

## **CREATING COMPETITIVE ADVANTAGE THROUGH INCREASING THE TECHNICAL AND ORGANIZATIONAL COMPETENCE**

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### **ABSTRACT**

*A modern enterprise in the market system of business, in order to survive, has to make frequent and radical changes in all aspects of business activity. It is evident that frequent changes in internal and external environment require a shift in the management philosophy. This implies, among other things, an increase of the technological and organizational competence, which has to be brought to a higher level, meaning that there will be applied high production, information and communication technologies, automation and robotization, flexible manufacturing systems, which will ensure the high quality products and services, greater satisfaction of the consumers, business without stored goods and teamwork. This paper should emphasize the need for continuous improvement of technological and organizational competence of the enterprise, because it is a presumption for creating its competitive advantages, and thus, its survival on the market.*

**Keywords:** high technologies, automation and robotization, flexibility of production systems, high quality of products and services, business without stored goods, teamwork.

### **1. INTRODUCTION**

Modern enterprises operate in a global, dynamic and turbulent business environment. They are very complex establishment characterized by: the amalgamation, diversification of product range, the internationalization of business, use of new technologies and frequent changes in the organizational structure. In the aim of maintaining or improvement of position on market, in conditions of the more global and complex environment, the enterprises are applying new production and information technologies and inventing and adopting the new organizational models which will enable fulfillment of the established goals. “In order to acquire and justify the epithet of “global”, the enterprise has to direct itself on creation of values which achieve competition advantages in regard to the best companies. In that sense, the most successive enterprises have to accomplish the high quality products and services, to have successful responds to the customers’ requests, operate without a stock, to be flexible, to apply automation, team concept, modern production and information technologies” [1, p. 53] and everything that can be classified into the technical-technological, business-organizational and informational requests.

### **2. CONTINUOUS FIRST NECESSITY OF INCREASING TECHNOLOGICAL COMPETENCE**

To the modern enterprise to survive in the market, it is necessary to continuously strengthen its competitiveness. Among other things, this is achieved by continuously enhancing its technological and organizational competence. Increasing technological competence is achieved using: high production, information and communication technologies, automation and robotization and flexible manufacturing systems.

*Application of high production, information and communication technologies.* The new production and informational technologies are improving efficiency and competition, while lowering price, there

is increase in performances and easy application are available to the companies. Their application contribute to the enterprises' strategic goals attainment, faster solving of every day's business problems, identification of the new business possibilities, faster and more quality response to the customers' requests, the production advancement and other. The contemporary production and informational technologies, as are computer aided design (CAD), computer aided manufacturing (CAM) and flexible manufacturing systems (FMS) enable to the enterprises to attain the high quality, reduce the stock, increase the production flexibility and in that way maintain and advance the competition's power.

The CAD means any project activity within which a computer is applied for creation, analyses or modification of a technical solution and allows finding of optimal solutions. In this case a draftsman, engineer's drawings, T- ruler are replaced by a computer. According to the analyses of enormous number of dimensions and alternative configurations and comparing the diverse design products and services on the basis of expenses and simplicity, designers optimize ideas connected with the new product.. CAM is based on robots, numerically guided machines and similar. Robots are programmable, multifunctional means, constructed to move materials, peaces, and specialized means using changeable programmed movement in order to perform specific jobs without human intervention. The numerical guidance is based on the wide spectra of guiding algorithms for different machine types that can be programmed in purpose of performing given operations. The essential CAM's characteristic is flexibility that originates from the possibility of reprogramming for the purpose of performing various operations. The engineering automation is performed through hardware and software for the computer aided engineering (CAE). Instructions for production are given directly trough software for the computer aided process planning (CAPP), while through connection of CAD, CAM and FMS we provide computer integrated manufacturing (CIM).

The competitiveness of a modern enterprise means fast reaction to changes. The fast reaction can be result of continuing, fast and updated information flows, which is provided by modern information technologies. In accordance with this, electronic data interchange (EDI), electronic mail (E-mail) and computer networks lead to increase data exchange rate and bring a new business concept application.

***Application of automation and robotization.*** Automation means introduction of contemporary machines that are constructed in such a way to follow established series of operation or computer commands with few human interventions. Automation allows to companies to achieve high quality of their products and services, to respond to the customer's requests with more efficiency, to operate with low level of stocks and to be flexible. Robots have important role in a sophisticated material control system and that is by automation of the logistic activities; barcode laser reading eliminates the need for manual data entering; the control by use of computers reduces expenses of activities connected with the quality.

***Application of flexible manufacturing systems.*** The flexibility in modern business conditions designates ability of enterprises to adapt to new, diverse and constantly changeable consumer's requests. Consumers are not satisfied with massively produced uniform products. Ford's approach that the customer can get any color of an automobile, under the condition that is black, is not applicable in today's competitive conditions. Enterprises have to produce wide product assortments with possibility of changes of products and their characteristics without stopping the production process. The production systems have to be flexible enough that, according to need, the products' design can be changed with low expenses. The flexible machine systems possess the high performances for production of components.

### **3. CONTINUOUS FIRST NECESSITY OF INCREASING ORGANIZATIONAL COMPETENCE**

As we have already said, the enterprise is strengthening its competitiveness in the market by increasing the technological and organizational competence. Raising the organizational competence to a higher level is achieved, inter alia, by providing high quality products and services, increase customer satisfaction, business without a stock and team work.

***Providing of high quality products and services.*** The quality presents a key success factor of modern enterprises. Up to the end of the 80's the system of quality was achieved by *control* and correction of already finished products that in result had increase of expenses connected with control, finishing,

refuses and maintenance in a warranty time limit. The contemporary approach to the quality management means designing and building the quality, and not subsequent inspections and maintenance. *The quality is becoming the paradigm of competitiveness, while having in mind the quality of products and services, as well as the quality of business processes.* The high quality requests coordination of work of all employees, from direct producers to the top management. Increasing of the quality in all product production process phases brings the shortening of time for the product creation, efficient use of the production factors, decreasing of the waste, and by that lowering expenses. Enterprises have to apply the concept of total quality management (TQM). "Total quality management is based on the following principles: 1) focusing on satisfaction of different and the more refined customers' needs, 2) focusing on the processes and their continuous improvement, the right way to attain the quality is management with all activities in the values chain, 3) the accent is on prevention, and not on the control of the final product production process, 4) each individual needs to be engaged in improvement of the quality and responsible for quality of its work, 5) just team work can improve the processes and achieve the high quality, 6) bringing of decisions should be based on reliable and relevant information, 7) an enterprise needs to cooperate with those suppliers that are capable of supplying the high-quality inputs, 8) focusing on decreasing of the expenses, 10) providing the quality is a permanent process, 9) the buyer is someone that determines the quality and not the producer" [4, p.493.].

The total quality management elements are: a) eliminating or reducing of activities that are not adding quality to the product, b) reducing the stock, time of the defect product production, c) rationalization of the production process, cooperation with suppliers, rising of the work force flexibility, d) stimulation of workers to maintain the equipment, to detect, record and solve their own problems.

**Increase customer satisfaction.** The customers are the final judges of whether the enterprises successfully fulfilled their goals. The successful respond to the customers' needs depends on the enterprise's capability and readiness to deliver a corresponding product in corresponding time and in corresponding quantity, and after that of corresponding performances, reliability, the product's characteristics diversity, with possibility of their servicing and with readiness to help to the customers without delay.

**Business without a stock.** Large stocks of raw-materials, unfinished productions and finished products are characteristic for traditional business conditions. "*In modern business conditions stocks are treated as a necessary evil that needs to be eliminated*" [5, p. 54]. Stocks are connected with needs for warehouse space and with high expenses for stocks maintaining. According to that, the enterprises have to take care about following:

- To reduce and eliminate raw material stocks, the enterprises have to be connected by long term firm contracts with limited number of reliable, attested suppliers that doing business according to the principles of total quality management, which can maintain safe and in time delivery and that are ready to do more often deliveries in small quantities.
- The stocks of unfinished productions can be reduced if the production process is fast and efficient, then, if there are produced products of the high quality and with zero defects and finally, if preparation of the machines for production is performed fast, and without interruption of production.
- The stocks of finished products can be reduced or eliminated if the enterprise has good knowledge about the consumer's needs and if there are possibilities for the products fast delivery, or the products are delivered to the customers immediately after finalization.

In connection with that, in order to gain the competitiveness, the enterprises have to accept new business systems. That is the case with *business system "just in time" (Just in Time - JIT)*. At the beginning this system had a goal to reduce or eliminate the stock of materials, unfinished production, finished products and merchandise. Today this system extends to eliminate all losses types of means and works in production and business. JIT operates in such a way that "the products are produced and delivered at the moment when need to be sold, the components are produced at the moment when need to be installed on structures and substructures, and materials are purchased at the moment when need to produce parts" [6, p. 441].

The production cycle time is consisted of: the processing time, production development time, expecting time and time of control. Just processing time adds value to the product. Other activities do

not add value to the product. In accordance with Berliner and Brimson the processing time in many enterprises is less than 10% of total production cycle time [7, p. 88]. That means 90% of the cycle time goes to the activities which add expenses, but not values to the product. By adoption of JIT philosophy and reduction of cycle time, total expenses are considerably reduced. The JIT's goal is to eliminate activities which do not add values to the product, to bring closer and equalize the production cycle time with processing time.

**Team work.** Team concept stimulates organization of people that work closely to participate in coordination in providing of successful enterprise business activity. The companies that successfully compete within global frames provide to their customers just in time the high quality products under acceptable prices. Presumption of a successful business is a team approach toward work, where all employees from a worker in production to the top management are involved in a process of providing of the quality, bringing solutions, etc. Managers encourage employees that during performing of work tasks they put their abilities in purpose of achieving of their common goal, which could be realized if employees can determine own benefits that arise from it. In the most successful companies employees are rewarded according to how many tasks they can perform, and not according to the number of items that produce or according to precedence. At the same time the higher flexibility of employees means easier solution of problems of a narrow passage.

#### 4. CONCLUSION

Today's enterprises work in a global economical environment in which exists brutal concurrency among bidders on market. Enterprise is constantly under the *threats* from the environment but there are also *chances* offered. Therefore the enterprise management is called for anticipation of affects from the environment, to work with strategic consideration and planning on minimizing of danger from the environment as well as maximal exploitation of chances for its enterprise that is offered within the environment. Survival on market is possible only if enterprise develops itself constantly, increasing its competency and by that concurrency. Increasing of competency is determined by improvement of own technical, technological and business organizational foundation.

Technical and technological foundation of creation of concurrency advantages makes: high production, information and communication technologies, automation and robotisation and flexible production systems. The new production and information technologies improve efficiency and concurrency of enterprises. Their use contributes in reaching of enterprise strategic goals, faster solving of everyday's business problems, identification of new business capabilities, faster and more quality response on customers' requests, improving of production, etc.

Automation provides for companies to realize high quality of their products and services, to response with higher efficiency on customers' requests, to provide business activities with low level of stocks and to be more flexible. Concurrency of a modern enterprise considers fast reaction on changes the most reflected in alternated customers' requests. Customers are not satisfied with mass produced uniform products, they look for particularities. Flexibility in modern business conditions means ability of an enterprise to adapt new, diverse and constantly altered customers' requests. Business oriented requests in creation and maintaining concurrency advantages are related to: providing of high quality products and services, satisfying of customers' requests, business without stock and team work.

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