Organizational Responsibility for Inventory Control

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Science in Business Administration

by

Spartico Galieti

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The thesis of Spartico Galieti is approved:

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____________________
Committee Chairman

San Fernando Valley State College
January, 1965
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PART I

INVENTORY'S PROBLEM AREA
CHAPTER I

INTRODUCTION

The basis for assigning the organizational responsibility for inventory control is of sufficient importance to justify constant consideration and clarification. "The average firm puts about fifty percent of its gross income into purchased goods and services. Industrial leaders have come to recognize that an outlay of this size rates the best possible management."¹ This caliber of management can be achieved only through a carefully conceived and permanently controlled program executed through a clear-cut delegation of responsibility and authority. The placement of the responsibility for inventory control is a matter of considerable difference of opinion. "In smaller companies, it is a common practice to delegate the responsibility to the treasurer or controller. Larger companies place reliance on individuals,

committees, or special departments."² Theoretically, one is led to believe that the common practice, for assigning the responsibility for inventory control, is sound and practical. However, in actuality the problem of assigning the responsibility for inventory control is not so simple. Industrial leaders are also faced with considerable difference of opinion among departmental supervisors. "The production man wants control of inventory to assure a sufficient stock of raw material and components to make scheduling more efficient. The Sales Department would like control of inventories to assure delivery on receipt of an order."³ "The purchasing man contends that inventory control (excluding finished goods) centered in purchasing reduces the communication problem."⁴ Another approach to inventory control is the assignment of this function to a materials manager. As one manager puts it, "Efficiency goes up and costs go down if responsibility for purchasing and production control (which includes inventory control) is given to one executive—the

³ Ibid.
⁴ McManus, loc. cit., p. 65.
materials manager."\textsuperscript{5}

In summary, these statements indicate that industrial leaders are faced with a very complex problem. The complexity created by these various opinions, linked with the restricted managerial time element, gives reason to believe that industrial leaders eventually develop an attitude of unconcern as to who controls inventory, so long as it is controlled. This is an unhealthy attitude on the part of industry's top managers, and probably a major reason for such an attitude is the lack of trained inventory personnel. This lack of trained personnel places top management in the awkward position of assigning organizational responsibility for inventory control to that department supervisor who can best present and support reasons why this task should be assigned to his department. These issues and reasons why inventory control should be assigned to a given department will be treated more fully in the following chapters.

"There is good reason to believe that many companies are operating without any precise inventory control."\textsuperscript{6} "No one worries about high inventories as


\textsuperscript{6}McManus, \textit{loc. cit.}. 
long as new orders keep coming in at a good pace; but when the ratio of inventories to new orders starts upward and continues to rise, then management begins to worry." These statements indicate the need for constant consideration of inventory control, and as with the solution of many problems of business organization, this can only be achieved by the sincere desire on the part of top management to become inventory conscious and to place its control within the organization for the benefit of the entire firm, and not for the benefit of any single department. This control must provide the responsible department with full authority to communicate with suppliers to assure the quality of their products, to discuss possible changes in the product which might indicate a savings to the firm buying the product, and to assure the reliability of the selling firm in meeting its shipping schedules.

The previous paragraph summarizes the urgent need for the constant consideration and clarification of the problem involving inventory control. The major purpose in discussing this problem is to stimulate constructive criticism of the practices and difficulties of assigning the responsibility for inventory control.

7 "Charts of the Week," Business Week, September 17, 1960, p. 98.
in an organization. If, through further consideration and clarification of the basis on which this assignment is made in business firms, a platform or jumping-off point for more development of this subject area is provided, then a contribution will have been made.

Statement of the Problem

The problem area is not one of establishing the one system or method for controlling inventories in an individual firm.

Much has been written on the methods for controlling inventories and the various systems which can be used to accomplish this, but the decision as to who should be responsible for such control is an area of much controversy. Dr. William Voris states, "In continuous manufacturing the control of inventories is an essential part of production control because of the exacting synchronization which must occur continuously between production and the supply of materials." The continuous synchronization of materials is vital to any production process, but its control can be assigned to a department other than production control and still maintain this continuous synchronization of materials.

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The point is, whoever controls inventory must not control it for his own or his department's benefit, but for the benefit of the entire firm. The efficient control of inventory must be the concern of every individual and every department within the organization. If controversy exists among managers within a particular firm as to who should control the firm's inventory, the firm will find it difficult to maintain a smooth and efficient functioning organization. Therefore, the intent of this thesis is to compare the pattern of assigning organizational responsibility for inventory control as established by management principles of organization with the opinion of various experienced managers operating in or managing inventory control.

**Hypothesis**

Sufficient reasons exist for assigning the responsibility for inventory control within the organization external to that of the Production Control Department.

The hypothesis does not contradict the quoted Voris position, but rather it leads to a review of devices for inventory control which were not widely used or developed at the time Voris took this position. These new devices, such as electronic controls, enable
production management to take a great latitude on this point. It is possible, through technological changes in production methods, and the introduction of electronic inventory control devices, that it is no longer necessary for the production control department to control inventories to assure the exacting synchronization which must occur continuously between production and the supply of materials. The position on this point, as expressed by Voris, implies that there is always the right amount or an overabundance of material on hand at all times, and that the quality of the materials is of a high nature. Under these circumstances, the quality of incoming material is the responsibility of the receiving inspection or quality control departments. If quality assurance of material is left to either of these departments, what disposition is made for a shipment of urgently needed material of poor quality? This situation arises quite often, and if it is not corrected at the source, the purchasing firm will suffer many setbacks in its production schedules. The point here is, the assurance of quality inventories should begin at the source of supply, and not at the point of entry of the purchasing firm.

Criteria

The criteria to support or question the
hypothesis will be of two types. The first will be based on the opinions of authorities in the field of production and inventory management. The second test will be the results of a survey of industry practices in the Los Angeles area concerning inventory control organization and management.

Definition of Terms

Inventory will be defined as raw material, purchased parts, in-process material, and finished sub-assemblies but excluding finished goods. The control of these items may be assigned to a single department or to various departments, such as finished goods, controlled by the sales department; and in-process material, controlled by the manufacturing department. Whatever the case may be, the control of in-process and finished goods will be excluded from the problem area of this thesis. "In general, an inventory control department is responsible only for the raw material and the purchased parts until they are requisitioned by the manufacturing department." 9

Statement of Method

Chapters II through IV will deal with the

9Ibid., p. 175.
different positions expressed on inventory control and the responsibility for its control. Investigation in this area revealed opinions which were biased simply because the articles were written for periodicals which were oriented toward purchasing, sales, et cetera. Some of the articles, although biased, presented some very good reasons for, and the practices of inventory control by various departments. Investigation of various testbooks revealed a multitude of opinions regarding the responsibility for inventory control. It appears that the authors are reluctant to make a definite commitment as to who should control inventory, or that they feel that it makes no difference who controls inventory or at what level within the organization its control is placed, so long as it is controlled. If the latter statement is the case, the efficient and economical control of inventory can never be attained, because of inefficient use of inventories, "buck-passing," and lack of cooperation and interest among departments.

Chapter V will indicate the various steps used to develop the sample size and the questionnaire for the sample survey to be conducted in the Los Angeles area. This survey will attempt to locate present control areas within certain firms, and opinions as to who should be responsible for inventory control.
The closing chapter will summarize all the previous chapters for the final evaluation to support or question the hypothesis.
CHAPTER II

CONCERN FOR INVENTORY CONTROL

"A real shock often awaits the company president, who decides to look into the company's inventory position. All too frequently, he finds that it is overloaded and ill-managed, which creates a needlessly heavy drain on precious working capital." ¹ Suddenly, the "word is out" calling for a "tighter" control on inventories. "This leads to minimum inventory positions that are less than safe, and that interfere with a normally--expected purchase order flow." ² The term, "better" control on inventories should be the policy adopted, for it tends to develop "a positive company-wide approach to inventory management which cuts across all organizational lines and eliminates the one-step negative approach which only stops the drain on the company treasury." ³


³Hick, loc. cit.
"One reason for tight inventory policies is the result of over-concern of some managements with conservation of working capital."\(^4\) Too often, "Management makes the mistake of getting too involved with this area of inventory accounting."\(^5\) This is due to the fact "that top management is far removed from the points where inventories are generated."\(^6\) These points are the results of both internal and external forces acting on the firm, as well as individuals within the firm.

**Inventory Generating Points**

"Too many business firms treat only the symptoms of an ill-managed inventory situation. The basic reason for this is due to managements' failure to recognize the natural biased feelings toward large inventories."\(^7\)

"A large inventory is desired by the firm's salesmen for the assurance of delivery on receipt of an order."\(^8\) This is important to the individual salesmen for reasons of elevating his social prestige as the

\(^4\)Baxter, *loc. cit.*

\(^5\)"Management Turns Its Sights on Inventory Control," *loc. cit.*

\(^6\)Ibid.

\(^7\)Ibid.

\(^8\)Ibid.
outstanding salesman, which may lead to promotions or a larger "pay envelope."

Externally, the salesman, who can deliver upon receipt of an order, soon becomes associated with a high corporate-image and finds the doors of his customers always opened to him because of his outstanding ability to deliver the "goods." The results--more revenue for the firm.

"The purchasing man desires a large inventory because he is afraid of being caught short." In many firms, his duties have been largely clerical. Under these conditions, the purchasing man becomes frustrated and feels insecure. "Too often, management has said to him: 'You get out the paperwork confirming the engineers' decisions. They'll tell you what to buy and maybe even where to buy it. You just try to get the best deal you can.'" This type of attitude stifles creative buying, it precludes value analysis, and encourages the purchasing man to buy in large quantities because of the cost reductions that are associated with large lot buying. A firm with this sort of attitude, and competition as it is today, soon find themselves with an overloaded inventory and many obsolete materials.

9Ibid.

"The production man wants a large supply of raw materials and component parts to make scheduling more efficient. This attitude is becoming more and more predominant since the introduction of the military's "PERT" and "PEP" planning systems which are desirous, and in some cases, necessary for obtaining government contracts.

These inventory generating points are only a few that management must take into consideration to avoid the negative attitude that is associated with a "tight" inventory control policy. Management must also consider the following points, and determine to the best of their ability which, or how these points may affect their firm.

1. Is added emphasis being placed on changes in styles and design of your products? This can lead to fast obsolescence of inventories and to a drain on working capital.

2. Have users of your products become more selective and insist on product design for a specific use? For suppliers, this means a broader product line and an increase in the number of slow-moving items.

3. Has your company broadened its product lines to match all items sold by competitors?

4. What is the degree of your product diversification? This may increase the

number of inventory items carried.

5. Are the users of your products desiring to keep their own inventories at a minimum, insisting on faster and more frequent shipments from your company? This may mean an increase of your inventories both in quantity and in number of items carried.

6. What is the degree of automation in your plant? Do you anticipate the introduction or increase of any automation equipment within your plant? Since this type of equipment results in high set-up costs, but lower unit costs, the economic use of such equipment calls for longer production runs which will increase inventories.12

These inventory generating points indicate why management must adopt a positive attitude when confronted with the problems of ill-managed inventories. This type of attitude gives equal consideration to all the inventory generating points of a particular firm. By doing so, management avoids the error of placing too much emphasis on a single inventory generating point, which in effect, may correct the problems of a single department, but does not establish the over-all inventory balance that is needed for optimum economy in this area.

To achieve this optimum inventory balance, management must also be aware of the reasons why better inventory management is a vital necessity for the

12Hinck, loc. cit., p. 49.
economic health of the firm. The effect of these reasons upon individual firms will depend mainly on the firm's management philosophies concerning size of plant operations, both present and future; the product or product lines, the degree of diversification, policies toward control, the firm's financial position, and methods of production. These areas are by no means the complete list. Some organizations are confronted with the complexities created by raw materials being concentrated in certain areas. This becomes more complex when a firm must tap the natural resources of foreign countries.

The tapping of foreign resources has a tremendous impact on this nation for reasons of maintaining its position as a world power. This power position is the result of the high production output attained by our industries, but the future maintenance of this power position relies on industry's ability to use its raw materials in the most efficient and economical manner.

Reason for Concern

Prior to 1913, management had little or no concern for inventory control. "Inventory was merely an adjunct to the production machine and one of the lesser production department's responsibilities. Materials were inexpensive, labor cheap, and competition was of a
pleasantly leisure nature."¹³ This pleasant industrial condition was further enhanced by the lack of any external pressure to force industry to control its inventory stock.

The passing of the Federal Income Tax Laws in the year 1913 necessitated the establishment of accurate records. Management attempted to remain in the dark concerning their inventory positions. They still maintained the position that inventory was one of the lesser production department's responsibility and necessitated no accurate control or records. The Federal Income Tax people did not follow this line of reasoning and demanded accurate facts and figures.

"Other external demands were created by the enactment of laws in various states requiring approval of state commissioners before issues of securities. Bankers asked to extend credit, investors contemplating the purchase of stock, underwriters considering marketing of securities, and auditors called in to examine company books."¹⁴ These external demands exerted pressure on industry for a precise management of its


¹⁴Ibid.
inventories. The shock exerted on management, by these demands, was enhanced by the fact that the works manager was in no position to supply the necessary facts and figures to fulfill these demands.

Along with the external demands, which required a precise control of inventories by management, came the awakening shock to the nation following the year 1938. Up to this time, certain natural resources of the United States were sufficient in quality and quantity to meet the demands of the American consumer. From 1938 to the present, there has been a tremendous increase in our standard of living. This increase has given the American consumer the economic freedom to have more than one radio, television set, automobile, plus an endless list of home appliances, all requiring certain precious metal elements for the electrical circuitry and chrome for appearance. The technical advances made in the field of space flight and aviation has also increased the needs of certain natural resource elements used in missiles and jet engines.

These demands, for the national well-being, provide sufficient reasons for concern, and for increasing inventory efficiency. However, there is another argument which follows this line of reasoning:

In our free enterprise system, industry has the moral obligation to prosper. In
return for the freedoms of democracy, private business assumes the obligation of succeeding in its task of converting invested capital, at a profit, into goods and materials which elevate the country's standard of living. The price for industrial freedom is industrial prosperity which provides gainful employment for a maximum number of people and produces an optimum amount of goods at a minimum price. Because company success or failure hinges, in large measure, on the nature of its inventory methods, there is a moral responsibility impinged on industry to manage and control their inventory through scientific measures to obtain the greatest profit yield possible on their inventory investment.15

15Ibid., p. 8.
PART II

INVENTORY VIEWPOINTS
CHAPTER III

DEPARTMENTAL VIEWPOINTS

"The annals of business failures contain many examples of companies forced out of business as a result of speculative inventory build-ups. Properly managed companies avoid this type of inventory excess, which can lead to insolvency. But in these days of narrowing profit margins, many executives recognize that the negative approach of simply curbing inventory speculation is not enough. They are becoming aware of the need for a more positive approach to inventory management. This means careful evaluation of the greatest profit yield obtainable on the inventory investment."¹ This, in itself, is no great task and can be obtained through simple mathematics applied to a variety of inventory control methods. The task of establishing an inventory balance becomes more complicated as the firm expands and begins producing a variety of products. At this point, an electronic computer may

¹Hinck, loc. cit., p. 48.
be necessary to handle the immense number of calculations.

An inventory balance system is only a small part of the inventory control problem facing today's modern industries. Even the best inventory balance systems cannot assure management that the inventory levels established for each item of inventory will be maintained to permit the even and continuous flow of material through the production process. These balance systems are only the beginning of a well planned inventory control program, but they are by no means the complete answer for an ill-managed inventory. Establishing the goals or levels required to maintain a balanced inventory for any company is only the beginning. When establishing these inventory goals or levels, managements must keep in mind the bias feelings of all functional groups toward inventory and that materials affect all company functions and activities in various degrees. "To engineering, they are the essence of product design, performance, and reliability. To manufacturing, they are an element of machine and manpower loading. To sales, they are the means of competing for customers and markets. To finance, they are an expenditure of working capital funds. Inventory materials are all of these, and more, but they cannot
be all of these, at the same time, to all activities, in equal measure.\textsuperscript{2} Since materials are a limited resource, management must establish a balance that will satisfy the desires of all functional groups to a degree which is the most profitable from a company standpoint and not for the benefit of any one functional group. How to accomplish this, and "where to place organizational responsibility for inventory control is an area where opinions differ considerably."\textsuperscript{3} Several companies have settled this problem by creating a material manager to deal with purchasing, traffic, production control, and other related material functions.\textsuperscript{4} This concept which establishes central control of the whole material package, appears to be a regressing of management principles back to the single-owner-manager organization and may well be the answer to the ill-managed inventory problem facing today's industries.

\textbf{Evolution of Inventory Control and Its Effects}

No area, in the span of management, has been


\textsuperscript{3}"Management Turns Its Sights on Inventory Control," \textit{loc. cit.}

\textsuperscript{4}McManus, \textit{loc. cit.}, p. 66.
neglected, as much as the area involving materials. This is due to the concept established years ago, "that skill in managing materials automatically accompanies skills in specifying and using materials." This establishes the premise that a good engineer or a good manufacturing manager is, by definition, always a good materials manager; therefore, there was no need for a separate, independent materials function. Odd as it may seem, "This premise is still accepted by some companies, but the modern progressive managers accept the premise that materials management is a basic organic function of the business--every bit as important as sales, engineering, manufacturing and finance."6

This confliction of opinions is due partly to the stubborn attitudes of some managers, who simply oppose any or all new approaches to managerial concepts. However, the main reason is because of the lack of understanding that the problem of inventory control is the "inevitable result of the evolution of the giant corporation from the small family-owned business."7

6Ibid.
7Ibid.
Here the owner-manager handled all administrative jobs. The size of operation permitted him to be his own materials manager, chief engineer, controller, manufacturing manager, marketing manager and personnel manager. As business increased, the owner-manager soon realized that he could no longer carry the heavier load created by the expanding growth of the firm. He then began to develop the organization by hiring assistants who performed certain administrative functions. At this point, the activities related to materials are not a problem to the owner-manager, but he may wish to relieve himself of this duty by assigning various materials activities to the manager showing the most interest, or to the manager who presents the strongest reasons why he should control various materials activities. Assignments were made in this manner with the thought in mind that the materials activities were not really too important and that they would be taken care of. The thought of hiring a new man to manage all activities related to the materials function rarely occurred. If it had, it was usually overruled by the ridiculous reasoning, "why create extra overhead by hiring another person to manage the materials function when the present personnel can manage various materials
activities and do the job as well, if not, better."\(^8\)

This concept did not change. As the organization continued to grow and become more complex, due to countless technological, economic, social and sociological forces, problems of communication set in, and responsibility was no longer centered in just one individual. As a result of this, conflicts developed between various department managers in their attempt to achieve supremacy as the top controller of the materials activities. "In all too many companies, conflicts in this area are resolved by the sort of compromise that is more political than economic. As a result, there is little or no coordination since no one really manages inventories and the relative inventory activities under this type of set-up."\(^9\)

This struggle for control of the inventory functions has, through the years, developed a trend where the activities related to materials have passed in degrees from the shop foreman, to the production control department, to the purchasing agent (buying phase), to the sales or marketing department (control of finished materials). The end product of this trend creates, in

\(^8\)Ibid., p. 64.

\(^9\)Ibid., p. 65.
many cases, conflicting and strained working objectives. The results of this trend still exist in many companies. This is evident by the many articles written on this subject, each defending or presenting viewpoints as to why inventory control should be the responsibility of certain departments.

Sales and Marketing's Viewpoints

The practice of placing inventory control with the Sales or Marketing Department is very unusual but not impractical. "Industries where fashion merchandise is popular, the maker must have stock available to make prompt shipment, otherwise, the popularity of the style may decline, orders may be cancelled, prices may have to be reduced, customers may go to competitors, and profits may be sacrificed."

This type of operation requires a very close contact with the fashion world, "where styles and color combination are of utmost importance." Equally important, with color and styles, are the many new types of fabrics that appear each year. Because these variables change from season to season, a firm manufacturing fashion goods must place the control

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of inventory with the Sales or Marketing Department because the personnel of these departments are the only individuals who are closely associated with the so-called "fashion world." A great majority of the individuals involved with the material control of an operation such as this, have been in this field for many years and have developed a feel for what they believe will be the better color combinations and fabrics for a given reason. If one were to ask them how they know that certain color on fabrics will sell better than others, they cannot give a scientific answer, for there is none. They just seem to know what selection will sell better than others.

In industries manufacturing hard-goods, "the Sales or Marketing Department would like to control inventory in order to maintain a complete line of materials to meet customer demands and to maintain the company's position as a leader in the industry."12 "This can be very dangerous, as individuals in these departments may be inclined to carry too large of an inventory."13 These individuals are also inclined to maintain inventory materials of high quality when the

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12 Hinck, loc. cit.
13 Ibid., p. 86.
same material could very well be of lower quality. On this, they maintain that they are in a better position to know what their customers want in the line of quality. If this line of reasoning gets out of hand on a competitive product, the results can become very disastrous to the company.

**Finance's Viewpoint**

"The judgment of the National Industrial Conference Board's recent study of over 100 companies implies that a discrepancy in the petty cash fund may evoke more concern than the accountant's writing off $100,000.00 for surplus and obsolete inventory."\(^{14}\) The fact that nearly 30 per cent of the total assets of the average company is tied up in inventory is reason enough for placing the control of inventory with the Finance Department. For a small and growing company, this may be the best policy, providing that the treasurer is given the authority and has the interest and background necessary to handle the inventory program. However, this policy can be harmful to a company due to the general feeling among finance men "that too

\(^{14}\)"Management Turns Its Sights on Inventory Control," *loc. cit.*, p. 56.
much money is tied up in inventories."\textsuperscript{15} "They would like to have no inventory, the tendency of which, is to cut inventories back too far,"\textsuperscript{16} which may disrupt the entire continues flow of materials through the production process.

**Production's Viewpoint**

Production Departments are primarily concerned with reducing excess inventories and maintaining proper inventories in order to achieve this, they must avoid material shortages which result in excessive inventories carried at all times."\textsuperscript{17} This excessive inventory can be very useful to hide inefficiencies that result in many production parts being scrapped or lost in the production process. Another misuse of inventory by the production personnel is the personal favors of making or repairing commercial items that are of no significance to the normal production process. These items are referred to as "government jobs" and can become very costly to the company. In spite of these misuses, W. E. Ritchie maintains that "Where the most important consideration

\begin{flushright}
\textsuperscript{15}Hinck, \textit{loc. cit.} \\
\textsuperscript{16}McManus, \textit{loc. cit.}, p. 65. \\
\textsuperscript{17}\textit{Ibid.}
\end{flushright}
is that of having adequate supplies of parts and materials on hand, inventory control should be tied closely to the group responsible for production planning and control. This concept may produce the parts and material needed to produce the end product, but too many companies find that communications and control, under this set up, are not of the caliber required to maintain a high overall company efficiency. The practice of "bootlegging" parts through a well planned material control system is the greatest disrupter of communications and control. In many cases, the piece part has been completed before the paper work for the part has been started. In some instances, the paper work is forgotten due to the confusion created in rushing the piece part through the production cycle. Under these conditions, control begins to break down and usually results in the necessity to "bootleg" more parts. This condition exists only when the Production Department has complete control of inventory or some portion of it.

Purchasing's Viewpoint

The strongest opponents, in the struggle for inventory control, are the Purchasing Agents. There are

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18Ritchie, loc. cit.
two main reasons why they want this responsibility:

1) "The desire to elevate themselves above the traditionally imposed duties which have been largely clerical which stifles creative buying."\(^{15}\)

2) "The trend toward central control of all material functions which the National Association of Purchasing Agents predict may well be assigned to the Purchasing Department."\(^{20}\) In view of these two reasons, which appear to be personal in nature, purchasing agents are presenting some outstanding reasons why inventory control should be assigned to their department. They maintain that the "purchasing department personnel have the prime desire and interest to manage inventory efficiently."\(^{21}\)

"Northern Electric, Ltd., cut their inventory by 25 per cent by putting inventory control under the purchasing department. Under this plan, stock records were centralized which permitted the use of scientific inventory control methods to maintain minimum stocks and


\(^{21}\)McManus, \textit{loc. cit.}. 
reduce investment." However, the largest part of the benefits of this plan was derived from the close watch and interest given it by the purchasing personnel. Another reason offered in support of inventory control under the Purchasing Department is that "most of the information needed to manage inventories is already in this department." Facts needed for buying decision, lead times, market conditions and quantity discounts is the normal information on hand in any Purchasing Department. On the other hand, the Purchasing Department must go only outside itself for two items, the sales figures, designating the amounts to purchase, and production schedules to designate when to purchase materials. Purchasing agents agree that if inventory control is centered in purchasing, the communication problem is smaller because of the material information which is already on hand in this department. They also agree that the communication problems can be overcome with close cooperation when inventory control is centered in other department, however, in practice, there are frequently delays and incomplete transmission of information.


23 McManus, loc. cit.
The awarding of government contracts to the lowest bidding firm, generally results in the firm establishing policies for purchasing materials at the lowest cost possible. Under these circumstances, where the cost of material is the major component in the cost of the finished product, inventory control should be exercised by purchasing officials.24 If this is the case, and inventory control is not centered in purchasing, close follow-up of material promise dates will either be lacking, or purchasing officials will accept too lightly the vendor's excuses for not meeting material promise dates. Dean S. Ammer maintains, "If purchasing officials applied just one-tenth the effort to routine follow-up that they apply to emergencies, many a crisis would be prevented."25 However, routine follow-up is restricted if inventory control is not centered in purchasing due to: communications breakdowns; the feeling among purchasing officials that their job, in the eyes of management, is only clerical which stifles personal interests; and the absence of the close contact to the inventory status situation to permit swift action

24Ritchie, loc. cit.

on materials that are approaching the minimum inventory stock levels.
CHAPTER IV

MATERIAL MANAGEMENT

In analyzing the aforementioned viewpoints, it should not come as a surprise that industry is contemplating the use of a renewed approach to inventory control. "This approach establishes central control of the whole material package. Traffic, inventory control, buying, and related functions are unified under one man," the material manager.

The materials management concept is not new. It has been traced as far back as 1926, and to the aircraft industry during World War II. Its origin is traced to the small family-owned business, and to the small one owner-manager business. Here, the size of the business operation not only permits, but forces the owner to handle all of the administrative functions. His ability to manage these functions is directly correlated to the success or failure of his enterprise.

The concept's recent rise to popularity is accredited to the nation's purchasing agents whose

1McManus, loc. cit., p. 64.
desires are to bring order to the chaotic inventory problems resulting from technological advances, our growing economy and the demand for lower costs. However, cynics feel that purchasing agents see the material management concept as an opportunity to add stature, responsibility, and salary gains to their traditionally clerical function. Louis J. De Rose sums it up in this manner. He "contends that purchasing is at a dramatic crossroads. It is faced with the prospect of being absorbed into a broader scope material management structure, or expanding its vision to embrace the entire material system." Under these circumstances, the choice of action is obvious. As for material cost, who but the purchasing agent knows best the cost of transportation, inspection, storage, and delivery of materials to the point of use?

Managements' Viewpoints

Variation of opinions regarding the material management concept is similar in respect to that which exists on the question, "who should be responsible for inventory control?" Much of this controversy is due to the lack of an exact science in an area which "the

\[2\text{De Rose, loc. cit.}\]
centralization of the material function into one department is eminently desirable and is definitely the trend. A review of the following material management viewpoints will indicate why this concept is desirous, and why it probably will never develop into an exact science.

**Material Management Objectives**

The single main objective of material management is to achieve an optimum return on material investments while maintaining a continuous and economical flow of materials from supply sources, through production, to storage and common carrier. Industrial managers have suddenly realized that materials, on the average, account for more than half of their company's costs. Better management of this high cost area can lead only to new and higher profits.

To achieve the single main objective of material management, one must consider additional material management objectives. These are listed below, and they "are concerned with the activities necessary to provide the uninterrupted flow of materials

\[\text{3Melnitsky, loc. cit., p. 21.}\]
and services used in production."  

1. Low prices for purchased materials and services.
2. High inventory turnover.
3. Low cost of acquisition and possession.
4. Continuity of supply.
5. Consistency of quality.
6. Favorable relations with supply sources.
7. New materials and products.
8. Economic make-or-buy decisions.
10. Product improvement and simplification.
11. Amiable and cooperative inter-department relations.
12. Long and short term economic forecasts.

Over-emphasis of any of these objectives may cause adverse affects which usually results to imperfect coordination and achievement of inter-departmental relations. An equilibrium of the objective emphasis is based on the individual selected as the material manager and his position within the organization structure.

The Material Manager

The selection of a Material Manager is the most important task, and the most difficult to achieve. The individual selected should know inventory control, purchasing, acquisition and stock costs, manufacturing

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processes, marketing, and finance. He must be a human relation expert and well experienced with the over-all goals of the company. One would think that an individual experienced in all of these areas should be the president of the company. However, a broad background of these areas is required to prevent the bias concentration on any one of the material management objectives. This, if permitted to occur, would defeat the whole concept of material management.

The selection of the material manager becomes more difficult as the size of the company increases. Executives of small and medium size companies are often required to "wear several hats." This situation lends very well in fulfilling the prime requisites required of the material manager. In fact, many small companies, as a result of this situation, have been practicing material management from necessity but have never considered calling it that.

Executives of large companies usually do not possess the broad company experience required to handle the material manager's responsibilities. Companies who employ such experienced individuals, find that these individuals are near retirement ages and lack the necessary drive to supervise and maintain a material management program. Yet, this concept can still be
used in large companies by parceling out the material functions to several executives and achieving coordination through the use of a committee.

Pros and Cons of the Material Management Concept

The largest drawback to the material management concept is that it has not been proven to fit into all types of operations. In large organizations, the concept works best with high volume repetitive products. With this type of operation, production standards, economical lot procurement of materials, and inventory standards are less difficult to establish and maintain. This usually adds up to higher profits for the firm.

Organizations who produced to customer specifications find the material management concept difficult to apply to this type of operation. However, the coordination aspect of the concept is accepted because purchasing, manufacturing and sales are related to materials and should have this material relation linked among them by one man or a committee.

Extremists of the material management concept feel that this link should also encompass the areas of inventory control, production control, traffic, engineering, products in transit, and material costs and vendor analysis. The extremists believe that
reuniting the functional areas relating to materials, that have become separated, will give organizations better capability for coping with the flood of technological advances, the growing complexity of our economy, and the powerful demand for lower costs.

Critics of the concept, in addition to the fact that the material management concept has not been proven to work in all types of operations and because the concept is not an exact science, further maintain that:

1. The material management concept goes against the general business principle of separating all major functions.

2. It eliminates the checks and balances desirable for proper operations. Decisions are made without the necessary cross section of opinions.

3. Top purchasing men are drawn toward manufacturing and away from the buying function.

4. A material manager would be spread too thin, thus losing touch with markets.²

Apparently, the critics have not considered that the desired checks and balances, and market visibility can be accomplished through committee action. Furthermore, the drawing of purchasing personnel to manufacturing could result in the economical balance of purchasing's objectives of buying in large quantities and production control's objectives of high inventory turnover and low

²McManus, loc. cit., p. 66.
The lack of an exact science generally creates doubt and uncertainty in the minds of individuals who, by chance, may be affected by a new concept. The critics have expressed this by their statement that the material management concept goes against the general business principle of separating all major functions. It is possible that a few organizations have combined their major function under the material management concept, however, it was never the intention of the concept to combine all major functions. This is expressed by L. J. De Rose's definition of the material manager's responsibilities and authority.

The material manager plans, coordinates, and monitors all activities which contribute to material-flow. This is not to suggest that he manages sales, manufacturing, engineering, or finance, all of which affect materials by their actions. The material managers' authority does not extend to functional areas. However, his responsibility must be to the material system. He must assure adequate inputs to the flow and balance levels at all stages of the flow, so as to satisfy output demands, efficiently and economically. Always, he must focus attention on materials as a production-distribution system, rather than a factor used by any single functional component.7

7De Rose, loc. cit., p. 92.
Summary

The previous chapter has indicated that industrial organizations have become aware of the high inventory costs, and that they desire the economical and efficient control of this area in the interest of all major functioning components.

The evolution of inventory control, from the small family-owned business to the giant corporation, was indicated along with the external demands for its control. Had management, from the beginning, taken a sincere interest in the evolution of inventory, the depicted inventory generating points and the viewpoints of the major functions desiring the control of this area, the present problems of assigning organizational responsibility for inventory control could have been solved and an exact science for material management may have been established.

Resulting from management's lack of interest in this area, the major functions have expressed their viewpoints why the inventory control responsibility should be assigned to their functional area. Realizing that these viewpoints express a sincere desire to control inventory in the interest of the organization, it is evident that the communications required for the efficient and economical coordination of material inputs
to the production process would be lacking if inventory control is assigned to any of these functional areas.
Dean Ammer expresses this by his statement that, "production control and purchasing are constantly jockeying for supremacy to control materials. As a result, there is rarely perfect coordination and achievement of inter-materials objectives."  

In conclusion, it appears that organizations will obtain the unbiased coordination for material flow through the application of the material management concept. Disregarding that the concept has not been proven to work in all types of production operations, and that a capable and energetic individual is needed to supervise and maintain it, it still appears to be the best method for monitoring all activities which contribute to the material flow that will satisfy output demands efficiently and economically.

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PART III

SURVEY AND CONCLUSION
CHAPTER V

INVENTORY CONTROL SURVEY

A mail questionnaire survey of industries within the Los Angeles area was conducted to obtain additional information to support or question the hypothesis. This method of obtaining information was employed because of the limited funds and personnel available for conducting the survey.

Realizing that the mail questionnaire has a serious disadvantage in that only ten to twenty percent of the questionnaires are answered, this method seemed most suitable considering the limiting factors, and this disadvantage.

The questionnaire contained thirty-four questions, twenty-eight of which were multiple-choice questions so constructed that the respondent could easily answer them by making check marks in appropriate spaces. The remaining six questions were constructed to obtain respondent information, name, title, et cetera.

The questionnaires were sent to 150 companies which were selected on a systematic sampling basis. By
this method, every tenth company was selected from an alphabetical listing of companies in the California Manufacturing Annual Register. Realizing that bias can enter the survey results, due to the nonsampling error of companies that may not have been included in this listing, a table of random numbers was employed to determine the starting point for selecting every tenth company. The table of random numbers was used in an attempt to create conditions for systematic sampling that would approach the requirements for simple random sampling.

In addition to the systematic sampling for selecting the 150 companies, judgment sampling was employed for selecting the respondents. Because of the small sample size, questionnaires were sent to various functional managers for reasons of obtaining a better cross reference of management opinions. For example, a questionnaire was sent to the purchasing manager of one company; another was sent to the sales manager of a different company, et cetera. This method reduces the survey bias considerably in relation to the bias that would have occurred had all the questionnaires been sent, for example, to purchasing managers of each company surveyed.

The questionnaire's main purpose was to obtain
management opinions regarding the following questions:

1. What is industry's present policy for assigning the responsibility for inventory control?

2. Does management opinions differ in relation to what organizational function should be responsible for inventory control?

3. Does management believe that the "modern concept of inventory control is for centralized responsibility?"\(^1\)

4. What material areas would management include under the centralized control concept of inventory control?

Survey Results

The following survey results are based on a twenty per cent return of questionnaires. This tabulation is not a replica of the questionnaire; answers that were not used by the respondents are omitted, and questions that received a high percentage response to a single answer will list only that percentage. Therefore, percentage response will not total 100 per cent on all items.

\(^1\)Melnitsky, loc. cit., p. 19.
1. The types of management personnel surveyed are listed to indicate the degree of management cross reference obtained by the questionnaire.

- a. Company Presidents 16.6%
- b. Company Vice Presidents 13.3%
- c. Company General Managers 13.3%
- d. Managers of Materials 13.3%
- e. Industrial Engineers 6.6%
- f. Company Treasurer 6.6%
- g. Sales Managers 6.6%
- h. Purchasing Managers 6.6%
- i. Managers of Manufacturing and Planning 6.6%
- j. Supervisor of Management Visibility 3.3%
- k. Administrative Assistant 3.3%
- l. Production Change Analyst 3.3%

Sixty-six per cent of these respondents registered more than ten years of experience in the management field.

2. The products of the companies surveyed are listed to further indicate the degree of cross reference obtained by the survey.

- a. Electronic Component Parts 26.6%
- b. Military Electronic Equipment 26.6%
- c. Military and Commercial Aviation Equipment 23.3%
- d. Automotive Parts and Accessories 3.3%
- e. Commercial Electronic Equipment 3.3%
- f. Steam Boilers 3.3%
- g. Plastic Injection Molds 3.3%
- h. Metal Containers 3.3%
- i. Tools for Spacecrafts and Missiles 3.3%
- j. Sheet Metal Stamping 3.3%
Eighty per cent of the respondents have indicated that their company has been in business for over ten years.

3. The production cycle for these companies was reported as follows:
   a. Short production cycle (less than 1 year) 50.0%
   b. Mixture of long and short production cycle 40.0%
   c. Long production cycle (1 year or over) 10.0%

4. The intricacy of the products manufactured was reported as listed below:
   a. Products very complex to manufacture 33.3%
   b. Products complex to manufacture 33.3%
   c. Products somewhat complex to simple 23.3%
   d. Products more simple than complex 10.0%

Further analysis of the products manufactured indicated that sixty-four per cent of the companies produced a variation of single products, while twenty-seven per cent produced a variety of products to be used in connection with a single product produced.

5. Cost of production for these companies, in relation to other companies manufacturing similar items, was reported as:
6. It was the opinion of the respondents that the high production costs in their companies was mainly the result of:

a. Poor control of materials 10.0%
b. Late engineering releases 13.3%
c. Production overtime 6.6%
d. All of the above items 33.3%

Thirty-four per cent of the respondents attributed high production costs to various reasons, such as, poor methods and procedures, nature of the business cycle, lack of overall controls, poorly designed products, continuous design changes, and product complexity.

7. Survey results indicate that inventory control responsibility is presently assigned as follows:

a. Production Control Department 36.6%
b. Material Control Department 36.6%
c. Purchasing Department 6.6%
d. Plant Foreman 3.3%
e. Company General Manager 3.3%
f. Sales Department 3.3%
g. Finance Department 3.3%
h. Manufacturing Scheduling Department 3.3%
i. Manufacturing Manager 3.3%

Fifty-seven per cent of the respondents report that the above entries have been
assigned the responsibility for inventory control for over four years.

3. Past inventory practices of the companies surveyed indicated that the responsibility for inventory control was assigned in the following manner.

a. Production Control Department 33.3%
b. Material Control Department 26.6%
c. Purchasing Department 6.6%
d. Plant Foreman 3.3%
e. Company General Manager 3.3%
f. Finance Department 3.3%

These percentages, in comparison to those of item 7 indicates an increasing trend of assigning inventory control responsibility to a material control department. However, twenty-three per cent of the respondents were unable to determine their company's post policies for assigning this responsibility.

9. Management preference, in relation to what organizational function should be responsible for inventory control, was indicated as follows:

a. Material Control Department 43.3%
b. Production Control Department 33.3%
c. Purchasing Department 10.0%
d. Finance Department 3.3%
e. Unable to decide 10.0%
10. The respondents indicated that they would place the responsibility for inventory control at the following organizational levels:

- Upper Top Management Level 6.6%
- Top Management (Major Functional Level) 36.6%
- Middle Management (Minor Functional Level) 50.0%
- Lower Management Level 6.6%

11. It was also indicated that this responsibility should include the following material areas:

- a. Raw material procurement for fabrication of parts 83.3%
- b. Work in-process 53.3%
- c. Purchase parts procurement for line assembly 80.0%
- d. Purchase parts procurement for fabricated details 80.0%
- e. Finished goods (Products & Sub-Assemblies) 60.0%
- f. Incoming inspection activities 10.0%
- g. Packing and Shipping activities 30.0%
- h. In-Plant traffic activities 50.0%
- i. Purchase Department 36.6%
- j. Production Control Department 36.6%
- k. Make or Buy Committees 43.3%
- l. Vendor evaluations 26.6%
- m. Receiving activities 43.3%
- n. Material Data Processing actv. 30.0%
The respondents were asked if they had noticed any trend toward the concept of organization which places all of the activities, of item 11, under the control of one individual or department. Thirty-four per cent of the respondents indicated they had noticed a trend toward this concept, while sixty-four per cent indicated no evidence of such a trend. Apparently, these percentages are based on the fact that, by the same percentages, the respondents had indicated that this trend was, and was not taking place in their company.

It was further indicated that forty per cent of the respondents believed that the integration of these activities would boost the efficiency and profits of their company; forty-seven per cent believed it would not, while thirteen per cent were unable to determine what the effects would be on their company.

The concluding question established the companies' present policy for the internal control of various inventory items. This
information was also desirous for reasons of comparing it to a recent Purchasing Magazine survey of 484 manufacturing companies.

### TABLE 1

**Thesis Mail Questionnaire Survey**

<table>
<thead>
<tr>
<th></th>
<th>Raw Materials</th>
<th>Shop Parts</th>
<th>Purchased Parts</th>
<th>In-Process Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Control Department</td>
<td>33.3%</td>
<td>66.6%</td>
<td>40.0%</td>
<td>66.6%</td>
</tr>
<tr>
<td>Material Control Department</td>
<td>40.0%</td>
<td>10.0%</td>
<td>33.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Purchasing Department</td>
<td>13.3%</td>
<td>3.3%</td>
<td>6.6%</td>
<td>----</td>
</tr>
<tr>
<td>Executives and Others</td>
<td>13.3%</td>
<td>20.0%</td>
<td>20.0%</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

**Survey Analysis**

The survey results have indicated that management opinions do differ in relation to what organizational function should be responsible for inventory control. However, this difference is not as extreme as was expected, since seventy-three per cent of the companies surveyed place this responsibility, by equal percentages, with the production control, and the
### TABLE 2

**Purchasing Magazine Survey**

<table>
<thead>
<tr>
<th></th>
<th>Raw Material</th>
<th>Fabricated Parts and Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Department</td>
<td>17.3%</td>
<td>35.5%</td>
</tr>
<tr>
<td>Material Control</td>
<td>*11.4%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Purchasing Department</td>
<td>69.2%</td>
<td>54.1%</td>
</tr>
<tr>
<td>Sales Department</td>
<td>16.1%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Executives and Others</td>
<td>17.2%</td>
<td>11.2%</td>
</tr>
</tbody>
</table>

About 20% of the replies mentioned more than one department, indicating joint responsibility. In this tabulation, the total number of mentions has been recorded, so that total percentages add up to more than 100%.

* Actual replies checked totalled 9.1%. In view of the fact that 11.4% reported having a separate inventory control department, the larger figure has been used.

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material control departments. This percentage depicts industry's present policy for assigning inventory control responsibility. A comparison of this policy, to management's preference for assigning inventory control responsibility, indicated that these departments were also selected for this responsibility with the preference of the material control department (forty-three per cent) being ten per cent above that for the production control department.

The survey also indicated that management was not completely in accord with the belief that the modern concept of inventory control is for centralized responsibility. The final results showed that forty per cent accepted this concept while forty-six per cent did not.

Discordance to this belief was further indicated by the response to item 11 of the Survey Results. Of the fourteen material areas listed under item 11, only six of the material areas, with a response of fifty per cent or more, were accepted by management to be included in the centralized control concept of inventory control. Had all of the fourteen material areas shown an acceptance of fifty per cent or more, with the exception of the incoming inspection area, then it could be established that management does
believe and accepts the centralized control concept of inventory control.
CHAPTER VI

SUMMARY AND CONCLUSION

Summary

The analysis of the criteria, presented in this thesis, does not clearly support the hypothesis that sufficient reasons exist for assigning the responsibility for inventory control within the organization external to that of the Production Control Department. This lack of support is evident by the conflicting opinions of authorities in the field of production and inventory management, as indicated in Chapters III and IV, and by the Inventory Control Survey results (Chapter V) of industrial practices in the Los Angeles area. However, sufficient reasons exist to question the hypothesis which is also evident in these chapters. This is indicated by the Inventory Control Survey, in that seventy-three per cent of the companies surveyed place this responsibility by equal percentages with the production control, and the material control departments. The survey also indicated that respondent's preference, for assigning inventory control to the material control department, was ten per
cent above the respondents' selection of placing this responsibility with the production control department. Further evidence, for questioning the hypothesis, is indicated by the opinions of authorities within the field of production and inventory management. These individuals have expressed various departmental desires and reasons why the responsibility for inventory control should be assigned within the organization external to that of the production control department.

Conclusion

The criteria of this thesis does not present a single concrete reason to fully support or question the hypothesis. It is apparent that there is no absolute justification for assigning the responsibility for inventory control external to the Production Control Department. However, there is a slight indication that the Material Management concept for inventory control is favorable and definitely the trend. Because of this indication, the following viewpoint is presented in support of the Material Management concept and for the continuation of this trend as the solution for assigning the organizational responsibility for inventory control.

Writer's Viewpoint

The proper management of company inventories
is of the utmost importance for two reasons: (1) dollars involved, and (2) the economical health of the organization. The average company's inventory involves thirty to fifty per cent of their gross income. An investment of this size certainly justifies the establishment of a material function which is at least equally in importance as the major organizational functions.

The economical health of an organization, both present and future, depends on its ability to produce economically to time factors. These time factors are schedules; receiving schedules, internal schedules, and shipping schedules. The latter, in the writer's opinion, is the most important of the time factors for the obvious reason that any producing organization who can meet their promised shipping schedules will aid the buying organization in meeting their schedules. Under these conditions, the economy of the producing organization will prosper because of repeated business as well as acquired new business. The buying organization will also prosper because internal material schedules can be met with little or no changes, thus aiding the buying organization for meeting its shipping schedules. Under these conditions, the organization will function in a more harmonious manner. Friction between departments, resulting from material problems, will be eliminated.
It reasons that if a problem does not exist, then there can be no substantial reasons for any department requesting the responsibility to control inventories.

Based on the aforementioned viewpoints, and the information compiled from the Inventory Control Survey, the following inventory control concepts are established as a jumping-off-point for further studies with the intent that an exact science may be established for this problem area.

1. For the larger corporations, an additional major organizational function should be established for the purpose of controlling inventories. The director of this function must possess title and authority equal to directors of the established major organization functions. The use of committee action for directing this function is not advisable since committee activities generally become secondary in nature to a committee member's major responsibilities within the organization.

2. In the small single owner or partnership organization, this responsibility must be that of the owner, or either of the partners until it is profitable to establish a major
inventory function as outlined for the
larger corporation.

3. The activities or areas that should be in-
cluded within the scope of the inventory
control function are as follows:
da. Raw Material procurement for fabrication
   of parts.
b. Work in process.
c. Purchased parts procurement for line
   assembly.
d. Purchased parts procurement for fabrica-
   tion details.
e. Finished goods (Sub-Assembly items).
f. In-Plant traffic activities.
This selection is based on the inventory
control survey and reflects those items
which received 50 per cent and above
respondents' approval of material activities
and areas they would include under the
responsibility of inventory control.

These inventory control concepts are, in the
writer's opinion, the starting point of a new approach
for the recognition that inventories are not simply an
annoying cost, but an asset that must be managed as
efficiently as a new company or machine.
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BIBLIOGRAPHY

Books


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