to the cycle may overlap in some industrial organizations whereas in others they may be subdivided into more detailed activities. Consequently, it is quite possible that in a small or medium size manufacturing enterprise, an individual in the course of his work may take actions which are

characteristic of two or more functions. In fact in a very small business one individual may perform all of these activities or functions.

Consumer-to-Consumer Concept

A logical first step in understanding the consumer-to-consumer cycle is to break it down into its functional separations or basic components of related activity. Using Laitala's terms, this is done as follows:

- A. General Specifications Function
- B. Design Function
- C. Production Function
- D. Selling Function

The General Specifications Function represents the combined impact of the consumer's expressed desires and the market research and analysis of those desires by the manufacturer. More precisely the purpose of this function is to define, as nearly as is economically feasible, what are the consumer's needs, and what he wants or thinks he wants. The end result of these efforts would provide a firm basis for the next sequence in the cycle -- i.e., the Design Function.

In the Design Function, the objective is to reduce into specific terms the information obtained by the General Specifications Function. It is here that someone creates the structure and physical form which the product

will have, the manner of production and the schedule of delivery. Therefore, an important aspect of the Design Function is to assure that the product is not only accurately tailored to meet consumer demands but is also designed to minimize production and maintenance costs. If this is accomplished within a minimum period of time, the finished product can be competitive.

With a sound and economical design the minimum contribution of the Production Function is to insure that the consumer's needs are met with respect to quality and performance. At the same time it is the responsibility of this function to bring the product into being within the estimated cost of production and deliver it on time.

As the fourth function in the cycle, the Sales Function embraces the tasks of bringing the product to the consumer and then convincing the consumer that the product meets his needs. Although it has been the objective throughout the consumer-to-consumer cycle to produce in conformance to the consumer's specifications, it is important to recall that these specifications are, as a rule, very broad and general. Therefore, the Sales Function remains critical to the overall fate of the manufacturer.

In any consideration of either Forrester's information-feedback system or Laitala's consumer-to-

consumer cycle, it must be remembered that the operation of the system and cycle does not necessarily start and stop with the consumer. While it is true that the needs of the consumer dictate and control the operation of the closed loop cycle, consumer desires may in fact be initiated by the Design Function in the form of a new product. The Selling Function then convinces the consumer that the new product will satisfy his wants and needs. Similarly the Production Function may develop variations or improvements in existing products which would in turn stimulate consumer interest.

It is, therefore, important that the manufacturer be fully and accurately informed as to the consumer's thinking, that he analyze this information carefully, and that he use this information intelligently. This means that he must not only strive for product improvement and new product development in light of what his consumers have told him, but above all he must retain positive control over sales and service so as to protect himself from unnecessary customer dissatisfaction and to enhance his corporate customer image.

Not only must the manufacturer have information concerning the consumers whose needs he seeks to fulfill, but he must be as certain as possible that his information is current, complete and above all, accurate and timely.

It is on the basis of this information that the manufacturer will formulate his decisions as to what to produce, how many, when, for what market, and at what cost of production, and at what rate of profit. Consequently, a relatively small error in the qualitative and quantitative aspects of the General Specifications Function could multiply to disastrous proportions for the manufacturer.

The necessity for an unrestricted flow of complete, accurate and current information throughout the organization is a matter of fundamental importance to the manufacturer. Much of this is in the form of information fed back from the market place where the consumer does or does not buy or, having bought, subsequently complains about cost, quality or performance. This feedback from the market place, in order to be of maximum value to the producer, must be supplemented by other types of information such as new market surveys, economic indicators, money supply, etc. all of which combine to provide the producer with a sound basis for his decision making process.

This writer is keenly aware that the foregoing brief expositions lack specificity and any penetrating analysis, but this has been by design rather than by omission. The purpose has been to offer a skeletal presentation of general concepts in order that the following sections might be viewed in their proper perspective, and

to afford a better understanding of the relationship between the manufacturer's functions of Specification, Design, Production, Sales and the Consumer.

SPECIAL CONFIGURATIONS IMPOSED ON CONCEPTS

In the previous section the reader was referred to Jay Forrester's information-feedback system and to Everett Laitala's consumer-to-consumer cycle. The former was in very broad and general terms; the latter was more detailed and in terms of specific industrial functions.

Previously it was pointed out that within any segment of the consumer-to-consumer cycle, circumstances in the environment can prompt decisions to improve one or more of the existing environmental conditions. Such a decision to change the environment leads to the actions required to bring about an environmental change. Thus, a new environment which will prompt new decisions and new actions has come into being and it will in turn prompt future decisions and actions which further affect the environment. The result is a continuous self-regulating information-feedback system operating within a particular segment of the consumer-to-consumer cycle. However, because of the interdependence of the various segments within the cycle, the changes within any particular segment will affect other segments until the entire consumer-to-consumer cycle reacts according to Forrester's system -- that is, environment leading to a decision which leads to an action which affects the environment and leads to new decisions and actions.

Purpose of This Thesis

This section will delineate the special configurations imposed on the consumer-to-consumer cycle, of a specific group of industrial manufacturers, by the lumber industry. The purpose will be to acquaint the reader with the impact which a dynamic consumer can have on the organizational structure and the consumer-to-consumer cycle of those manufacturers who are dependent upon that consumer. This purpose will be accomplished through a skeletal outline of both the lumber industry's raw material -- i.e., the log, which is a cylindrical portion of the fallen tree; and on that percentage of the log which cannot economically be converted into lumber. However, in order to better understand how the concepts of Forrester and Laitala are influenced by the consumer, it is well to examine some of the factors which describe this consumer.

Impact of the Southern Pine Lumber Industry

Since 1895, the Southern Pine Region has annually produced approximately twenty-five percent of the nation's lumber. This same pine region in 1963 supplied 44.6 percent of the pulpwood consumed by the nation's pulp mills. It is a region of rapid growth timber species, and in addition has the largest area of commercial forest land in the nation. Consequently, the outlook for the future of this region and the industries which depend upon its forest

products appears brighter now than it has since the virgin timber stands of a half century ago were "cut out" (or consumed).

For these reasons, plus the author's own experience with the Southern Pine Lumber Industry, there seems justification to examine the concepts of Forrester and Laitala in terms of the Southern Pine Lumber Industry as the consumer. This thesis will hereafter, except where noted, consider this industry to be the consumer and will examine the influence which this consumer now has and will continue to have upon the machinery manufacturers who concentrate their efforts toward him (this consumer). While the industrial group who produce wood waste utilization machines will be of primary concern, the influence which the consumer has had on other industrial groups manufacturing for the lumber industry is comparable. The purpose in selecting this particular group of machinery firms is that the effects of the consumer have been more recent and more pronounced than on the older and more established manufacturers who concentrate their efforts on the lumber industry. In addition, the manufacturers of wood waste utilization machinery have come into being within the past decade and have experienced a complete cycle in the economic business climate. Therefore, from this point forward, the term CONSUMER refers to the Southern Pine lumber industry.

Similarly, the term MANUFACTURER will refer to the manufacturers of wood waste utilization machinery unless otherwise identified.

Lumber Industry -- In General

As a national industry, lumber is quite unlike steel or automobiles. There is not a sense of industrial cohesion among the many thousands of scattered lumber manufacturers throughout this country. This is due, in part, to the fact that the bulk of lumber is produced in widely separated sections -- the West Coast and the South -- where the operating conditions and regional problems are quite different. It is also due, in part, to the fact that the Redwood and Douglas Fir lumber produced on the West Coast and the Southern Pine produced in the South is highly competitive.

In terms of Forrester's concept this means the national lumber industry has at least two environments -- i.e., the West Coast and the South. Geographical distance and the identity of the natural characteristics of the lumber produced within these environments has evolved an environment wherein the circumstances which affect the West Coast may or may not affect the South. For example, if wages are increased on the Coast, where labor unions are common, it will definitely alter that environment and influence the decisions and actions by the lumberman within

that region. However, the decisions and actions taken by the West Coast lumbermen may be of such a nature as to go completely unnoticed by the Southern lumbermen. Consequently an environmental change within the West Coast lumber industry might not alter their external actions and therefore, would not affect the environment within which the Southern lumber industry operates. On the other hand, if in this example the wage increase had resulted in a significant price change in the price of Douglas Fir and Redwood lumber, then the change within the West Coast's environment would influence the environment of the Southern lumber industry. In the latter instance an environmental change on the Coast would influence not only the environment of the Southern lumbermen, but it would also influence the environments of all lumber consumers. Similarly this change would affect the paper industry's environment, and the environment of all those manufacturers who produce lumber substitutes, plus the transportation industry's environment. In essence the internal change in the environment of the West Coast lumber industry would result in a change in its consumer-to-consumer cycle which would in turn affect the environments of numerous other industries.

Historically, the lumber industry has been composed of thousands of men with limited financial resources. And although there have been some men of

considerable wealth, who have added to their fortunes with investments in a lumber operation, they have been in the minority. The greatest percentage of the lumber has, until very recent times, been produced by conservative individualists or by gamblers who could invest a few thousand dollars in a sure thing.

It sounds simple, and it was. Making a success in the lumber industry, with the exception of the depression in the thirties, amounted to setting up a small sawmill and producing lumber. Neither quantity nor quality were very important. No previous experience was required. About all that was required was the ability to saw a straight line and this was not always critical.

Beginning with a few thousand dollars a man could build a large lumber business and do it on a pay-as-you-go basis. This was made possible through the sawmill operator's environment which permitted him to buy both land and timber at a price low enough for him to harvest the timber, manufacture it and sell the finished product at a price above that required to return his investment in both land and lumber. Thus, the margin of profit in the production of lumber was large enough to permit the sawmill operator to receive the land free when he bought the timber. Consequently, it was nearly impossible for a man to lose in such a situation. The amazing part is that such transactions

were common until the 1940's.

Oddly enough, these conditions existed at a time when the demand for lumber far out stripped the supply, and when there were very few or no substitutes for lumber. The unfortunate influence of these conditions on the consumer evolved an attitude of indifference to change and indifference to the needs and desires of their customers.

The impact which this environment and the resulting attitudes of the Southern Pine lumberman (the consumer) had on the machinery manufacturers was an undesirable one. Over the years these manufacturers lowered their standards of excellence. They did not attempt to encourage and promote new ideas, processes, or methods. They did not endeavor to modernize any segment of their organizations. They manufactured to compete only with other machinery manufacturers who had been affected similarly by the lumber producers. Thus the consumer set unfortunate specifications; namely, specifications of indifference and resistance to change, which the machinery manufacturers reacted to in an affirmative manner.

In as much as the concepts of Forrester and Laitala operated as stated earlier, they did so to the detriment of two industries. The consumer's complacent

attitudes were fed back through the consumer-to-consumer cycle to the manufacturer where these attitudes formed the basis for their future decisions. As a consequence the attitudes of the consumer affected the organizational structure of business enterprises in both industries. "Deadwood" and "status quo" philosophies evolved and became dominant.

Technological and Economical Factors

Then, the environmental conditions changed. Scientific and technological developments by other industries which use forest products such as insulation, roofing, flakeboard, and pulp and paper resulted in products which were more economical and could substitute for lumber, thereby greatly reducing the nation's per capita consumption of lumber. This environmental change was accelerated by technological advances in metals. One example of the latter is aluminum which is now used in sidings for both industrial and residential structures.

During this same period taxes, wages, and most of the other costs involved in converting the standing tree into lumber, spiraled upward. As a result some of the markets which formerly consumed large volumes of low grade lumber found the cost of even the lowest grades prohibitive. In addition, competition came from the virgin forests on the West Coast. These virgin species

are often lower priced than the second, third and fourth generation timber available to the Southern lumberman. Thus, the Southern lumber industry has been threatened from several directions -- i.e., the environment has changed and now demands new decisions and new actions.

As stated previously, the years preceding the mid 1950's had been good to the Southern Pine lumberman (the consumer). There had been no awareness in this industry of the consumer-to-consumer cycle because demand far exceeded supply. As a consequence few lumbermen concerned themselves with either their own consumer-to-consumer cycle or with the General Specifications which they had handed to their machinery suppliers. Likewise there were few lumbermen concerned with the time lapse between customer action and reaction.

To summarize, due to the enclosed or isolated environment in which the lumberman (consumer) existed, the general specification which he issued encouraged the business firms producing for him to simulate his environment. As a consequence they could not come to the aid of the lumberman because they were hardly in a position to help themselves. As a result most of the firms in the lumber industry were unable to recover in time when competition changed their environment and required new decisions and new actions of them. The "good

ole days", where there was plenty of business for everyone, were soaring off into history. In its place the day of energetic, aggressive, and intelligent competition had come to the lumber industry, and the number of firms in the lumber industry which would be closing their doors permanently could be counted in the hundreds. Likewise, the percentage of machinery firms which could reduce the time required for their information-feedback systems to complete a cycle would be astoundingly low. As a result the actions forced on the lumbermen resulted in significant changes in their general specifications. These changes subsequently altered the environment of the machinery firms which are connected with the consumer as proposed in Laitala's consumer-to-consumer cycle.

The Consumer-to-Consumer Cycle in Action

Herein lies a good example of interdependence. First, the environment of the lumber industry was changed by a decrease in the demand for their product. This change in their environment led to the decision to alter their methods and attitudes so that they would not be forced out of businesses. This decision led to the actions required to become competitive. One such resulting action was to alter their general specifications to the machinery firms who build machinery to be used in the production of lumber. Thus the consumer who had

his environment and cycle altered in turn altered the environment and consumer-to-consumer cycle of the machinery firms with which this thesis is concerned.

The Manufacturers in Laitala's Cycle

How did this particular group of industrial manufacturers with which this thesis is concerned come into being?

It all began in early 1950 when news arrived from Sweden that a new machine had been developed which would permit the economical conversion of the wood waste remaining from the production of lumber into wood chips. These wood chips, which are uniform little particles of wood fiber, could then be sold to the pulp and paper industry, thereby reducing that industry's need for pulpwood.

If this could be done, and it could, wood chips would help the lumberman in three important areas. First, it would offer a practical solution to the problem of disposing of the 60% of the log which could not be converted into lumber. Second, the wood waste materials, which formerly had been a disposal problem, could now be converted into an income producing asset. Third, as the percentage of wood residues converted into wood chips increased, forestry conservation would also improve. Correspondingly, the better the forestry conservation, the smaller the

competition for the standing timber. As a result there would be a higher grade of standing timber available to all industries using forest products. Thus, to the lumberman, wood chips are a diamond in the rough.

However, there were three obstacles to overcome before the lumberman could capitalize on this opportunity. First, and the most difficult evolved around the lumberman's characteristically ultra-conservative philosophies and resistance to change. Second, the lumberman had to select the machines he needed and wanted, because by 1957 there were more than ten firms offering wood waste utilization machinery. Third, the lumberman had to arrange for the financing of the machines he had selected.

Although this has proven to be extremely simple, many a lumberman could not convince himself of its value; -- i.e., the lumberman could not make the transition from environment to decision. Even today, with history and experience proving unquestionably the tremendous profits to be gained from wood waste utilization, many a lumberman still doubts its value and refuses to capitalize on this opportunity -- i.e., the time lapse in their information-feedback system is too great. That is, the length of time between the environmental change and the decision has been so great as to prevent action by many lumbermen. As a consequence, when the decision is finally made, they

are no longer in a financial position which will permit them to take the required action, and thus, they are being forced out of business.

Influence of the Consumer

The influence which the consumer (the Southern Pine lumberman) has had on the manufacturers of wood waste utilization machinery has been real and undeniable. To illustrate, the consumer's general specifications for wood waste utilization machinery were originally so broad as to permit the sale of any machine which even looked as if it could do the job. The consumer did not require excellence in the performance of the machines which he purchased. Likewise, he gave little or no consideration to maintenance costs on these machines. As a result the specifications handed the manufacturers were so broad as to permit them to produce machines which were mechanically incapable of processing a significant portion of a sawmill's total production.

Reaction in the Environment

However, since 1960 this environment has begun to change. At that time, 1960, the consumer could select his wood waste utilization machinery from thirteen different manufacturers. Most of the manufacturers boasted sales forces in the South of ten or more men. However, by the

summer of 1963, just three and one-half years later, there are only seven firms still in business. Of the seven one has entered the picture since 1960 and has since changed ownership twice. Only five are still owned and operated by the same principal stockholders, as in 1960. In addition, none of the seven manufacturers operating today claim as many as eight full-time salesmen in the South.

It is not this writer's intention to imply that all seven of these manufacturers are identical. Yet from this writer's own experience, all seven appear to approach the consumer in much the same fashion. For example, not one of these has a full-time research and development activity. In addition all seven combine their Market Research and Analysis Function with their Sales Function. Therefore, what feedback of information there is from the consumer must come either through the sales function or through the service function. And from experience the feedback usually requires a period of time which makes the system and information ineffective or of little or no benefit in decision making. By the time sufficient information is fed back, the progressive elements in the environment have initiated another change. In other words, those members of the Southern lumber industry who are in business to stay are now initiating environmental changes faster than the changes are being fed back through Laitala's

consumer-to-consumer cycle to the manufacturer. Therefore, the machinery firms who depend upon the lumber industry for their survival must evaluate the method which they use to bridge the gap between their Design Function and Production Function, and the consumer or they will be forced out of business.

THE BRIDGE BETWEEN MANUFACTURER AND CONSUMER

The purpose and intent of this, the third of four major sections, is to focus attention on the methods by which the manufacturer can bridge the gap between his organization's design and production functions and the consumer.

Needless to say, the two general methods -- i.e., either the manufacturer builds and operates his own sales organization, or he retains independent sales representation on a contract or commission basis -- are of only fractional value if operated outside of the framework of the concepts of Forrester and Laitala.

In the foregoing sections, Forrester's concept of an information-feedback system was described as an environment which leads to a decision which results in action which in turn affects the environment and thereby, influences future decisions and actions.

Within Forrester's concept, the day-to-day operation of an industrial organization must, if it is to be successful, operate according to Laitala's cycle. Specifically the consumer-to-consumer cycle which begins with the consumer and later returns to the consumer as judge and user, must operate as an information-feedback system. Thus, this cycle, in terms of engineering functions and operating within the framework of Forrester's information-feedback system, affords a firm foundation upon which to

build a bridge between the manufacturer's organization and his consumers.

The General Specifications Function and Sales Function

Combined

In this thesis, the bridge is a combination of the general specifications function and the sales function as described in Laitala's cycle. This combination is justified on the basis of the special configurations imposed by the lumber industry on the consumer-to-consumer cycle of the manufacturers, as discussed in the previous sections. While the combination of the two functions may not be the optimum arrangement for these machinery firms, in the sense that the optimum is unknown, it has proven practical from a financial standpoint and will, therefore, be considered to be the optimum for the purposes of this thesis.

As previously pointed out, it is the objective of this thesis to present those factors germane to making an intelligent selection of the bridge best suited for each manufacturer. There will be no recommendation as to which method or bridge is best. Therefore, it is likely that some combination of the two methods will afford the optimum solution. In addition, the writer will assume that the reader and management are capable of making the correct selection once the pertinent facts are presented.

The Manufacturer's Sales Organization

If the manufacturer elects to build and operate his own sales organization, a significant cash outlay which can be estimated with reasonable accuracy, is involved. Books and accounts must be set up, together with forms and procedures for using them; people must be employed and trained; office facilities and equipment must be provided; salesmen must be recruited, trained, and assigned territories; and finally, an individual of demonstrated competence must be paid to plan, direct and supervise the overall sales organization. Therefore, the sales operation should be organized and managed on the basis of a thorough knowledge of the company's market and its market potential or the whole undertaking can become a costly failure.

More specifically, the company-operated sales organization must have the same efficient and effective information-feedback system for which the better commission and contract representative have long been noted. Unless the consumer's changing needs and desires are promptly made known to the design function, Laitala's consumer-to-consumer cycle cannot come into play. Similarly, the entire sales effort must be geared to a realistic assessment of how many units can be sold in what market over what period of time, within a price

range which will yield the desired and sustained rate of profit. This vital and critical information can be obtained most efficiently and kept current only if the sales function operates within the concepts of Forrester and Laitala, as previously described.

If these factors can be established with reasonable accuracy, and if the cost of the sales organization can be tailored accordingly, then the company would have some justification for adopting this approach -- that is, establishing and operating its own sales organization. However, it must be recognized that any cost estimate of building and operating a sales organization is a reflection of the ideas, the objectives and the sense of relative values of the corporate officers who develop this estimate. No two manufacturers, regardless of similarity in size or type of product, would come up with the same cost estimate for setting up a sales organization.

Briefly, then, the advantages of the company sales organization can be summarized in terms of tight and positive control on the part of the manufacturer. This means that the manufacturer can ascertain and respond to the changing needs and desires of his consumers in a shorter period of time than might be the case if he were functioning through an independent sales organization. As

a converse the disadvantages can be summarized in terms of the increased requirement for management personnel, hence increased overhead.

So far attention has been focused solely on the operational aspects of the company-operated sales organization. In this day and age of intensive competition an important additional factor has been injected. This is the matter of assisting the consumer in financing his purchases. Regardless of the details of how it is done, this requires a line of credit over and above that required for the manufacturing operations. The availability of this line of credit at economically acceptable terms can spell the difference between success or failure of the manufacturer. Unfortunately, in today's market the manufacturer has little choice. Either he finds a way to simplify the problems of his consumers or he goes without consumers and dies on the vine. Whether the manufacturer can provide this financing and how he provides it can, in the final analysis, determine in fact whether he will be able to produce at a profit or even produce at all.

Along with the fundamental question of financing, there is the problem of servicing the consumer's equipment. No matter how well it is designed, no matter how well it is engineered and produced, problems are bound to arise. Some of the problems may derive from latent defects in design or

production. Alternatively, the difficulty may arise from misunderstanding and mishandling on the part of the consumer. Regardless of the cause, consumer dissatisfaction can be fatal if it is not corrected immediately -- and immediately means hours, not days or weeks.

Thus, the length of time required by the manufacturer's system to complete its circuit is critical. In no other aspect of the day-to-day relation between the manufacturer and his consumer is the efficiency and accuracy of the information-feedback system so important. It is not enough to recognize that a piece of machinery is not performing as it should. Often, the period of time in which the consumer is dissatisfied can be fractionalized if the service function is fully and completely informed as to the symptoms. In many instances the malfunction can be corrected by a simple adjustment which does not require the skill of a trained specialist. But regardless of whether the manufacturer is contemplating building his own sales organization, or is planning to use a contract or commission sales agent, provision must be made for prompt and responsible handling of breakdowns, malfunctions, or any other evidence of customer dissatisfaction with the product in which he has invested. The key element here is that the customer could care less why his equipment is not functioning as expected. He is not disposed to consider

whether it is his fault. All he knows is that he has paid his money and he expects the machinery to work.

The Contract or Commission Sales Organization

For the small manufacturing concern with limited capitalization, the contract or commission sales organization has much to offer. In the first place, legitimate sales agencies are highly experienced and professionally competent in their chosen fields. They are concentrating their efforts in a rather limited field of their own choosing for which they are best qualified. They concentrate on selling, and they work solely on a commission basis -- they are paid only for what they produce. As professional selling experts they can be expected to produce a higher net rate of return per hour of applied effort than a company sales organization with its overhead burden. On the other hand, contract or commission sales organizations normally have more than one line of merchandise (the exception, of course, is the exclusive sales organization set up and controlled by and for a manufacturer to market his product line and his alone.)

Another point which the manufacturer must consider is the injection of a third environment resulting from the use of a contract or commission agency. In the case of a company sales organization the manufacturer need consider only his own environment and that of his

consumer. The addition of a third environment, associated with the contract or commission sales agency, tends to complicate and extend Laitala's consumer-to-consumer cycle. By way of illustration, the reader is requested to recall the example in Section IV wherein the design function had to modify a product in order to regain consumer acceptance. If the manufacturer retains positive control over both the general specifications function and the sales function, he can more easily and readily detect and compensate for any inaccuracies in his information-feedback system. While it is possible for the manufacturer to take the same corrective actions through a sales agent there are numerous factors which dictate more tact and diplomacy on the part of the manufacturer. One such factor is the lack of dependence upon the manufacturer by the agent. Inasmuch as the agent needs the manufacturer he is not solely dependent, as a rule, on one manufacturer for his income. The converse, of course, is the situation wherein the manufacturer owns and operates his own sales function. Thus, the use of a sales agency connotes an implied loss of direct and positive control over the company's total marketing program, and unless the terms of the contract with the independent sales organization specify otherwise, the manufacturer may be at the mercy of the sales agent insofar as market coverage, buyer, responsibility, etc., are concerned.

On the plus side and quoting from an article by Edward Bachorik, General Manager, Allied Control Company, Inc., in Sales Management, December, 1960: ".....although manufacturers employ four times as many salesmen as representatives throughout the country, the total sales of the company men are only twice that of the representatives. In addition, company sales office payrolls are nearly five times larger than those of the independent sales representatives."

Bachorik further states that this superior sales-getting ability sharply contrasts the independent agent with the company salesmen in both consumer and industrial sales according to the 1960 Census of Business Statistics. On the average, industrial and consumer sales agents are more economical than company office salesmen. Operating expenses for the independent agent average about 3.1% of sales as compared to 7.7% for company sales offices and branches.

Now it would be nonsense to claim that the contract or commission sales representative is the answer in all companies. There are, of course, good and sufficient reasons in certain marketing situations for choosing the company operated sales organization over the sales representative. It would be foolish, therefore, to condemn all manufacturers for what appear to be uneconomic sales policies.

Bachorik additionally points out that time after time Allied Control has set up regional sales offices when the need seemed clearly indicated. Time and again they have supplanted the office with a sales representative in the same area and then watched sales volume grow immediately. In many instances sales have even doubled in the course of a year after the switch. It has happened often enough for them to rule out chance and business cycles as the cause of this growth.

Moreover experience taught Bachorik and his Allied Control Company that the regional sales office is severely limited by the type of sales manager who can be employed to run it. This happens because too often the best qualified men whom they can employ as sales managers quit to become sales representatives themselves. In summary, Bachorik points out that in hiring a sales representative manufacturers are not merely buying an efficient and economically run sales organization. What they should get in addition is the extra sales ability produced by the sales representative's initiative and independence.

Thus, all of the commonly accepted criteria justifying the use of the sales representative, good or bad, tend to ignore the single positive value representatives have to offer at any time or place -- aggressive selling. And although not specially emphasized, this

high performance is possible only because of the representative's awareness of the fundamentals on which Forrester's and Laitala's concepts are based. By the same token, the independent sales representative's concentration on his chosen field of effort tends to make him more sensitive to changes in the environment.

Similarly, the sales representative usually has far more information at his finger tips because of the wider range of consumer needs and desires which he seeks to answer and fulfill. But, due to the fact that the agent usually represents more than one manufacturer he tends to permit his effectiveness to any one manufacturer to be compromised due to a weak information-feedback system between himself and the manufacturer. This can be due in part to the fact that the all-important feedback of information which he must originate involves time and trouble to assemble, digest and report; consequently, it takes time away from his selling and customer contact time for which he is being paid. There is always the possibility that the communication flow from the sales agency to the manufacturer may leave much to be desired. Unfortunately, the manufacturer has no ready means to assess the validity or completeness of the information he receives. Consequently, he may find himself lagging behind those of his competitors who have developed a more

effective and practical information-feedback system. Particularly is a manufacturer apt to find himself in this situation when the contract or commission representative must feed back information to more than one manufacturer. Thus, not only does the addition of the agent's environment complicate both the system and cycle but his representation of more than one manufacturer tends to increase the cycle time and increase the probability of incomplete or inaccurate information being fed back through the system.

Alternative Courses of Action

While financial limitations at first glance may appear to leave the small manufacturer no choice but to retain the services of an independent sales agent (or agents), the manufacturer should not forget the increased complications which are possible if he elects to place a new element between himself and his consumers.

Whether and to what extent the manufacturer has a choice should be established by a thorough analysis and evaluation of all the factors involved.

The first phase of this analysis and evaluation should be devoted to a projection or estimate of the number of units that can be expected to be produced and sold over a specified period of time, and the price range within which they can be sold. Production and selling

costs should then be computed on the basis of the same number of units and the same time period, and the resulting costs compared with expected gross income from sales to determine the amount and rate of profit or loss that reasonably can be anticipated at that level of activity. This procedure is portrayed in the following table.

This breakout of expense items shown is illustrative only and is not intended as an all-inclusive or optimum pattern; this will vary according to the accounting policies and structure of different companies.

TABLE I

SALES vs COST OF SALES

(Period: One Year)

Gross Income1,000 units at x per unit xxxxxTotalExpensesMaterials, direct xxxx

Direct Labor

Packaging and Transportation

Advertising and Public Relations

Customer Service

Overhead

(Facilities, Indirect Labor,

Taxes, Insurance, Etc.)

TotalProfit or Loss in \$Profit or Loss as % of Sales

The second phase of the analysis and evaluation should be devoted to development of an estimate of the cost of setting up a sales organization, and comparison of this estimate with the cost of retaining contract or commission sales representation. This projection is illustrated in Table II on the following page.

With these estimates in hand, the manufacturer is now in a position to undertake negotiations with an independent sales agent to determine which course of action offers the greatest advantage for the money invested.

A major point in these negotiations is the question of whether the sales agent can and will provide customer financing and on what basis. It must be remembered that the cost of financing was not considered in the development of the cost estimate for a company-operated sales organization. As pointed out previously, it was assumed that while the company had adequate financing for its production operations it might not be able to carry the additional burden of customer financing. The question now is whether the contract or commission sales agent (s) can and will provide customer financing along with their selling efforts at a combined rate which will not grossly exceed the manufacturer's cost estimate for its own sales organization but without the customer financing capability.

TABLE II

SALES ORGANIZATION vs CONTRACT OR COMMISSION REPRESENTATION

<u>Sales Organization</u>	<u>Contract or Commission Representation</u>
<u>Facilities</u>	
Space	
Heat	
Light	
<u>Sub-Total</u>	
<u>Personnel</u>	
Sales Manager - Salary	Rate of commission as percent
Salesmen - Basic Salaries	of sales to cover responsibi-
Commissions	lities such as the following
Expense Accounts	as agreed upon by company and
Insurance, Retirement,	agent and included in the
Social Security	contract:
	-- Extent and type of market
	coverage
	-- Advertising
	-- Customer Servicing
	-- Information feedback --
	market and product
<u>Sub-Total</u>	
<u>Administration</u>	
Books of Accounts	
Office Equipment	
Forms and Letterheads	
Phones	
Postage	
<u>Sub-Total</u>	
<u>Promotional Activities</u>	
Public Relations	
Advertising	
<u>Sub-Total</u>	
<u>TOTAL COSTS</u>	<u>TOTAL COST</u>

A second major factor that must be considered by the company in its negotiations with an outside sales agent (s) is the all-important matter of customer service. It is not necessary, probably not even desirable, that an independent sales agent attempt to perform this service. However, it is necessary that there be a clear understanding between the manufacturer and the independent sales agent as to how the service shall be provided. Consumer service was not included as an element in the cost estimate of the manufacturer operated sales organization because it is a recognized production expense which the company must bear regardless of the service bridge between itself and its consumer. While the independent sales agent should not be expected to perform this service, the agent must be fully informed as to how the manufacturer plans to handle it and must be satisfied that the manufacturer is willing and able to satisfy all reasonable complaints. Without such assurance, the reputation of the sales agent could be needlessly jeopardized.

A third major point which the manufacturer must keep in mind involves the agent's responsibility for his share of the information-feedback. It is not enough that this point be covered in the contract with the agent. The manufacturer must assure that the agent has been provided

with explicit and detailed instructions as to the type and volume of market information that is required to influence the Forrester and Laitala concepts. Moreover, the manufacturer must keep in touch with his agent frequently enough to insure timely feedback of information, and he must assess the information provided to insure that it accurately reflects consumer attitudes and preferences. This is an important point because either too little correct information or too much wrong information could defeat the objectives that both Forrester and Laitala proclaim for their concepts of organization.

Finally the manufacturer must recognize and accept the possibility of increased costs in maintaining an information-feedback system resulting from the third environment introduced by the independent sales agent. While this presents no insurmountable obstacles and is not inconsistent with Laitala's concept, the third environment does add to the burden of the manufacturer from the standpoint of management control and can also be expected to extend the time required for Laitala's cycle to operate.

The proper handling of the foregoing factors requires authority and responsibility beyond that normally associated with individual functions such as sales or production. To expand the activities and responsibilities

of existing organizational entities to handle these factors could result in an organizational arrangement that might be difficult to administer and control. The addition of a function specifically vested with the authority and responsibility for such matters would simplify the problem of overall administration and at the same time provide a clearly identified driving force to insure that such matters are given proper attention. In this sense the function will be required to insure that the gap between the manufacturer's design and production functions and the consumer, as conceived in Laitala's consumer-to-consumer cycle will be closed in the event that the manufacturer elects to retain contract or commission sales representation.

So far this paper has dealt primarily with the specifics of the relative costs of setting up a company sales organization versus retaining contract or commission representation, with due consideration for the two major factors of customer financing and customer service. There are other factors which would play a part in the manufacturer's final decision. Pride in having its own sales organization is one such factor, although it can be an extremely expensive one if given undue weight in view of the fact that the manufacturer's salesmen would be competing in the field with the

independent sales agent (s). Another factor would be the extent and nature of market coverage which an independent sales agent (s) would be willing to provide at the best rate which the manufacturer could afford. If there is sufficient markup between known production costs and estimated selling prices, this may not become a problem. On the other hand, since both the manufacturer and the independent sales agent expect to make a profit, the commission rate the manufacturer can afford to offer may be insufficient to warrant full market coverage by the sales agent (s). This, in turn, would require careful consideration by the manufacturer as to whether contract or commission sales representation would be to its advantage.

In choosing a channel of distribution, management must consider the nature of the market (scope of distribution, size of average sale, the anticipated sales volume, consumers' buying habits), the availability and attitude of its distribution vehicle, the effectiveness and cost of various outlets, and the ability of the method selected to close the gap between itself and the consumer.

Closing the gap in itself is not sufficient. It must be accomplished in a minimum of time and it must assure accurate and current information if the manufacturer

is to remain competitive. Moreover, it must be accomplished with a minimum of disturbance to the organizational stability of the manufacturer.

Additional factors which must be considered by a manufacturer in reaching a decision on whether to develop and operate his own sales organization are the size of his operation, his financial position, production cost and profit ratio, availability of professional sales personnel, the type of products he is producing and the nature of the market he intends to reach.

The size of the manufacturer's operation obviously plays a major part in determining whether to develop and operate his own sales organization. Many manufacturers are financially strong enough to be able to experiment with alternative methods of handling sales and distribution and do this for extended periods of time if necessary. Smaller manufacturing firms, on the other hand, with more limited production capability and correspondingly limited overall resources usually cannot afford the luxury of trial and error and must make a decision based largely on judgment.

The manufacturer's financial position and size are not always directly related to the extent that large manufacturers are always financially sound whereas small manufacturers are always financially weak. Many a small

manufacturer may be in far better financial shape at any given point of time than some of its larger competitors. However, a strong financial position in and of itself would not necessarily justify a decision one way or the other unless management could demonstrate that the course of action chosen would not compromise the firm's future financial position.

The effects of production costs and profit ratio are self evident. If, for any reason, production costs are high and the profit margin is narrow, the manufacturer has no problem in determining whether he can afford the cost of developing and operating his own sales organization or whether he must retain contract or commission representation.

The availability of professional sales organizations for the type of product (s) in question, at a price which the manufacturer can afford to pay, will also have a lot to do with the course of action selected. For products that are simple in design and construction and in general use, the manufacturer should have a reasonable number of possibilities from which to choose because fewer technical skills are required. For unique or specialty products, and particularly if they are complex and expensive, a manufacturer will have a more difficult problem of satisfying himself beyond

question that any sales organization which he is considering does in fact have the technical ability to handle his product (s).

In considering contract or commission sales representation the manufacturer must not lose sight of the impact which his decision will have upon his consumer-to consumer cycle. For the manufacturer who chooses to develop and operate his own sales organization, and is satisfied that he can afford to do so, his problem is relatively simple. The sales effort will be completely under the manufacturer's direction and control. Thus, the manufacturer is in a position to design an information-feedback system that will tie together his general specification, design, production, and sales and service functions and insure that they are all reasonably responsive to consumer desires and needs, and general market conditions. The manufacturer is not only able to design and install such an information-feedback system, but he is also able to evaluate its application and review its effectiveness at will.

Assuming a reasonably practical and coherent organizational structure with clearly established lines of authority and delineation of responsibility, the information-feedback system could be built around the existing organization with little or no change. With the

functional responsibility clearly established for market research, design, production, sales and sales service, the development of a good information-feedback system would be largely an administrative matter -- determining what information is needed, getting it and putting it in the format in which it should be arranged, and then transmitting the information to those responsible entities which are to be furnished with the information.

However, if the manufacturer elects to retain outside sales representation, whether it be on a contract or commission basis, he is confronted with additional problems in his information-feedback system. Basically, the problem centers around the loss of direct control in any principal-agent relationship. The manufacturer would undoubtedly include in his contract with the agent specific requirements as to the feedback of consumer attitudes and market trends for use by the design and production functions. And with a reputable and efficient sales organization, the information-feedback certainly would be honored to the best of that organization's ability. Unfortunately, however, the manufacturer would be unable to monitor the operation, and would have to accept the information furnished to him without having a positive means of ascertaining its accuracy and completeness in the event he received adverse

consumer reaction. Except for such information-feedback which he might receive through his customer service activity he could never be quite sure to what extent the adverse reaction was generated by inclusion or omission of information on the part of his sales agent as distinct from faults in the product.

If the manufacturer seeks to retain contract or commission sales representation, he must be prepared to make some adjustments within his own organization to compensate for the loss of direct control over the sales function and the flow of vital consumer-reaction and market information. As pointed out previously, he can spell out his information feedback requirements in the contract with the sales agent, but he cannot control the results as he can throughout the rest of his operations. Conceivably he can attempt to attain the same type of information through other sources, but this would be costly and if he ran into contradictions or variations in the information received, he would not know which source to believe. Finally, even if the producer could rely completely on the integrity and capability of his agent, he would still be faced with the problem of coordinated effort within his own organization based solely on the inputs from the sales agency.

To summarize, if the manufacturer elects to

retain contract or commission sales representation, there exists an excellent opportunity for a gap to develop in his consumer-to-consumer cycle.

THE MARKET COORDINATOR FUNCTION

Recapitulation

So far, this thesis has addressed itself in logical sequence to the fundamental aspects of two way communication between the manufacturer and his consumer.

First, the concepts advanced by Forrester and Laitala were explored in detail in order to put them in proper perspective. This provided the basis for analyzing the alternative courses of action available to a manufacturer.

Forrester contends that environment leads to a decision which leads to an action affecting the environment and thus leading to new decisions and new actions. Within this broad and general framework of industrial organizational theory Laitala argues his concept in terms of specific industrial functions wherein ".....the consumer plays the role of final inspector and judge --- therefore, it is necessary to begin with the consumer as specifier and end with the consumer as buyer and user." ⁸

The importance of proper evaluation of consumer attitude has been stressed as the key element.

While the principle of information-feedback is specifically described by Forrester and is only implicit in Laitala's approach, both are directed toward the same

objective to such an extent that for all practical purposes they may be considered one and the same.

Next the special configurations imposed upon the consumer-to-consumer cycle of a specific group of manufacturers -- manufacturers of wood waste utilization machinery -- by a specific consumer -- in this case the lumber industry -- were analyzed. The characteristics of the lumber industry were described with particular attention to the changes which the lumber industry has undergone both in organizational structure and methods of doing business. Likewise the same characteristics of those who supply the lumber industry with machinery were examined, with emphasis being placed on the importance of the time cycle period in each industry's information-feedback system.

Finally the methods by which the manufacturer can bridge the gap between his own organization and his consumers were examined with particular reference to the two fundamental courses of action open to the manufacturer in achieving the objectives proposed in both Forrester's and Laitala's concepts. The alternative courses of action -- i.e., development of a sales organization by the manufacturer versus the retention of sales representatives on either a contract or commission basis were described in detail. Among other things it was

pointed out that in the event the manufacturer decided to retain contract or commission sales representation, this would result in additional costs for a new function identified as that of Market Coordinator. No recommendation was offered, however, as to which course of action was preferable since this can only be done on the basis of specifics peculiar to any given organization.

Thesis Objective

Against this background this thesis is dedicated to the following proposition:

If after careful analysis and evaluation, the manufacturer elects to build and operate his own sales organization, the activity of the general specifications and sales functions are fairly well established and recognized. If, however, the manufacturer elects to retain independent sales representation on either a contract or commission basis, there arises a problem of establishing a bridge between the independent sales organization and the design and production functions of the manufacturer. It is then the contention of this thesis that there must be a new organizational function created within the manufacturer's organization

that will aid in meeting the manufacturer's objectives in an optimum manner.

The Importance of a Communication System

Any communication system between the manufacturer and an independent sales organization, retained on either a contract or commission basis, must operate within the framework of the concepts of Forrester and Laitala. Formerly there had been just the two environments -- i.e., the manufacturer's and the consumer's, at either end of a two way bridge. However, with the decision to retain contract or commission sales representation the manufacturer has injected a new environment (that of the independent sales organization) between these two environments and in the center of Laitala's cycle. Previously the manufacturer had connected his general specifications function and sales function with the consumer. As a consequence the communication system must be widened and strengthened to facilitate the flow of traffic between these three environments (manufacturer, agent and consumer). The necessity for reworking the communication system is a derivative of the need for the manufacturer to retain open access to his consumer for such consumer-sensing devices as service, public relations, and advertising. In addition the communication system must support a two-way information-

feedback system between the manufacturer and his agent which will assure that the manufacturer's policies and procedures are clearly understood and adhered to and that the sales representative (s) does perform in accordance with the terms and conditions of his contract (s).

Strictly speaking the manufacturer has contracted part of his functions. Therefore, he must insure that the sales agent between himself and the consumer will obtain and relay all of the information which is vital to both organizations. Moreover the manufacturer must insure that the information-feedback between himself and the consumer remains operative as he cannot disassociate his name and reputation from the acts of his agent insofar as the public is concerned. In addition, customer acceptance and customer goodwill are consumer environmental conditions critical to the manufacturer. Thus, the very life of the manufacturer is contingent upon the effectiveness and cooperation of his sales agent (s). Consequently, the creation of a special function to monitor the contract appears to be more than justified.

Purpose of the Market Coordinator Function

Such a function is essential in order to avoid inadvertent overlap and confusion in the lines of

communication, both between an agent and the manufacturer and within the manufacturer's organization. This is particularly important when the activities of the new function must of necessity mesh closely and harmoniously with the activities, responsibilities, and authority already vested in the design, production, and accounting functions.

Consider, for example, the nature of the information flow between the manufacturer and his sales agent. This two-way information-feedback system will include such topics as the manufacturer's sales policy, the manufacturer's advertising and promotional efforts, operating policies and procedures, attitudes toward consumer financing, operational matters affecting delivery dates, discussions relating to customer service, and a host of other issues. Since authority and responsibility are already vested in the design, production and accounting segments, duplicate authority and responsibility cannot be vested in the new function, which for purposes of convenient reference will be tentatively identified at this point as that of market coordinator. At the same time, this new function must be vested with clear-cut authority and responsibility in its own right for supervising and controlling both the sales and the general specifications functions which

have been contracted to a sales agent.

The Objective of the Market Coordinator Function

The market coordinator function as contemplated in this study would embrace a wide range of activities, all built around three major objectives: (1) monitoring the sales contract; (2) insuring an information-feedback system both between the consumer and the sales agent; and (3) insuring a continuous consumer-to-consumer cycle with minimum time lapses.

The purpose in monitoring the sales contract would be to insure performance by the sales agent in accordance with the terms of the contract. In this connection, it is of particular importance that the manufacturer is sure he is getting the degree of market coverage and product exposure agreed upon. Also, it is necessary that the manufacturer is current at any point in time, as to the status of commissions and accounts between himself and his agent.

The manufacturer must also be concerned with trends or changes in the environment of his market so that the joint efforts of the manufacturer and his sales agent may be adjusted and redirected as necessary to adapt to changing environmental conditions. To put it another way, as the manufacturer grows and expands it becomes increasingly important that some function in the

organization is qualified to advise the best method of getting the maximum mileage out of the manufacturer's advertising and promotional efforts. Another reason for placing the market coordinator function within the manufacturer's organization is to insure that the manufacturer will have an instrument with which he is able to present and intelligently analyze the sales agent's problems.

An intelligent information-feedback system, including both the market coordinator function, the sales agent, and the company's own customer service activities, can be beneficial to an effective analysis of the manufacturer's position at any point in time. Trade reaction to the manufacturer's line of products, consumer satisfaction or dissatisfaction, the frequency and cause of consumer complaints, the manufacturer's portion of the total market, the competitiveness of his prices, and sometimes even the reasons for lost sales, are all important items of information which the manufacturer needs in order to ascertain his environment and to adjust to changes in both his own environment and that of his consumer.

Building and maintaining a suitable company image is greatly facilitated by an information-feedback system. By piecing together information obtained from

a variety of sources -- i.e., the sales function, the service function, the market coordinator function -- it is possible first to construct an image of the company as it appears to the consumer and then, by concentrating on reported deficiencies and shortcomings, to strengthen and improve the image, to shape it along the lines desired, and finally to disseminate it through the manufacturer's institutional advertising program.

While the following are not necessarily of major importance, they should not be ignored. The following are examples of supplementary factors to be acknowledged:

- a. Assisting in shaping the manufacturer's advertising program.
- b. Seeking out opportunities for direct participation in trade association seminars, exhibits, machinery expositions, etc.
- c. Undertaking a continuing analysis of the present and potential markets for the manufacturer's products.
- d. Watching for new inventions and developments that would affect the manufacturer's environment and distribution methods.

- e. Keeping current on the manufacturer's share of the total market.
- f. Being cognizant of trends and changes in the basic national economy, with particular attention to cyclic business fluctuations which if disregarded might compromise the manufacturer's financial position.

A perennial problem is the evaluation of advertising. The objective to be accomplished by a given advertisement should be kept clearly in mind. For instance, some programs are aimed at preselling the consumer; others are psychological weapons in the competitive war; while still others have the more intangible objective of building prestige. Regardless of the objective, if the manufacturer does not have an effective and efficient information-feedback system with a brief cyclic period he may learn too late, or not at all, of the ineffectiveness of his advertising program.

Next, consideration of the growing importance of consumer credit is imperative. This development has brought a train of problems in its wake. Yet, most great mass-production industries could not be supported without credit selling. Installment-credit selling in some form is here to stay although no one knows exactly

what level it will attain in our national economy. Increasingly, credit is an important point which must be taken into consideration in selecting representatives and distributors. Where sound financing is not available to otherwise acceptable dealers, the manufacturer may be compelled to help arrange for such financing services. Obviously those executives in charge of accounting, design and production would be unduly taxed if they were expected to handle this activity.

Need for the Market Coordinator Function

Ours is a dynamic economy, constantly undergoing rapid changes, and these changes can have immediate or long range effect on the overall organizational structure of most manufacturing organizations. Therefore, it is essential that there be a link between design, production, and consumption. The market coordinator function is the medium through which the changing demands of the consumer -- who is free to buy what he wants, where he wants -- is transmitted to the manufacturing organization which is capable of filling these wants. But a sense of direction is required. This the market coordinator function can supply.

Thus, the view here is that the market coordinator function is the one to assist in coordinating the various functions comprising the organization. Especially

is this true if the general specification and the sales functions have been contracted to an independent organization. This is important because the selling effort originates with the determination of the consumer's needs and later returns with a finished product which the consumer buys or rejects. Therefore, the market coordinator function must have a strong voice in research, design, and production decisions.

"So long as the customer is free to buy from competing sellers and producers, the function of the business closest to the customer must carry weight in influencing the decisions that determine the character and cost of the product."⁹ Necessarily, this requires that functions which are consumer-minded be profit conscious, be thoroughly grounded in business economics, and be sensitive to both the possibilities and limitations of mass-production techniques, and play a dominant role in the day-to-day decisions of the manufacturer.

Research work on new products must face the marketing test. All too often various functions within the organization have suggestions and ideas as to new products which will fit into the type of equipment, skills, and techniques of the work force, but which cannot be distributed through the existing methods. Full consideration must be given to what is involved in creating

appropriate methods of distribution for new products, and it is the market coordinator function that should assist in spelling this out.

Product research usually involves improvement in quality or utility. This may mean greater satisfaction in use, greater convenience in use, or longer life. Here again, the market coordinator function should assist in establishing the priority and relative values because cost limitations ordinarily will not permit adoption of all desirable improvements. Here again, the information-feedback system must reflect and correctly interpret the desires of the consumer in order to strike a balance between features and price that will expand the manufacturer's market. And, in order to assure that consumer responses are properly noted, there must be a function which is responsible for this notation. Ordinarily it would be the general specifications function, with aid from sales, which would have this responsibility. But remember, the sales and general specification functions have been combined and contracted; therefore, there must be some function which will assume this responsibility. That function is the market coordinator function.

The accounting, design, production, and market coordinator functions must determine the number of different items which will constitute its firm's line of

products. The sales function, as a rule, wants to have a product to match every individual offering of all competing manufacturers. On the other hand, the design and production functions are responsible for unit costs and consequently, are generally for less tooling expense and longer production runs. The market coordinator function must stand between these two pressures, sensitive to each, and make appropriate recommendations.

Likewise, the market coordinator function must know when a product should be added, when one should be dropped, and when to substitute a new one for one which is to be dropped. The "image" which the public forms of a given line of products is largely in its hands, not because it originates the ideas expressed in the products but because it has a grasp of the economics involved and a feel for the consumer's attitudes and preferences. This feel for consumer attitudes and preferences is primarily the result of an information-feedback system operating within Laitala's concept of the consumer-to-consumer cycle.

While plans are being formulated, aesthetic design is also under way. In this area where judgment and balance from the sales point of view are essential, the need for a function to supplement and consolidate the responses for each of the manufacturer's agents becomes

obvious. All too often, consumer convenience and utility are sacrificed to a standard of pure aesthetic design which exists in the mind. The consequence of this is that product life is sacrificed for someone's idea of beauty.

Choices of various materials are often possible, as well as various processing methods, and the marketing viewpoint must carry weight whenever decisions on these points might involve consumer preferences. More than this, problems of economical shipment, damage in shipment, mechanical failure, etc., must be taken into account. Thus, an information-feedback system is both fundamental and essential just as is the need for a function which will assure both the speed and the accuracy of current information in the information-feedback system.

In this connection, two points should be made. The first is the importance of coordinating advertising, sales, service, and the other devices used in modern selling. If these parts are not properly fitted together, a great deal of the research time and production effort can be dissipated by faulty planning and extended time delays. The second point deals with the sales organization. It involves not only selection, training, and incentives but also the relationship to the manufacturer.

Sound policies are important in every part of any business, but are vital in this area.

In summation, the market coordinator function must realize that the intrinsic quality of a product is determined by its design, the kind of materials used in its manufacture, and the degree of precision and competence in its manufacture. When it reaches the end of the assembly line, packed for shipment, its level of quality is forever established. It may still go through a number of shipments and trans-shipments, be unloaded, and held in storage a time or two before title of ownership is transferred to the consumer. But the expenses incurred beyond the production function, although not adding to the intrinsic quality of the article, may add greatly to its cost. The market coordinator function must, therefore, focus its attention on ways and means of reducing this spread between the direct production costs of goods and the price the consumer pays.

The full benefits of planning can best be realized when there is assurance that the sales function will sell the products produced. Uncertainty as to consumer trends can be removed if the consumer-to-consumer cycle can be established within Forrester's information-feedback system.

The market coordinator function must comprehend

the whole sequence from consumer to design to production to consumer, and maintain a steady and consistent flow of information through the entire engineering cycle. It must realize that a sales agent which sells the product for a use for which it was not designed is really doing the manufacturer a great disservice. It is these unusual circumstances which combine to make this function mandatory.

Because of the critical importance of an information-feedback system, the function of market coordinator is fully justified even though it represents an additional cost to the manufacturer who elects to retain contract or commission sales representation. Its basic justification lies in the fact that as the consumer's environment becomes more competitive the manufacturer's environment must also become more competitive. These factors demand a fast reaction capability on the part of the manufacturer's organization. Consequently, the design and production functions must have the benefit of a positive and timely information-feedback system.

In summation, the position of market coordinator may be described as the gap closer which ties together the three functions of design, production, and sales into one positive and effective competitive force.

SUMMARY AND RECOMMENDATION

In summary this thesis has explored, within the concepts of Forrester and Laitala, the impact of consumer environment and consumer attitude upon the engineering cycle within a manufacturer's organization. Two possible courses of action for bridging the gap between manufacturer and consumer and for accurately interpreting consumer demands have been presented. One involves direct action utilizing the manufacturer's own organizational structure; the other is through use of an independent organizational structure not under the direct control of the manufacturer.

This thesis recommends the inclusion of the function of market coordinator within the organizational structure when a manufacturer must distribute his products through an independent agency not directly under his control. Needless to say this function which has been placed within Laitala's consumer-to-consumer cycle is of little or no value unless the total organization is operated within the general framework of Forrester's information-feedback system.

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