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APPLICATION OF SUSTAINABLE DEVELOPMENT THEORY IN PACKAGING DESIGN

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The work presents a research of the principles of sustainable design and methods of use them in the creation of environmentally friendly packaging solutions. An analysis of ecological packaging design methods of various industries was carried out. The prospects and possibilities of applying the theory of sustainable packaging design are considered and directions for future research are proposed. Recommendations on the development of ecological packaging are provided.

Key words: *sustainable design, packaging design, eco-friendly.*

INTRODUCTION

Today, society pays a lot of attention to the ecological design of packaging and its impact on the environment. There is an obvious need to align packaging design with the principles and goals of sustainable development, which includes minimizing negative environmental impact, maximizing positive social impact, and ensuring economic viability and efficiency. However, applying sustainable design theory to packaging design is challenging due to the conflicting demands and expectations of many factors and stakeholders. Packaging design requires a holistic, creative, collaborative and adaptive approach that considers the entire life cycle and value chain of products and packaging, involves co-designing and co-creating solutions with users and other stakeholders, and allows for experimentation, evaluation and improvement of solutions in response to changing needs and conditions.

PURPOSE

This paper aims to explore how sustainable design theory can be applied to packaging design to create eco-friendly packaging solutions that reduce environmental impact and enhance social value.

RESULTS AND DISCUSSION

One of the main challenges for applying sustainable design theory to packaging design is to balance functionality and sustainability of packaging solutions [1]. Functionality refers to the ability of packaging solutions to protect, store, transport and transfer products. Eco-friendliness is about reducing environmental impact and increasing social value. In some cases, these two



aspects may conflict with each other. For example, a Loop packaging solution can compromise the functionality of products by requiring more space, weight and maintenance for reusable containers. Ecovative's packaging solution may compromise the sustainability of products by using more energy and resources to grow and process the mycelium. Lush's packaging solution can compromise both the functionality and sustainability of products, exposing them to contamination, damage or loss [2].

Therefore, packaging designers must find optimal solutions that can satisfy both functional and environmental requirements for products and packaging. Packaging designers must consider various factors such as the type, nature and purpose of the products. User preferences, needs and expectations. Availability, suitability and cost of materials.

Another important factor in applying sustainable design theory to packaging design is influencing and changing user behavior and education. Consumer culture refers to how users interact with, use and dispose of products and packaging. Building consumption skills refers to how users learn about, understand and value products and packaging. In some cases, these two aspects can affect or depend on the sustainability of packaging solutions. For example, Loop's packaging solution can depend on users' behavior to return containers for reuse or recycling.

Ecovative's packaging solution may rely on user awareness to inform them of the compostability or reusability of the packaging material. Lush's packaging solution can rely on both user behavior and education to persuade them to buy bare or minimally packaged products.

A third key factor in applying sustainable design theory to packaging design is to foster collaboration and innovation between stakeholders. Stakeholders are individuals or groups involved in or affected by packaging decisions, such as manufacturers, consumers, distributors, retailers, regulators, etc. Collaboration means collaboration and coordination among stakeholders to achieve common goals and interests. Innovation refers to the creation and implementation of new or improved products, processes or systems that can increase the efficiency and value of packaging solutions. In some cases, these two aspects can contribute to or limit the sustainability of packaging solutions. For example, Loop's packaging solution can foster collaboration and innovation by bringing numerous consumer goods companies and retailers to its platform and offering them new business models and services.

Ecovative's packaging solution can foster collaboration and innovation by partnering with different industries and sectors that can use its packaging material and offering new solutions for different applications and functions [3]. Lush's packaging solution can foster collaboration and innovation by involving its consumers and suppliers in the production and distribution processes, and by offering them new products and experiences.

Accordingly, packaging designers must design solutions that support collaboration and innovation among stakeholders, taking into account stakeholder



roles, needs, resources, conflicts, and trust. They should use strategies such as setting clear goals, building effective communication channels, promoting learning and recognition, and considering sustainable solutions.

CONCLUSIONS

The paper discusses the challenges and opportunities of applying sustainable design theory to packaging design, based on the comparison and evaluation of three case studies. One of the key challenges is balancing the functionality and sustainability of the packaging solutions, which may sometimes conflict with each other. Designers need to consider various factors, such as the type of products, user preferences, and materials availability, to find optimal solutions. Changing user behavior and education is also important in promoting sustainable packaging practices, as well as fostering collaboration and innovation among stakeholders. Designers should consider stakeholder roles, needs, resources, conflicts, and trust, and use strategies to support effective communication and learning to achieve sustainable packaging solutions.

REFERENCES

1. Braungart M., McDonough W., Bollinger, A. Cradle-to-cradle design: creating healthy emissions – a strategy for eco-effective product and system design. Journal of cleaner production. 2007.
2. Lewis H., Verghese K., Fitzpatrick L. Evaluating the sustainability impacts of packaging: the plastic carry bag dilemma. Packaging Technology and Science: An International Journal. 2010.
3. Kim Y., Ruedy D. Mushroom Packages an Ecovative Approach in Packaging Industry. Handbook of Engaged Sustainability. 2019.

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ЗАСТОСУВАННЯ ТЕОРІЇ СТАЛОГО РОЗВИТКУ В ДИЗАЙНІ УПАКОВКИ

У роботі представлено дослідження принципів сталого дизайну та методів їх використання при створенні безпечних для довкілля рішень упаковки. Здійснено аналіз методів проектування екологічної упаковки різних галузей промисловості. Окреслено перспективи та можливості застосування теорії сталого дизайну упаковки та запропоновано напрями подальших досліджень. Надано рекомендації щодо розробки екологічної упаковки.

Ключові слова: екологічний дизайн, дизайн упаковки, екологічний.