

Biomimicry as a means of Innovation and Sustainability in the Field of Product Design

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Abstract

Companies and productive institutions seeking to keep pace with proceed progress, increase competitiveness through innovation of new products, the development of existing products, and provide design solutions that retains its entity in the local markets, and globally.

As the nature was the source, and the permanent fount of ideas that industrial designer can be inspired and innovated everything new by them in order to achieve the welfare of humanity and meet the needs of the necessary products, Biomimicry came as a branch of knowledge seeks to achieve sustainability, raise the efficiency of the product, and reduce raw materials and costs, from here came the problem of research, where the rapid development of the economy, and the world of products, as well as environmental pressures that imposed on companies to rethink its policies and arrange their positions even in line with those of development and pressures.

The importance of research is to clarify the relationship between biomimicry, innovation and sustainability and its impact on the competitive advantage of industrial products.

By recognizing biomimicry definition: a conscious simulation of nature, species must have the ability to adapt and differentiate environments that forced them to find solutions to changing conditions, through the identification of biomimicry approaches, whether it is a reductionist approach based on simulations of some characteristics, functions, mechanics, or mechanisms of movement of certain organisms or biological processes. This is the traditional type, or the holistic approach that believes that sustainable, environmentally friendly products should be achieved.

Economic, social and environmental aspects must be considered, and to be innovative rather than traditional classic. This is what is gained by excellence and competitiveness in a world where competition is increasing in the local and international markets, so productive institutions must seek new ways of development, and improvement to keep pace behind progress.

Sustainability is also defined as a way to achieve growth, which is considered to be the humanitarian aspect in all its dimensions in addition to the economic, social, moral and environmental aspects

Competitive advantage is defined as anything that distinguishes the enterprise or its products positively from its competitors from the point of view of the end customer.

Therefore, it is the responsibility of design to provide innovative products or develop existing products. Competitive advantage is the cornerstone of the organization's performance. Business organizations rarely have a competitive progress in all areas compared to other competitors, that importance showed through:

- It gives qualitative, quantitative and superior superiority over competitors, thus allowing them to achieve high results

- Make the organization superior in performance or value to its customers or both
- Contribute to the positive influence in the management of customers, and the rest of the dealers with the organization and motivate them to continue and develop the deal

The research aims to guide the Industrial Designers, and those in charge of research and development in companies to the importance of applying Biomimicry as a tool for innovation in product design.

The research assumes that by applying the principles of biomimicry in product design, sustainable products can be accessed.

The research is based on the analytical descriptive approach: the information about the biomimicry is collected in terms of its concept, definition and principles, as well as the concept, definition and levels of innovation. The concept of sustainable design is identified and the interaction between biomimicry, innovation and sustainability is determined in the design of the industrial product

The research reached a number of results, the most important of which are:

- 1-Biomimicry is one of the sustainable design strategies that takes into account the three important aspects of economic, social and environmental aspects through the imitation of patterns and strategies of nature.
- 2- Biomimicry is an introduction to innovation, placing new or non-traditional ideas into actual practice in the organization's practices, and then reaching sustainable products through simulation of nature.
- 3- There is a strong interactive relationship between biomimicry, innovation, sustainability, and competitive advantage: finding solutions to design problems by simulating the natural world, by mimicking nature's forms, functions, and ecosystems in a way that addresses design challenges sustainably.

The research also reached a number of recommendations, the most important of which are:

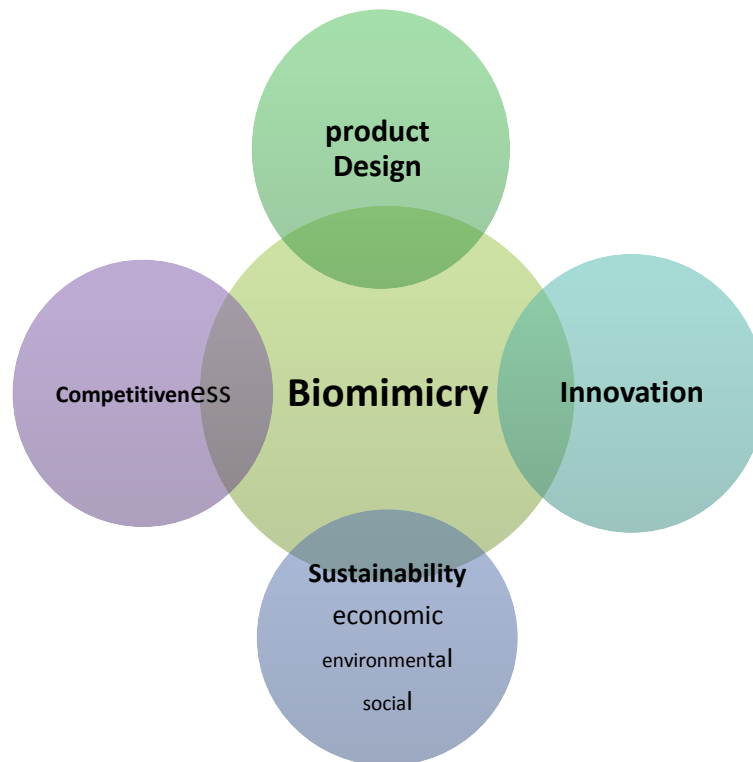
- Emphasize the need to apply biomimicry as a means of innovation in the field of product design
- The attention of industrial design researchers, industrial designers, research and development in the companies to the importance of the application of biomimicry as a means to achieve competitiveness, sustainability and innovation of products
- The need to work to take account of the economic, environmental and social aspects when designing new products or developing existing products, where sustainability, quality, access to an economic product that meets the needs of consumers, and the desirability and acceptance

Guiding words: Product Design, Product Development, Biomimicry, Sustainability, Competitiveness, Innovation, Inspiration from Nature.

Conclusion

Through the study we can say that there is a close relationship between the Biomimicry, and innovation that considered the means of industrial designer through which to invent new design solutions characterized by high efficiency, quality and appropriate form, as well as the

function by simulating what created by the Creator, and thus take into account the environmental, economic and social aspects of so-called sustainable products, which in turn achieve the competitive advantage of productive institutions



The interactive relationship between Biomimicry, Innovation, Sustainability, and Competitive Advantage

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