Management of Market and Life Environment Protection

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Modern business conditions demand a new kind of approach in process management areas and development of competition. Changes in market area produce a direct impact upon the way of thinking that is related to the company management so that generation and conservation of advantageous position over competition must be a result of a constant periodic process. The basic elements of advantage over competition are the dominance in expertise and in assets. A continual improvement of efficiency of knowledge and work efficiency is a basic imperative of modern economy and the most significant factor in the competitive activity of a company in world market, where the key players are Corporations. This knowledge needs to be built in business policy of every business organization. Assets dominion is a tangible advantage that is acieved by investing into automated processes, computerized and robotized production means, trade marks, and production quantity. By recognition of its values and by investing in these items, the company takes a new position as regards the consumers. Technological sciences, as multi disciplinary scientific areas, have to develop new kinds of knowledge in designing new products and processes, including complex systems and methods for protection of living environment. Ecology, technology and environment protection, with successful interaction, should point toward a possibility of further improvement of living quality.

1. Introduction

In international economic relationships, quality is recognized as a basis for removing technical-technological and many other obstacles that emerge in trading in goods and services. The company's competitive position, similarly, is based on a higher quality product, a higher safety in use, as well as upon a higher extent to which the needs are met, which further stresses the interrelation between the competitive advantage and technological innovations. The background for these processes is an accelerated development of technology where the information technologies (IT) are of paramount importance [1].

The implementation of these gave rise to new rules of competition that lean on the production standards, service standards, technology development and innovations. The processes of an accelerated growth of industry and raw materials leave huge quantities of pollutant waste materials that threaten the man's quality of life. We can even argue that the survival itself is endangered. This has led to undertaking a number of activities whose objective is to solve the existing and prevent the emergence of new ecological problems. The efforts of the majority of countries are focused upon bringing as adequate regulations as possible, as well as upon developing more efficient systems for environment management, in order that stimulative conditions for a successful environmental protection should be created.

2. Market management

A positioned company which fails to produce innovation at the times that demand one is doomed to stagnate and perish. The management that is unable to manage innovation in that period has not expert enough to accomplish their task [2]. The importance of new products in the technological innovations for a company has long been well known. These are part of the modern company's competitive environment as well as the basis for its survival and growth. The success the company has made in the positioning of its competitiveness and profitability is directly related to the expertese of the management and their competence in bringing the needs and the offer into accord [2]. Creating and maintaining advantage over the competition is a result of a permanent process (Figure 1).

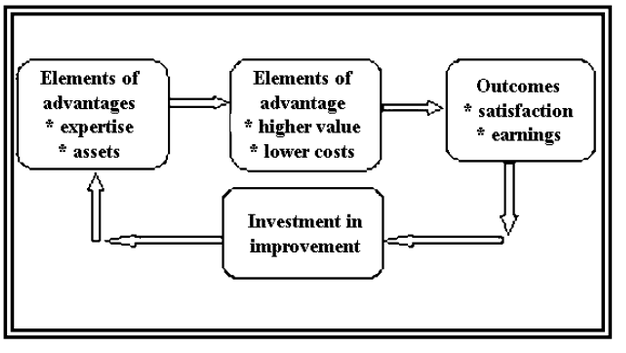

Figure 1: Elements of competitive advantage

When implemented correctly, information technologies can contribute to the adjustment and management processes in different ways. They can encourage ideas for new products and new markets, in the first place. They can also help improve the efficiency of the new product development process, increasing the probability of a future commercial success.

One advantage of the information technologies implementation is less time required for collecting, processing and sharing or distribution of information. A well informed manufacturer will decide in favour of implementing new technological procedures more readily. Information technologies enhance the development of numerous new products, however, they also cause certain products to disappear. It is for this reason that a range of new product management models were proposed.

One of the possible models is the product life cycle analysis [4]. The essence of the product life cycle (PLC)[1] is the awareness that the product is created, it grows, matures, declines and finally disappears from the market. The product life cycle analysis yields the data on the market saturation. In some circumstances, the tendency of demand over a certain time period can be predicted.

By shortening the life cycles of certain products and simultaneously prolonging the cycles of others, information technologies implementation can offer a range of advanced products with new and improved properties. This postpones the process of ageing of the product at minimum costs, while at the same time increases the economy of business operations.

The purpose of information technologies implementation is the capability of surpassing the boundaries developed by the industries, creating new markets or making old markets obsolete. In some cases, new markets are captured/created by identifying and enhancing the needs that have previously failed to be fulfilled or satisfied. Meeting these needs enhances not only the development of new products and services, but also the development of new technologies, whose direct implementation generates new production processes and new ways to meet the customers' elemntary needs.

The efficiency of information technologies is especially evident in the production of health-safe and hygienically pure food, the imperative of the modern man.

The automation of the processes by the digitalization of the parametre values of the product manufacturing and their manipulation by the computer management units becomes increasingly important in this field of production.

In order to meet the customers' needs in a profitable way, the manufacturers use the information technologies to establish and maintain contacts with their suppliers and other agents, among which are not only the suppliers of raw materials and semi-finished products, but also the consulting or credit granting firms (Figure 2).

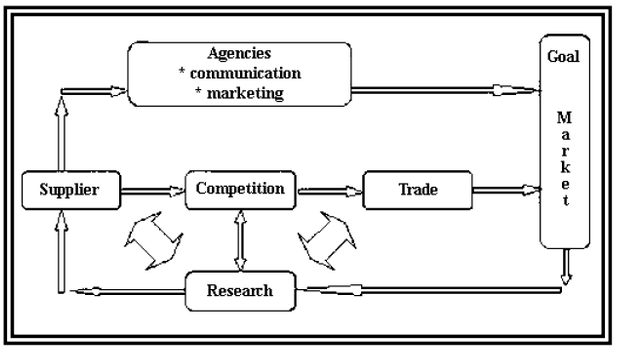

Figure 2: Coordinating system

Such electronic services result into a many-sided communication, a more efficient information flow and, consequently, the introduction of modern production processes. At the same time they help increase competitiveness and ensure conditions for a faster and a more efficient allocation of resources.

The advantages of electronic business (information) are, as potentially high, recognized and adopted in the production of functional food, too[2], so that we can be certain that this is one of the possible new product management models. The computer analysis of the marketing system has shown that the modern man's diet should include not only health-safe food, but also the nutriments that have an additional positive effect upon human health.

Functional food production is most widely used in the flour mill and baking industry, however, it is also partly present in the meat industry. These are the products manufactured from natural ingredients and used in the daily diet. The additives to the nutriments, use dto make them functional food are: probiotics[3], prebiotics[4], antioxidants, vegetable fibres, mineral matter, vitamins.

One potential solution in preventing starvation and death of thousands of people is certainly electronic information, implemented within new technologies.

Fast developing countries, such as Brasil, China and India, are in an increasing demand for food products. A higher standard of living in these countries resulted in an

[1] **Product Life Cycle**

[2] **Refers to the nutriments that, besides their basic, nutritive, value, produce an additional positive effect upon human health.**

[3] **Fermented sausages, when produced as functional food, contain probiotic bacteria. These are probiotiv organisma, types: *Bifidobacterium Spp.* and some species from the *Lactobacillus* family.**

[4] **These are indigestible ingredients that stimulate the activity of one or several species of bacteria (diet fibres).**

increased demand for meat, eggs and milk. Only in 2006, four times as much meat was produced compared to 1961, as its consumption worldwide is now twice as high and amounts to 43 kg per inhabitant. In 1985, an average Chinese consumed 20 kilos of meat annually; today, the quantity exceeded 60 kilos.

In 2006, China imported 20,27*10[6] t of food, 40 percent more compared to the previous year. This is one reason that an increasing portion of world crops is now used in the so-called indirect diet[5].

What concerns us most is the fact that arable land was once used to grow plants used in nutrition. Recently, the production of fuels has developed, using wheat to produce ethanole and diesel fuel. As much as 30% of crops in the U.S.A. is transformed into the fuel of plant origin, which is one of the generators of higher prices of bread wheat, i.e., of famine.

Modern agricultural achievements are not accessible to all the nations at the moment, however, modern genetic technology is possible to implement. By electronic communication it was established that there are approximately 200 genetically modified seeds (resistant to extreme weather conditions) in the laboratories of the poorest countries.

Similarly, the sales of genetically mutated seeds commodity increase, and 43% of fertile soil in the fast growing economies (China, India, Brasil) is sewn with these very seeds.

3. Environmental protection management

The pollution of the environment by the waste of non-biological origin is increasing worldwide, therefore it is necessary that steps are undertaken to sustain the quality of life and ensure the conditions for biological survival. The development of production and consumable raw materials, products and energy is such that it threatens the ballance between the quantities of extracted waste matter and the nature's ability to absorb it.

The ammassement of ecology problem issues brought an increased awareness of its global character in its wake. The majority of countries are engaged in adopting adequate regulations in environment management and in creating a favourable social climate to ensure stimulative conditions for environmental protection. Besides, an increasing portion of national income is allocated for working out the solutions to the environmental protection issues.

Some serious pollutants are: PET, HDPE, LDPE, PP packagings[6]. It is for this reason that the ecological status of packaging is estimated on the basis of the impact of used and discarded units of packaging upon the environment. The term used in the estimate of the ecological ststus of packaging is the *ecological balance* and includes two groups of criteria:

- technological and economic eligibility of the unit of packaging and
- ecological acceptability of the unit of packaging.

It is important to note that the ecological status can be corrected in each of the phases of the life cycle. To pack a product, such packaging is used whose properties satisfy technological requirements The selected packaging is then assessed from the economic point of view and valuated according to the techno-economic criteria.

Thus valuated packaging is then subjected to the estimate of ecological status. Contrary to the ecological suitability criteria (the impact of used and discarded packaging), the impact of packaging is estimated throughout the life cycle, from the use of raw materials, to the manufacturing process, to the use of packaging, to the procedures of treating the used and discarded packaging.

Empirically obtained data show that the energy consumption in the packaging manufacturing process affects the estimeted ecological status of packaging to a greatest extent. It is for this reason that the term *ecological balance* was introduced, to define the energy consumption in each of the phases of packaging life cycle. The least energy consumption is found to be in producing glass packaging, whereas the greatest consumption is caused in the production of metal, especially aluminium packaging.

The greatest effect in environmental protection, however, can be achieved by the implementation of appropriate procedures with used and discarded packaging.

Various types of packaging are usually a very valuable secondary raw material and the packaging waste phase includes all the procedures of packaging waste treatment for the purpose of getting new products produced. Only the part that is not possible to recycle becomes the packaging waste and is permanently stored in underground storage sites.

[5] More than a half of soya quantity produced is used as livestock feed.

[6] Packaging on the basis of: PET – polyethilen-terephthalate (water and beverages bottles), HDPE – high density polyethilene (table oil bottles), LDPE – low density polyethilene (main component of plastic bags), PP – polypropilene (street containers and drinking water supply pipes).

It is important to note that recycling the used packaging helps reduce the volume and mass of packaging waste to the amounts more than ten times smaller. It simultaneously provides raw materials and /or products that have a certain economic, and overall an ecological value. Thus the cardboard, paper, woodboard packaging are increasingly used in the production of paper, cardboard and other products.

Broken glass packaging is used as a basic raw material in the production of glass. Recycling of metal packaging is also very important in terms of its economic justification.

As regards the recycling of plastic packaging, it is important to disintegrate the packaging into its ingredients, since only these can be recycled. If polymer materials are not possible to disintegrate further (manyfold polymers or combined materials), it is economically and ecologically reasonable to use them as fuels.

Recycling is incresingly spoken about as a profitable business, as well as a way to protect the environment. This is further supported by statistical data that present the total annual waste of $3*10^8$ euros in Serbia, caused by an inappropriate waste management. The value of the annual waste equals the value of 1.1% gross national product of Serbia. It is for this reason that the rate of re-use and recycling of packaging (paper, plastics, metal and glass) should be raised to one foruth of its total quantity.

The packaging industry is a very profitable industry all over the world. The development of technology, an ever-increasing care for the ecological aspect and recycling, as well as the growth of customers' demands make it one of the most advantageous industries. The reason is self-evident – the goods for sale must be packed.

According to the data obtained from the Statistical Institute of Serbia, the Recycling Agency and the independent researchers, the data on the waste materials collected, the recycling, the production, the exports and the imports in Serbia in 2005 were as follows:

Category	collected	recycled	production	exports	imports
Paper	144,944	105,978	523,205	39,593	447
Metal	307,971	337,145	376,319	143,975	173,149
Glass	31,262	12,446	16,371	18,816	0
Copper	22,5	15	17,5	7,5	0
Aluminium	20	60	110	7,5	47,5
Plastics	15	5	15	10	0
Total	541,677	535,389	1058,395	227,384	221,096

Table 1. Scope of secondary materials market in tons

On the basis of the data a conclusion can be drawn that the imports of paper exceeded the exports to a great extent, as is the case of collected and recycled paper, though only a portion of collected paper was recycled. As far as metal is concerned, more metal is recycled than is collected, which is the consequence of large imports, approximate to exports in this case.

Very small quantities of glass are collected and recycled. The exports are negligible, and there were no imports at all. Copper is collected in larger quantities than are recycled. The exports were satisfactory, but there were no imports. Much more aluminium was recycled than was imported, which is the result of too much aluminium imported compared to the exports.

As regards plastics, the quantities recycled are significantly smaller than those collected, the result of satisfactory exports, with no imports of plastics. The production has, apart from the cases of copper and plastics, largely exceeded all the other positions.

An industry accompanying all other sectors, the packaging production cannot stagnate, especially if we know that all the products with a fast consumption rate (food, chemicals and other commodity purchased at mega markets) are consumed daily, therefore there is a demand for new quantities on the market. This is not a problem for packaging manufacturers, as they can always combine the forms and the types of material, and the production technology develops fast. The development of this industry here is a great opportunity for a majority of entrepreneurs.

There are 500 small private businesses in Serbia producing and importing packaging. A smaller number of firms is engaged in manufacturing or importing packaging machinery.

The advantages of our market for this type of business are as follows:

- Strategic positioning on the markets of Europe, Asia and the Near East,
- Duty-free access to the free-trade area in Southeast Europe ($6*10^7$ customers),
- Serbia is not a European Union memeber; greater flexibility and advantages in investing,
- The lowest tax rate on profit in Europe,
- Trained and non-expensive work force,
- Relatively stable economy,

[7] **http://www.ekoforum.org**

- Stable monetary policy and prompt implementation of macroeconomic laws,
- Liberal regulations in foreign trade and foreign investments, and
- Relatively simple procedures of setting up a business and starting production, including the non-residents stay regime, firm registration and customs duties.

The packaging and packaging machinery industries also provide opportunities for large corporations with modern technology. Knowledge of ecology and the spread of ecology movements caused radical changes in the packaging industries of the developed countries. The reesearch conducted in a number of countries show that certain international trusts and agencies are deeply concerned with eco-packaging and recycling issues.

The member countries of the International Chamber of Commerce adopted the "Human Environment Quality Protection Code". These regulations urged numerous multinational corporations to adopt similar eco-rules.

The field of recycling in Serbia is regulated by the Waste Management Act of 1996, when the Agency for recycling was established; by the Code on collecting, storage and transport of secondary raw materials of 2001; and by the Environmental Protection Act of 2004. The Agency for recycling reports to the Ministry of science and environment; however, as regards its activities and the type of liabilities, it collaborates with other compatible ministries, such as the ministries of privatization and economy, of power supply, of health care and of finance. The agency is simultaneously engaged in expert work such as monitoring the situation and control of the secondary raw material use, market research for such materials, data on the available and required quantities of secondary raw materials. How much raw material and which materials we have, can they be treated in this country or not, do we have capacities installed, do these need to be revitalized, and, if we do not have them, which are the priorities in their construction[7]?

4. Conclusion

A continual improvement of the knowledge and work productivity is the fundamental imperative of the modern economy as well as the most important factor in the global competition of companies, where the main role is played by large corporations. IT are the basic module in achieving technological advantage and adequate protection of environment.

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