

Management Accounting and Total Quality Management

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Abstract: This article examines the relationships, similarities and differences between two production quality improvement programs: the Just In Time method – just in time you need it – and the Total Quality Management. In particular there is a flashback to the creation of these specific methods and there are explored their elementary operation principles, their mode of operation, as well as the conditions of their application. In the last part there are noted the results and there are analyzed the relationships between them.

Key-Words: Just In Time, Total Quality Management Kanban, Kaizen, Toyota.

1 Introduction

Management Accounting, for decades now, has worked on the development, the formation and the implementation of quality improvement programs in the production process of organizations (enterprises), so as they to become more competitive. These programs began to develop in the 1950s and they formed a separate branch that works on the “Production Management”, specifically aiming to the Total Quality improvement that is connected with the production process. Among the main quality improvement programs are included: a) The “Just in time” method, b) The “Total Quality Management”. We will concentrate in this article on the presentation of the elementary characteristics of the two aforementioned “philosophies”.

2 “Just In Time” method

2.1 The principles of operation of the J.I.T. system

The J.I.T. production system comprises a group of targets, techniques and methods the roots of which come from the Japanese culture. The J.I.T. methodology (rather philosophy) was developed through efforts after the 2nd World War as a result of the collective campaign made by the Japanese industry to compete with the American industry. During that period the president of Toyota is said to have declared in the beginning of the '50s to the

officers of the company “You’d better catch America in a couple of years, otherwise the Japanese automotive industry will not survive”. The “father” of the development of the J.I.T. way of production was Taiichi Ohno [1].

More specifically, the J.I.T. production system was created during the 1950s in the Japanese automotive industry TOYOTA, which developed a system called Kanban (Toyota production system to which we refer further down) aiming to satisfy the customers’ requirements for various types of produced cars, by minimizing the delays in deliveries.

2.2 J.I.T. environment

Traditionally until the middle of the 20th century the companies predicted the demand of their products for the future and then they tried to adjust their production in order to cover the predicted demand. This procedure was not easy since the management decisions had to reply to the following questions:

- Which is the perfect size of orders for raw, auxiliary materials and packaging materials that the enterprise should at any moment have?
- The existing workers or employees are they enough or not? Do we need to hire staff (in case there are predicted positive growth rates) or to fire (in the opposite case)?

- Which is the correct size of quantity of finished goods that the enterprise should have in order to satisfy the consumers' needs?
- Which has to be the perfect "cycle time" that is to say the time required until an order is completed or a product is produced?
- Which is the perfect programming of the production process?

What is the stock and product control system (J.I.T.) (just in time)? The just-in-time production of goods is based on regulated procedures during mounting, only with the use of the quantities of items that are required and only when required. The J.I.T. method pays attention to the reduction of the stocks to the minimum possible. In this way it is achieved the reduction of requirements for working capital, of the time for the orders' completion and of defects. The companies that use the J.I.T. (Just In Time) control system buy materials and produce units of products only to the extent required in order to cover their real demand by the customers.

2.3 The goals – philosophy & conditions for the application of J.I.T. system.

The goals, to which the methodology of application of J.I.T. aims, play a very significant role in its development.

These goals are summarized as it follows, according to Edwards [2]:

1. Zero defective products
2. Zero redundant quantities
3. Zero time
3. Zero time
4. Zero equipment failures
5. Zero material circulation
6. Zero preparation time in the production
7. Zero peaks – zero delay time

2.4 Which are the benefits of the J.I.T. system?

Numerous small and big companies have used the J.I.T. system with great success. Among the big companies that use the J.I.T. systems are: Bose, Goodyear, Westinghouse, General Motors, Hughes Aircraft, Ford Motor Company, Black and Decker, Chrysler, Xerox, Tektronix, Intel. The basic benefits of the J.I.T. approach Garrison -Noreen, [3] concisely are:

1. Capitals that before were bound by the stocks may now be used elsewhere.
2. Spaces that were previously used for storage now become available for other productive uses.

3. It is reduced the turn-around time which results to bigger possibility of production and faster response to the customers.
4. It is reduced the percentage of defects, thus leading to less wasting and greater satisfaction of the customers.
5. Better product quality
6. Cost savings and increase of productivity
7. More regular flow of production
8. Bigger participation of the employees
9. Improved relationships with the suppliers
10. Utilization of the most qualified staff.
11. The quality is responsibility of each employee, not only of the control inspectors.
12. Smoother flow in the production process.

In general, it should be considered that the greatest inheritance of J.I.T. system is the insight it provides to the factory's dynamics and the relationships between production, production cycle time, productivity, punctual delivery of orders during the production process etc.

2.5 Difficulties in the application of J.I.T. system

It should be noticed that the J.I.T. system is not trouble-free; these usually appear when there is increased demand for the production of a product and respectively there are very few or not at all stocks, thus the lack of a material affects negatively the production process or even the distribution of a product. Furthermore, problems may also arise from the Suppliers' function, especially if they are not close to the production plant. As it is normal, the farther away the Suppliers are, the less predictable is the delivery time of the necessary materials, due to the existence of accidental imponderable factors, such as strikes, weather conditions etc. In order the application of the J.I.T. system to succeed, there should be almost absolute coincidence regarding the timing between the Suppliers' and the enterprise's production systems that J.I.T. applies.

3 "Total Quality Management"

T.Q.M. has been adopted by enterprises globally, being a powerful tool for the improvement of the provided products and services. The quality is among the most significant competitive factors for the long-term satisfaction of the customers. Therefore, the effective quality management of the products-services firstly begins with the credible and accurate measurement of the customers' perception regarding the quality.

The sense of T.Q.M. was developed by Deming, Duran and Crosby in the '50s. It was adopted by the Japanese organizations and it began to be actually applied since 1949 by the Union of Japanese Scientists who aimed to the improvement of the productivity. This undertaking was also attempted in the U.S.A. with about 30 years of delay and particularly in the 1980s. Later on it began its application in Europe. Nowadays, it is one of the most basic administrative techniques in Japan, mostly responsible for the transformation of the quality of Japanese products and their reputation. T.Q.M. is one integrated administrative system with strategic perspectives and has as unique goal the customer's satisfaction and the continuous improvement of the business and the production processes of the organization. The improvement of the processes' quality requires the engagement of everyone, from the senior administration until the last employee; otherwise, single attempts for the solving of certain problems are condemned to fail. For the achievement of its goal and the problem solving, T.Q.M. has to show quantitative methods and tools.

The results of the application of a T.Q.M. system are faultless processes which deliver products and services satisfying the customers' requirements, are on time delivered, at a competitive price [4].

In order the goal to be achieved, the system has to be adopted by all the operational parts of the organization: from the sales and the marketing to the production and the administrative services. The components of the success of T.Q.M. comprise effective education, effective application and engagement of the senior administration and its commitment for the observance of the principles and the goals of T.Q.M.[4].

Following successful application of T.Q.M. in the field of processing, it began the effort of transfer and application of its principles to organizations of services provision.

2.2.1 Basic Principles of T.Q.M.

In T.Q.M. the organization (or the enterprises) actively intends to specify the needs and the expectations of the customers, to integrate the quality in the production processes, utilizing at maximum the experience and the knowledge of the staff, meanwhile aiming to the continuous improvement of all the operations of an organization. The basic principles of T.Q.M. are analysed below [5].

- Focus on the customer and the interested parties
- Participation and Team work
- Focus on the procedures.

- Continuous improvement and Learning.

3.1 Basic structures of T.Q.M.

The basic features of T.Q.M. system that operate as a support and play a role for its success are the following [5].

3.1.1 Infrastructures

The infrastructures consist of almost all the management systems of an organization, which are necessary for the operation and the application of the principles of Total Quality.

The main systems are mentioned below:

- Customer Relationship Management
- Leadership & Strategic
- Human Resource
- Process Management
- Information & Knowledge Management

3.1.2. Practices

Practices are all these activities effectuated by the partial managements of an organization, which consist the basic infrastructures of Total Quality, aiming to high performance.

3.1.3 Techniques & Tools

Among the techniques and tools are included a range of graphical and statistical methods aiming to the design of projects, the data collection, the results analysis, the processes control and the solving of detected problems.

4 The relationship between T.Q.M. & J.I.T.

In the previous units we tried to present, even concisely, two applied methods aiming to the improvement of the production process and which are referred in detail in the literature of the Management Accounting. First of all, it must be noted that they are two systems, the application of which began from Japan and this is probably the reason for their common features. These systems were developed and applied by a specific automotive industry, which until today aims to increase the sales of a continuously newer, more dynamic and credible range of models, also mainly based on the continuous improvement of its customer-centre philosophy. The reply to the question whether there is a relationship between T.Q. & J.I.T. is that the methodology of J.I.T. may be considered to be an inextricable part of T.Q.M. philosophy. Their relationship may be focused on the central idea that intends to their implementation,

which is nothing more than the satisfaction of the customers' needs. T.Q.M. is more acceptable by many enterprises throughout the world (regardless of the field they belong to) and that because the basic principles of Management apply for all the countries. The application of J.I.T. system respectively may make sense in production units (processing) of big size and not in small and medium-size processing enterprises or enterprises for services provision. The J.I.T. system is already applied in the industrially developed world as an international organization standard of the productive systems, which is included in the general principles of application of Total Quality Management.

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