

THE CONTROL OF AN INDUSTRY IN THE BUSINESS CYCLE¹

By HOWARD COONLEY²

HUMAN nature decrees that every executive shall believe his business to be surrounded by more difficulties and intricacies than could possibly exist in any other enterprise. Claiming no exception to the human rule, I am confident there is no more delicate problem of production and inventory control than that of the Walworth Manufacturing Company. As producers of pipe fittings, valves and tools made of cast iron, malleable iron, brass and steel, we are required to have ready for shipment at any time something over 23,000 different finished articles. In terms of completed parts this means several times that number of items.

Our product goes to the building trades, to manufacturing plants, to the railroads, shipbuilders, oil fields, and in fact to every line of activity, in quantity. Although new construction of buildings and equipment of all kinds plays a large part in our demand, by far the greatest tonnage is used in repair work, and therefore we are unusually subject to the necessities of quick delivery. We distribute this product, approximately 50,000 tons of finished material, through six of our own branches located in the largest distributing centers and through large jobbing and manufacturing customers.

We have two factories, one in South Boston which produces under normal conditions something over 1,000 tons of finished goods a month, and in Kewanee, Illinois, a larger unit producing normally something over 3,000 tons monthly. South Boston Works ships to the territory east of the Alleghenies and to our export customers; Kewanee Works covers the territory from the Alleghenies to the Pacific Coast. In general, the assortment of material produced at both plants is approximately the same.

At the time of my becoming president, the Walworth Manufacturing Company in 1913 had only one plant located in South Boston and their sales were approximately 15 per cent of our present volume. Since the number of items which they were producing and storing

was the same as at present, their production and inventory problem was fully as difficult. The methods used in ordering material were characteristic of those followed generally at that time—namely, to give a blanket manufacturing order to the superintendent when a shortage occurred and leave to his off-hand decision the determination of the quantity to produce. There was available no background of records on which to predicate a planning system. Figures showing the company's condition were available only once a year. No estimate was possible of the current monthly profits and there was no classification of the product.

I. Development of Cost Accounting

Realizing the vital necessity of a more definite system of accounts to make possible an accurate method of control, we determined as a first step to divide our product into major classes and to use this classification in all our accounting. As a second step we decided to reconstruct our sales and production records over as long a period as was practical, and to use this information as a basis for a budgetary system. The necessities of war and the changes in the company's activities delayed the time at which our budgetary system could be started and it was not until the year 1922 that we obtained the full advantage of control methods which are now a permanent and basic part of this company's policy.

For purposes of both accounting and production control, we had decided to divide our product into fifteen groups and to break these groups down into thirty-eight classes. From the time materials are put into production to the time they are billed to our customers, these classifications are maintained. By use of these classifications through the summary accounting records, we can follow the movement of goods, through raw material and work in process, until they have passed out of our control into the market. The simplicity of such a cost accounting system is one of the great aids to interpretation of the productive processes going on within the company.

II. Changes in Organization

While this simple cost accounting system was thus being developed, there was also in progress a simplification of the organization. It was not an easy matter at first to define clearly the functions of the major executives. Of course, as is the case with many companies who first approach such a problem in organization, it is found that many persons are attempting to do the work which others feel should come within their jurisdiction. Lack of definition is bound to bring about much overlapping of duties. When this overlapping was eliminated from the major functions, we arrived at an organization showing three line vice-presidents—one in charge of production, one in charge of sales, and a third vice-president in charge of all administrative functions. And since our business has many technical aspects, a fourth vice-president in staff capacity heads up all functions pertaining to engineering. There are also, of course, the other usual corporation officers—secretary and treasurer. Therefore, six officers in contact with the president's office assume control of all branches of the business, each being given full authority in the direction of all activities within his control, and being held responsible for financial results, which our revised accounting system makes it possible to segregate.

It was naturally necessary in turn to break down the activities coming within the jurisdiction of each of these vice-presidents, so that every subordinate would know his authority and responsibility. The major executives under the Vice-President in Charge of Production, for instance, are the Boston Works Manager and the Kewanee Works Manager. Under each of these managers is a complete but distinct organization, and the accounting system is arranged to correspond with the authority of these officers. Each works has its own accounting records based upon the division into fifteen groups and thirty-eight classes, so that we may check costs and efficiencies between the two works on a comparable basis.

This plan of organization and the development of an adequate cost accounting system had but one ultimate end in view. The company, which was developing rapidly, must for control purposes be just as easy to comprehend as the original smaller organization. Responsibilities must be so clearly marked that there could be no sidestepping the results as indicated by the accounting records. And thus was laid the foundation for a budgetary control which should make possible a ready indication of the present status of the business and its future trend.

III. Relation of Walworth Business to the Business Cycle

Now as this development was progressing, the facts about the business, which had been simply guessed at before, began to accumulate and shape themselves into definite "rules of the business." We began to see that there was some rhyme and reason behind the past fluctuations in the business, and before long it seemed wise to inaugurate a statistical section which could run over the gathering figures and interpret them. Just how extensive the activities of this section would become was not definitely laid down. At first it was simply thought that something could be accomplished toward finding out where the Walworth business stood with relation to general business. Some publicity was being given at that time by certain economists to the theory that each business had its own cycles just as distinctly as general business. These economists suggested that any industry might find out its own cyclical changes and learn whether its movement was severe or easy. Furthermore, they suggested that the individual industry would probably find that its cycles corresponded in point of time with the cycles of business in general. It might discover that its particular volume reached its high or low point earlier than general business; or again that the general business situation developed a definite number of months in advance of its own varying conditions. But the first and most important suggestion they made was that if each business knew that it was affected in response to general business conditions, and could establish its position with regard to the general business movement, it would have a sure index of changes of policy that should be made to meet its own changing conditions.

This suggestion was in line with our own attempts at more definite control, for with the newly established organization and accounting methods to give us the facts, we needed only an indicator to tell us how to make maximum use of them. So the Planning and Statistics Section had cut out for it an initial field of activity. The facts already at hand, compiled by the accounting department, became its raw material, and even though the accounting plan had not yet been fully developed, there was much work that could profitably be done.

The first experiments showed that a Walworth cycle did exist and that it was very marked. A curve representing this cycle action by a very simple statistical process was worked back as far as 1890 on the basis of records available in the treasurer's office. There seemed to be a fairly logical sequence over a period

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² President the Walworth Manufacturing Company, Boston.