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Oct 28th, 8:00 AM - Oct 29th, 6:00 PM

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Recommended Citation

Lajqi, Violeta; Ljukovic, A; Dinaj, S; and Makolli, Sami, "The influence of ecological packaging design on consumer perception of purchasing food products: a case study in Ulqin" (2023). *UBT International Conference*. 3.

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The influence of ecological packaging design on consumer perception of purchasing food products: a case study in Ulqin

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Abstract. Due to environmental problems from food packaging, in recent times the tendency to use different techniques for environmental protection and reducing waste from packaging has increased significantly. The main purpose of this paper is to research and assess the impact of the design of ecological packaging as a method for reducing waste from food packaging, and the impact of the ecological packaging design on consumers' perception of purchasing food products. The research was developed in the form of a review of other researchers as well as through a survey by Google Docs., in Montenegro. The study included 300 people who participated by filling out an online questionnaire. This paper further elaborates on the research findings by comparing age groups, gender, perception of ecological packaging, consumer awareness, and the main problem that pushes consumers not to try to change their lifestyle for a cleaner environment and derives the results of analyzes that best summarize the problem and lead to its solution, especially the possibility for its solution. The tool used to analyze the answers is the IBM SPSS program, through which the statistical and graphic data for the choices of the participants in the questionnaire were obtained. This study makes diverse contributions in terms of theory, methodology, and policy-making, and with the recommendation for packaging industries to design packaging with ecological designs that stimulate the curiosity of consumers for their purchase.

Keywords: Environmental protection, food package, ecological design.

1. INTRODUCTION

Based on scientific researches, three crucial obstacles to the purchase of eco-friendly packaging have been identified. First, consumers require assistance in recognizing eco-friendly packaging; because while consumers primarily consider the packaging material itself and eco-labels, they also take into account other aspects of package design, such as colors and images of "nature" that can be deceptive. Second, it is evident that consumers lack knowledge, particularly regarding new packaging materials like bio-based packaging. Third, many of the reviewed studies provide proof that other product characteristics such as price and product quality are more significant to consumers than eco-friendly packaging (Ketelsen, Janssen, & Hamm, 2020). However, some studies documented a significantly higher willingness on the part of consumers to purchase and pay for eco-friendly packaging and products with reduced packaging compared to products with standard packaging, indicating an overall positive attitude. Sustainable packaging is the type of packaging that can offer the necessary protection conditions for food, but simultaneously it is biodegradable and can be disposed of as organic waste in landfills to biodegrade through a natural process. In this manner, sustainable packaging becomes part of the local economy (Athanassiou, 2020).

Packaging has undergone significant changes over time due to advancements in technology, transportation, and society. These factors have influenced various aspects of our lives, including the manner in which products are packaged. Packaging serves as the initial point of contact for consumers when they come across a product, thus it holds utmost importance in reflecting environmental values and promoting eco-friendly practices. One approach to accomplish this is by utilizing "biodegradable packaging", which finds explanation in the article "Biodegradable packaging - A sustainable approach" (Ambrose, 2019). Biodegradable packaging is designed in a manner that rapidly decomposes, ensuring minimal harm to the environment. Furthermore, it is crafted using materials that are easily recyclable and can be reused. Another effective method of promoting environmental consciousness through packaging is the utilization of eco-labels. These labels, also referred to as ecological labels, encompass symbols or logos that signify a product's eco-friendly nature and adherence to specific standards (Khan Md

Raziuddin Taufique, 2014). By incorporating eco-labels, consumers are aided in recognizing and selecting sustainable packaging options in contrast to conventional alternatives, enabling them to comprehend the associated advantages. Hence, it becomes imperative to establish distinct and consistent indicators that facilitate consumers in distinguishing and appreciating packaging that is truly "environmentally friendly". Eco-labels or ecological labels emerge as one of the most efficacious means to accomplish this objective. Eco-sensitive packaging has the potential to capture the interest of environmentally conscious consumers, as it can have a positive impact on their purchasing decisions. Products labeled as eco-friendly offer distinct advantages for the environment when compared to their regular counterparts. These benefits include reduced energy, water, and raw material usage, as well as decreased emissions during production and consumption (Phil, 2004).

The aim of this research is to delve into consumers' perception of eco-friendly packaging specifically for packaged food items. This study aims to examine how individuals perceive environmentally conscious packaging and whether it influences their buying habits, prompting them to become more eco-conscious in their choices.

2. METHODOLOGY

The study examines the influence of environmentally conscious packaging design on consumer perceptions regarding the purchase of food items and its potential for reducing food packaging waste. Packaging plays a crucial role in safeguarding food from production to consumption, while also catering to the demands of a modern lifestyle that values convenience and variety in food options. The primary objective of this research is to investigate how the use of eco-friendly packaging design impacts consumer decision-making processes. To gather data, a quantitative methodology was employed, utilizing an online survey conducted via Google Docs. The survey targeted 300 individuals aged between 18 and 60 years residing in Ulcinj, Montenegro. Comprising of 18 questions, the survey aimed to evaluate how green packaging design influences consumer perceptions when purchasing food products. The research questions and hypotheses revolved around several key themes, including identifying the types of food packaging that are more environmentally friendly, exploring consumer strategies to minimize packaging waste, gauging consumer awareness regarding the environmental impact of food packaging, and assessing consumer evaluations of packaging sustainability and its significance to them. The hypotheses sought to examine the influence of green packaging design on consumer behavior and perception. The collected data was analyzed and the hypotheses were tested using the IBM SPSS program.

The subsequent analyses were conducted to address the research inquiries and test the assumptions:

RQ1: How can consumers decrease packaging waste?

To address this question, the survey data was analyzed to comprehend consumers' attitudes and behaviors related to diminishing packaging waste. Descriptive statistics and inferential tests, have been used to compare different groups of consumers and their attitudes towards reducing packaging waste.

RQ2: How informed are consumers about the waste caused by food packaging?

This inquiry was tackled by examining the survey data to evaluate consumers' understanding of the ecological effect of food packaging waste. Explanatory data and measures of central tendency have been used to summarize the degree of understanding among the survey participants.

H1 - Consumers find it challenging to invest (paying more) in products with environmentally friendly packaging as a result of uncertainty and without informing them until they are fully persuaded of the risk and issue it presents to the environment and everyone's health, contamination with waste lots of plastic packaging or other polluting materials.

To test this assumption, inferential statistical tests, have been used to examine the relationship between consumers' willingness to pay more for products with environmentally friendly packaging and their level of understanding and perception of environmental risks associated with traditional packaging.

H2 - The society has not been informed about the actions that should be taken to minimize and contribute to the protection against environmental contamination from the packaging of food products.

This assumption may have been tested using explanatory data to evaluate the overall level of societal understanding and information about actions to minimize environmental contamination from food packaging. Additionally, inferential tests, have been used to examine the association between societal understanding and demographic variables. The use of these analyses allowed to draw conclusions and make recommendations based on the findings, contributing to the comprehension of the impact of environmentally friendly packaging design on consumer behavior and perception.

3. RESULTS AND DISSCUSION

The study aims to investigate how consumers can diminish the amount of waste generated from packaging and enhance their understanding of the environmental consequences associated with food packaging waste. The passage delineates a range of tactics that consumers can implement to decrease packaging waste, including purchasing items with reusable and recyclable packaging, opting for discounted products to conserve fuel resources utilized in transportation, and selecting products with packaging that can be locally recycled. Additionally, it underscores the significance of educating and promoting a culture that minimizes the usage of plastic bags and other detrimental materials. Based on the comprehensive survey, the second set of four questions pertaining to this research query are the most pertinent, as they approach the same topic from various angles. Provided below is an alignment chart inserted amidst these questions to facilitate the necessary visualization required for analysis. For better visualization, the questions are:

- *Q5 - The design and composition of ecological packaging, influence and have priority in your choices of food products.*
- *Q6 - Glass or metal packages, unlike plastic ones, after consumption, use them further for placing other foods.*
- *Q7 - Ecological packaging and their proper use can halve the amount of waste that accumulates at the domestic and local level.*
- *Q8 - The amount of waste can be reduced more if individuals pay attention to the use of ecological packaging rather than collecting and throwing away waste.*

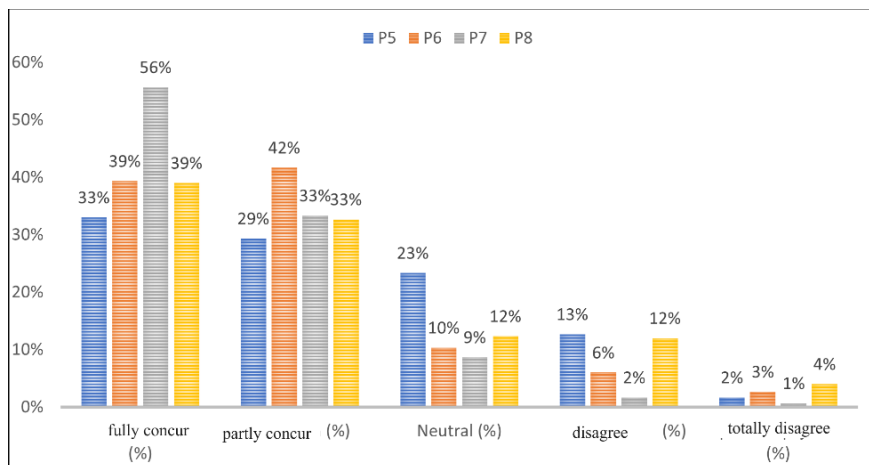


Figure 1. Compliance chart for questions 5,6,7 and 8 of the questionnaires

According to the compatibility chart, it can be observed that customers generally concur with the findings. However, there is less agreement regarding the influence of design and composition of eco-friendly packaging on their choices. The chart reveals that 33% of participants strongly agree, 29% somewhat agree, 23% are neutral, and 15% disagree. Furthermore, the text delves into the notion that individuals value environmental protection and prioritize ecology in their living environment, which amplifies their curiosity about the mere theoretical nature of social responsibility and its lack of practical implementation. The agreement graph pertaining to inquiries 5, 6, 7, and 8 highlights those participants, particularly the survey respondents, overwhelmingly support the notion (at a rate of 89%) that adopting environmentally friendly packaging and utilizing it appropriately can effectively halve the accumulation of waste at both household and local levels.

The research findings reveal a heightened consumer consciousness regarding the environmental impact of food packaging waste. Moreover, consumers are eagerly embracing sustainable packaging practices as a means of contributing to environmental preservation. Nevertheless, there remain certain gaps in both consumer awareness and behavior, as well as societal understanding and information regarding the mitigation of environmental

pollution stemming from food packaging. In addition, the study delves into the comprehensive examination of Lynsey Hollywood's 2013 research, which hailed plastic as a secure and convenient packaging material. The research explores the extent to which consumers are cognizant of the environmental consequences of food packaging waste and the extent to which they are adjusting their behavior accordingly to minimize waste generation. Drawing upon the extensive research conducted and a recent 2021 sustainable consumption report from Germany, it becomes abundantly clear that the majority of consumers are indeed aware of the issue and are actively modifying their shopping habits to curb waste production. In fact, over half of the respondents in the report firmly believe that their individual actions can significantly contribute to environmental preservation. These concerns manifest on a larger scale, with a staggering 50% of respondents affirming that they have altered their shopping behavior in pursuit of sustainability. This includes opting for alternative products, exploring new stores, and, in some cases, being willing to pay a premium. Furthermore, more than 25% of consumers actively avoid purchasing items that they deem insufficiently environmentally friendly. Additionally, one-third of respondents assert that sustainability factors exert a strong influence on their food purchasing decisions.

Despite of the theoretical preference for sustainability, the high cost still acts as a major hurdle for numerous consumers, with 40% confessing that sustainable products are excessively pricey. Companies and brands that disregard the importance of sustainability and environmental preservation may encounter a gloomy outlook. The findings of the survey disclose that respondents acknowledge their contribution to the problem of environmental pollution and the wastage of food packaging. One particular query in the survey (question 9) asserts that the extensive volume of waste in the environment poses a direct threat and sparks worrisome concerns regarding future well-being. This statement garners an overwhelming 96% agreement from the respondents. However, in question 11, which queries whether respondents are willing to pay additional costs for food items packaged in an eco-friendly manner, only 66% respond affirmatively, while 25% remain neutral and 9% respond negatively. This indicates that despite their awareness that paying more is a means of aiding their future and well-being, as confirmed by the subsequent discovery with an 87% agreement, they are unwilling to compromise their savings.

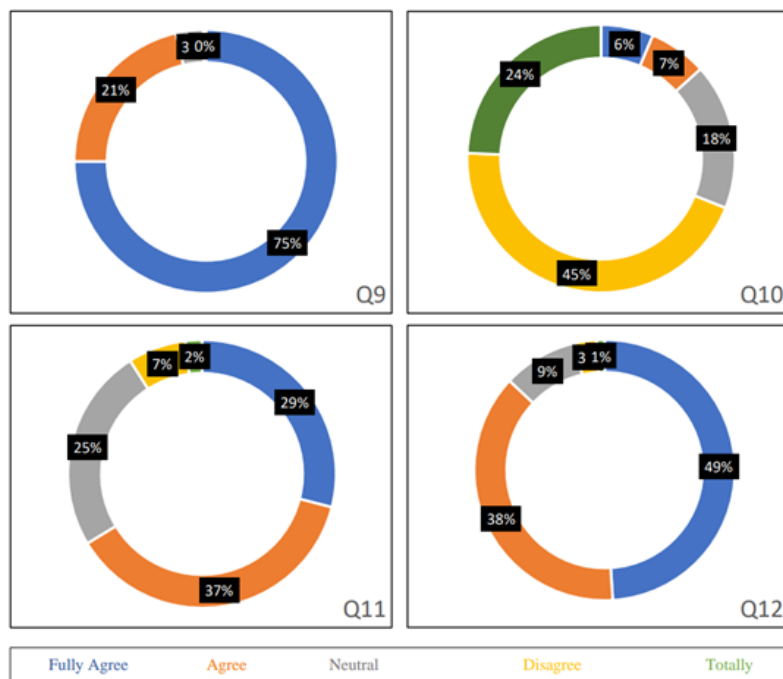


Figure 2. Compliance chart for questions 9, 10, 11 and 12 in the questionnaire

The second research query scrutinizes the extent of consciousness among consumers regarding the waste generated by food packaging. It is evident from the results that consumers, as a general rule, acknowledge the ecological repercussions of food packaging waste and express a willingness to embrace sustainable packaging methods to safeguard the environment. However, there remains room for improvement in terms of consumer

awareness and conduct, as well as social awareness and information on how to mitigate environmental pollution stemming from food packaging. The chapter dedicated to data analysis in this study delves into the survey responses, shedding light on disparities in viewpoints across various age groups and genders. For instance, the outcomes demonstrated that younger individuals favored utilizing their own means of transportation prior to purchasing fresh food products, while females tended to bring their own bags or utensils when acquiring such items. Additionally, the findings revealed that the majority of participants were cognizant of the significance of eco-friendly packaging and its impact on the environment. In conclusion, this study furnishes valuable insights into consumer conduct and perceptions regarding the design of eco-friendly packaging and its environmental implications. The findings indicate a growing awareness among consumers regarding the importance of sustainable packaging, although discrepancies in viewpoints based on age and gender still persist. Furthermore, the study highlights the challenges and opportunities associated with promoting sustainable packaging practices among consumers. These findings possess the potential to inform policymaking and industry practices, as well as facilitate the development of targeted interventions aimed at fostering consumer awareness and sustainable packaging.

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4. CONCLUSIONS AND RECOMMENDATIONS

Since, ecological signs on packaging have an impact on consumer perception and play an important role in reducing packaging waste and protecting the environment from packaging waste, this study leads to the recommendation that packaging industries design packaging with ecological designs that encourage the curiosity of consumers for their purchase, and in Collaboration with Environmental Organizations, the Prioritizing of Use of Sustainable Materials that are recyclable, biodegradable, or made from renewable resources. This approach not only reduces waste but also educates consumers about sustainable alternatives to traditional packaging materials. Using universally recognized symbols and clear messages about the product's environmental impact can inform and educate consumers. This approach helps in making an emotional connection with consumers Also, in coordination with the legislative measures in force, ensuring that packaging designs comply with existing environmental laws and regulations and staying updated with changing legislation, to achieve a level of reduction of packaging waste and environmental protection. This strategy can effectively contribute to a broader effort in environmental protection and package waste reduction.

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