

# DESIGN AS AN INTEGRAL ELEMENT OF PRODUCT DEVELOPMENT

Rade S. Knezevic<sup>1</sup>, Zeljko Knezevic<sup>2</sup>

<sup>1</sup>Faculty for Strategic and Operational Management, University „UNION-Nikola Tesla”, Belgrade, Serbia, e-mail: rade.knezevic@fpsp.edu.rs

<sup>2</sup>Novi Sad, ezeljko.knezevic@vinarijacoka.co.rs

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**Abstract:** *Considering the very wide range of areas in which the design is present (industrial products, architecture, furniture, fashion, textile, web design, graphic design, etc.) a great importance of design is also expressed, which is always interpreted in the context of some specific application areas. In the innovation and design of special interest is the definition and the role of design in the innovation process, i.e., creation, or more precisely, design objects for everyday use, especially those that are produced in large batches, so industrial.*

*The design can be viewed as a new multidisciplinary activity, that relies not just on science but largely, if not predominantly, on the creativity and art. Thus, one of the instruments for realization of new needs, and therefore profits, is design. The development of design and its increasing importance is economically conditioned, so the basic demand with which the design is facing today is actually the money.*

*This paper is an attempt to emphasize the importance of design as a component of the process of product innovation, because compared to competing products it represents an element of differentiation and an important source for obtaining and maintaining the market advantage.*

**Keywords:** *design, product, innovation, competitive advantage, quality.*

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## 1. INTRODUCTION

The modern form of industrial production is the result of a very dynamic development of science and technology. The economic interests are taking more dominant position, became a decisive factor in the overall functioning of the man. A continuous aspiration of man is a permanent increase of capital, for which the consumption is one of the limiting factors. In that part of the chain of liberal capitalism, i.e., in the consumption increase, design, and especially industrial design, finds its significant role. The production capacity and their employment are constantly growing, they are more dependent on the creation and realiza-

tion of the new needs. For the imposition and creation of these needs design was invented as a new multidisciplinary activity that relies not just on science but largely, if not predominantly, on the creativity and the art. Thus, one of the instruments for realization of new needs, and therefore profits, is design. Development of design and its increasing importance is economically conditioned, so the basic requirement with which the design is facing today is actually the money.

One of the essential elements of differentiation compared to competing products is the design of products, and thus representing an important source for gaining competitive advantage on the market. Unfortunately, product design often comes too late in the process of developing a new product, and therefore its significance and the potential are becoming small, or, remain neglected.

Changes in the market and technology development occur simultaneously and interactively. Successful coordination of marketing, design and production can take the opportunity offered by the trends that emerge and even those possibilities which consumers themselves are not even aware of.

Each product which has out-dated or unlikable design becomes very sensitive to constant demands of competition to push similar products from the market. Early identification of such products, which have become unattractive to the consumer, is a serious problem for a company that produces a large range of products. One of the possible ways of solving these problems is the formation of a commission to monitor the product and the design of their products. These commissions should include experts from the marketing department, production, procurement, sales, controlling, human resources management and a department for research and development.

The role and task of the designer is reflected in the skill of forcing yourself, and encouraging others to greater involvement, and even the choice of heavier ways in solving problems, if they contribute to improving the quality of construction. The designer is characterized by a principled knowledge not only of their specialties, but also from other related fields that are associated with it. The wide horizon, as a rule, is provided with a broad range of interests. This means that the designer must constantly improve and acquire new knowledge in practically all areas.

## **2. BASIC PARAMETERS AND FACTORS OF DESIGN**

One of the main design features is the integrated interventions along the entire course of social reproduction: the intervention of design applies equally to the production, distribution and consumption. These three basic spheres of social reproduction are the parameters of industrial design.

Parameters are those social, human, technical, technological and organizational factors which cause the emergence, development and industrial design tendencies in the macro, historical and social micro relations at the producers, consumers and products level. Factors important for design process, in which the designer must take care, are resulting from the basic parameters.

Between parameters and design is a dialectical relationship: the design is required by them, but at the same time can act on their development. For example, the development of technology of plastics, new technical and scientific discoveries in the field of electronics have contributed to the conception of industrial design, and on the other side systematic policy

of industrial design may act stimulating on the processes of development of science and technology.

The main parameter of design development is its social orientation. V. Papanek (1923 -1998.) warns that the designer works in a polarized situation to absurdity. The author applies the principles of social responsibility of design in joint projects with problems such as UNESCO and the World Health Organization. He kept trying to use design as a force for improving lives.

The designer has tasks also within the marketing, which promotes the idea of subordinating the production to the level of the usage of the product, critically designer quickly realizes that it is actually vice versa: the production conditions the consumption, consumption is subordinated to production, which is aiming for the intensive and more uniformed consumption, for insuring major series and reducing the costs of the production.

Education of the consumer and the professional approach of designer, his analytical and methodical skills, narrow the field of kitsch activity. The task of design is not to support already existing reality, but to create a new, solving customer problems.

Good design is in a function of the company's success. There are three important areas in which decisions about the design have a great importance: identity of the enterprise, product design, brand identity. Therefore, the design is integrated into many aspects of the business or company as a whole. The need to highlight and special considerations of product design stems from the fact that the product often remains with a consumer long after the promotional materials and packaging are discarded.

Good design must meet the necessary requirements that are directly related to factors

Classification by design factors	Usage	Relevance of the sales	Production
Aesthetics	*	*	
Motivation	*	*	
Function	*	*	
Ergonomics	*		
Mechanism	*		*
Structure	*		*
Production		*	*
Economics		*	*
Presentation		*	

that are placed at the emergence of new products. The classification of design factors and their relevance, according B. Archer [1], is presented in table 1.

The effect of some of the factors can be found only in his interdependence of all other factors, as well as the parameters, which in the given situation are acting on the design.

Due to this, the designer's task is not to design product of functional perfection but to design systems and processes which meet human needs, in such a way, that in the creative process of creating its own environment be included the user of the product.

Usage of licenses, patents and plagiarism of foreign decisions does not allow a real competition in the market, regardless of whether it copied a complete solution or a method.

In addition to satisfying the specific demands of the market, conditions of competition, presentation and promotion of products, product design as part of its integrated quality must meet the requirements of transportation, warehousing, distribution, servicing, etc. (Example: if you compare the number of visits to the market (shopping center) with the number of visits to the theater, museum or gallery, number of purchased consumer products with the number of purchased books or paintings or reproductions you get a realistic picture of the cultural significance and cultural exposure of the product in daily use).

### 3. INDUSTRIAL DESIGN AS A COMPONENT OF THE INNOVATION PROCESS

The product design can be defined in different ways. According to Kotler (17, p. 377) the design is all the product characteristics that affect how the product looks and functions according to customer requirements.

International Council of Society of Industrial Design (ICSID), formulated the following definition: "Industrial design is a creative activity whose aim is to determine the formal qualities of industrially produced objects. These formal qualities include the external features, but above all those structural and functional relationships which convert a system into a coherent whole, with respect to both manufacturers and users." (2)

The product design is an element of differentiation in relation to the product of competition, and thus becomes a very important source for gaining and maintaining a competitive advantage of companies in the market. Often the product design comes too late in the process of developing a new product, and because of that, its importance and potential remain untapped.

"We do not think that good design can make a bad product good, regardless of whether it is a machine, building, brochure in promotional purposes or businessperson, however, we are convinced that good design can significantly help in the realization of the product to its full potential. In short we believe that good design is good business." Thomas Watson, IBM

Most products on the market can be improved in several ways, and one of them is certainly by design. All products on the market that work and are used, depend critically of industrial design in terms of commercial success.

The design as a characteristic of the product has a multiple meaning, depends on whether it is viewed from the customer or the manufacturer side, so for the customers well designed product is the one that is aesthetically pleasing, easy to open, install and use, and easy to repair, and on the other hand, for the company well designed product is the one that is easy to produce and easy to distribute.

In manufacturing companies industrial design plays an important role in creating and enhancing the reputation of the company. Industrial design determines the style of the product, which is directly related to the perception of the product by the consumer and the companies itself. When the companies maintain permanent, recognizable and consistent look, contributing to the creation of visually attractive distinctive product that attracts attention of potential customers, we can say, the visual capital was established through. When a company has an established positive reputation among consumers, since the visual capital is very valuable, it can thus create a positive relationship with the quality for new products.

It is possible to prove that modern technology, industrial and serial production work as a cycle of mass communication, where the manufacturer occurs as a carrier of certain information including cultural, and the user (consumer) as a receiver of such information.

Industrial design appears as the cultural content that is announced to the user. Products do not work only at the level of its use value, its function and its purpose, but their action extends to the formation of cultural and social values and attitudes of the user who is surrounded with them.

When designing the product, a very complex task must be resolved, because we have to worry about the shape, characteristics, quality performance, conformity. We can say that the product design involves the choice of a combination of functional, structural and aesthetic qualities.

Designing a product form, is actually determination of the product by the physiognomy, color, size, shape and structure.

Designing the different characteristics of products aims to contribute to their basic function. Product managers must identify and select the appropriate new product characteristics, analyzing the customer and examining the relationship between value for the customers and cost for the company. Depending on the size of the company, designing the product is differently organized. Large companies often have special departments for design, while smaller companies use the services of agencies involved in this kind of work. In the departments for design, engineers will monitor the process of generalization, perception and evaluation of the concepts relating to technical characteristics of the product. The role of engineers is to respond the question whether the product will suit the purpose, which assumes analysis of product value. A successful design requires close cooperation between engineers, designers and researchers.

A measure of the efficiency of the design are the number of modifications of design and frequency of design modification. In a close relationship all should be done with strategic marketing actions at the target segments of the market. Designing quality of performance is more important parameter for product differentiation. Most often, the products can be classified into four performance levels: low, average, high, superior. [2]

The level in which the basic characteristics of the product are functioning represents the quality of performance. It must be created a level of performance that fits the target market and which is in accordance with a new performance of competition. Managers of the products, in collaboration with designers, must work on continuous improvement of performance that can lead the company towards greater profits and higher market share. Designing products in accordance with dimensions and characteristics of the people provides the product with conformity and comfort. The design can be considered as a process of product design, because for the development and designing of products of crucial importance is defining the products of which depends the realization of the whole project of a new product. In defining the product concept we must consider the needs, requirements and tastes of potential customers as well as the benefits which they expect from the new product. Good design must meet the requirements relating to: product usability, ergonomic adaptability, technical / economic reliability, aesthetic sensibility and consistency of image.

Designing a product must be considered from the standpoint of engineering, production and costs. The most common restrictions in the design process for the company are the availability of financial funds, the compatibility of new products with existing production capacities and technologies, the general objectives and planned development of the company, required resources and time, the share of research costs and of development.

In the development of product design has to be considered the limitations that come from the environment that has technologically legal character: product safety, packaging, labeling, registration, branding.

#### 4. CONCLUDING REMARKS

Product design is an essential element of differentiation in relation to competitors, and thus represents an important source for acquiring and competitive advantage on the market. Unfortunately, product design often comes too late in the process of developing a new product, and therefore its significance and potential become small, that is, remain neglected.

Most products on the market can be improved in several ways, and one of them is certainly by design. All products on the market which work and are used depend critically from industrial design in terms of commercial success.

The design as the characteristic of the product has a multiple meaning, depending whether it is viewed from the customers side or the manufacturer side, so, for the customers well designed product is the one that is aesthetically pleasing, easy to open, install and use, and easy to repair, and on the other hand, for the company well designed product is the one that is easy to produce and easy to distribute.

The design can be considered as a process of product design, because for development and designing of products the crucial importance is to define the product on what depends the realization of the whole project of a new product.

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