The Future of Productivity in the Food Industry -
Introduction

by

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Discusses the need and solutions for improving productivity in the food industry.

The year 1973 has been chronicled in the news media as the "Year of Watergate", but historians may record that an event of greater long term significance occurred in that year. For 1973 may well mark the year in which cheap food disappeared forever from the table of American consumers. Prices for food purchased for home consumption increased by 16 percent in 1973 and an increase of similar magnitude seems to be in the cards for the current year. The reasons for this sudden upswing in food prices are complex. Devaluation, foreign demand, worldwide climatic changes which have affected production, unionization of farm labor, escalating wage levels in the food marketing system, and other causes have all played a role.

Underlying all of these factors, however, is a disturbing trend of fundamental significance to the future of food prices. That is that the American economy seemingly has lost the ability to find ways continually to improve productivity in important sectors of the food marketing system. As a consequence, as wage rates advance 10-15 percent per year, almost all of this advance is reflected in an increase in unit labor costs and in prices. In the retail sector of the food industry, productivity appears to have had a negligible improvement over the past five years and in the last two years may have actually decreased. Preliminary figures provided by the U.S. Department of Labor indicate that during the entire period from 1968 to 1973 the average annual increase in output per manhour in retail food stores amounted to only three-tenths of one percent per year. Supermarket Institute figures on sales per manhour, when deflated by a price index, actually show a reduction in manhour output during the last two years. At the warehouse level, data from both NAWGA and NAFC suggest that there has been little year-to-year improvement in tons per manhour handled through our warehouses. The processing sector of the industry has demonstrated the best performance, but its rate of improvement, which averages two to three percent per year, will hardly suffice to offset the wage increases currently being negotiated in the industry.

It is apparent, therefore, that the food industry faces a productivity crisis and that there is a need for new approaches and new efforts to accelerate the rate of productivity improvement. I believe that such improvement can come from three kinds of programs which need to be implemented in the future:

1) Cooperative efforts among operators, government, unions, and companies providing industry services or supplies. An example of the progress which can be made through such cooperative programs is provided by food industry efforts to introduce a unit train in the industry which have resulted in the advent of the Fresh-From-the West Train. Transportation seems to lend itself to such cooperative measures because no one company can hope
by its own efforts alone to change the system.

I would suggest that a major area of waste exists in our handling of direct deliveries and that a real effort must be undertaken in the next few years to develop consolidating systems to reduce costs in this area. This has been a favorite subject for discussion as long as I can remember, but little has been accomplished. In 1964 a study found that stores having a weekly volume of $40,000 had an average of 135 direct deliveries per week of which about 88 were below $50 wholesale value. Despite the rise in food prices which has occurred since that date, a study made in 1970 found that 65 percent of such direct deliveries were still less than $50 wholesale value. These small orders cost retailers money in terms of labor at the store level, high accounting costs, and probably increased pilferage losses.

But perhaps more significant, a system which involves trucks going from store to store dropping off orders of less than $50 is too wasteful in terms of energy use for this economy to tolerate any longer. Under the Clean Air Act of 1970, urban areas that cannot meet national clean air standards have been told to prepare clean-up plans which will meet those standards by 1975. A number of cities are in the process of adopting such plans which in general will call for a reduction of daytime truck deliveries. I would suggest therefore, that consolidation of deliveries is a must item on the agenda of improved productivity and energy conservation. Please note that this is not just a retailers' problem. There are opportunities for consolidation at the manufacturer level as well. I recently learned that about ten candy manufacturers supplying the New York City area have worked out a consolidating system for deliveries which is working very effectively.

2) Efforts by industry groups to achieve standardization in order to facilitate automation. Standardization is frequently a necessary prerequisite to increased mechanization. Agreement among all sectors of the food industry as to the nature of the Universal Product Code and the symbol to embody it was, in retrospect, perhaps the most critical and time-consuming phase of the development of the Automatic Checkout system. Today the food industry is giving increasing attention to the problem posed by proliferation of shipping cartons for dry groceries which makes automation difficult and increases damage loss whenever the product is handled. A preliminary study by Arthur D. Little, made for the National Association of Food Chains, suggests that a system of modularized shipping containers in which variation in dimension of shipping cartons would be limited and permissible modules would be related one to the other so as to fit securely on a pallet could save one to two cents per carton, depending upon the kind of warehouse operation involved. Savings in pennies per case may not sound significant until it is noted that some 15 billion cases are handled annually in the food industry.

3) Accelerated development of new technology. The food industry has not been noted for rapid introduction of new technology. As a matter of fact, the supermarket has changed very little in its basic technology in the last 30 years. All we have done is to substitute the labor of the shopper for the labor of the clerk; but the cans are still put on the shelf manually.

The lack of rapid technological development in the food industry, is, at first glance, a rather surprising phenomenon in view of the characteristics of the industry. The food business is noted for its high volume, repetitive operations. At most levels of the industry labor costs are a significant portion of operating costs and labor rates typically are high. The industry is competitive with alert management. Furthermore, from the point of view of the supplier of new equipment, it is a replicative market so that equipment...
designed to meet the needs of a particular company would probably have a market in similar units in other companies. All of these factors should tend to make for rapid development of labor-saving new technology.

But such development has not occurred. Why? In the first place, the food industry by and large is service and market-oriented, rather than operations or technologically-oriented. In supermarket operations, many new labor-saving devices have failed to make inroads because while efficient from the operations standpoint they had serious shortcomings from the merchandising point of view. The "automatic market" has been talked about for years—and indeed a prototype supposedly will open in Japan in 1975—but little enthusiasm is generated in the industry because it would make it extremely difficult for the supermarket operator to induce impulse sales. It is apparent that for technology to succeed in the food industry, the engineer must understand the merchandising needs of the operator as well as the problems of materials handling. A second barrier to technological progress has been the lack of research in the industry and the lack of staff with engineering capabilities. The result has been a lack of communication between the engineering and scientific community, on the one hand, and the operators in the food industry, on the other. There are probably many new developments in use in other industries which could be applied to the food industry if only a better system of intercommunication could be devised.

To this end, we at M.I.T. have begun a program which we call TAFI—Technology Applied to the Food Industry—in which we are bringing together food company executives at all levels of the food distribution industry and engineers to discuss needs for new technology. The initial meetings have been well attended and we hope in the year ahead to expand the program to USC and Michigan State. We have encouraged the exploration of unusual ideas—for example, can a laser be used to cut meat? I don't know if there is any merit to this idea, but I have received letters from two companies in the laser business who want to explore the problem further with supermarket operators. This is the kind of technological interchange and experimentation which TAFI hopes to encourage.

The retail food industry is cooperating with this project in a unique manner. The National Association of Food Chains is canvassing its membership to accumulate ideas as to technological needs. It is hoped that these can be enumerated in what in effect will be an "industry shopping list" which can dramatize the industry's needs for new equipment. One of the great deterrents to the development of new technology has always been the risk that even though an idea is technically sound there is no market for it that is financially viable. The process now being followed by the food industry and the TAFI Project may eliminate some of this risk by clearly spelling out the nature of the need, identifying the cost-saving which could be effected and assigning a priority to certain innovations based upon an appraisal of leading firms in the industry.

If we are to succeed in slowing the rise in food costs in the future, we must devise plans to improve productivity at every level of the food production and marketing system. In 1973 about 38 cents of every dollar the consumer spent on food went to the farmer. Therefore, efforts to further improve farm production must be an essential part of an industry productivity program. The same is true for transportation which in 1973 amounted to seven percent of all food marketing costs. And of course the food processor and food retailer occupy strategic positions in the food marketing system and need to find ways to reduce their cost of operation. We are therefore, fortunate in having a panel today which represents all of these strategic sectors and which can enlighten us about possible future developments which can improve productivity in the food system.