

THE LATEST TRENDS IN PACKAGING DESIGN

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Purpose: Packaging is an indispensable and top-rated component of product that accompanies everyone's life. Its number and widespread use make it easier for consumers in many situations, but it also poses many risks, mainly to the environment. This study aimed to identify the latest research directions in the packaging design field. A review of the literature in this field can give an idea of the research work undertaken in this area of science.

Design/methodology/approach: The study's objective was to use the systematic literature review method and the PRISMA procedure. Research papers from the Web of Science database were reviewed. At the first stage of the study, 46 scientific articles that dealt with packaging design were accepted for analysis in the final step of the procedure.

Findings: The analysis identified four main lines of research in the most current global literature. These were: (1) enhancing product appeal and consumer impact, (2) eco-friendly materials and sustainable packaging, (3) durability and physical protection of product quality, and (4) impact on healthy eating habits and countering food waste. The most popular direction proved to be enhancing product appeal and consumer impact. Papers on this theme accounted for 41% of the publications in the review. A more in-depth analysis indicated that the following research areas emerged within this direction: increasing consumer purchase intent, improving product appeal and image, attracting consumer attention, the impact of packaging elements on consumer perception, and the application of design methods using artificial intelligence.

Originality/value: The research makes it possible to identify the most up-to-date science in packaging design. They provide an opportunity to learn about and reflect on the global situation in this field. The data obtained made it possible to determine that the dominant research trend is marketing, and most research on packaging design is focused on this topic. In the current climate crisis and the widespread call for sustainable action in every field, it is apparent that the latest issues in packaging design do not reflect this trend. Moreover, there is no doubt that packaging is such a standard product that it has a robust environmental impact. However, the directions of scientific work can be influenced, for example, through grant systems.

Keywords: Packaging design, packaging, marketing, environmental protection, SLR.

Category of the paper: Literature review, research paper.

1. Introduction

Due to their numerous advantages, product packaging is becoming increasingly common and indispensable in community life. Thanks to their daily use and the development of their functionality, they fulfil many of the tasks that are set before them (Weinrich et al., 2023). However, braces for progress in this area must take into account the requirements that are placed on packaging. Particularly those resulting from new regulatory conditions such as the New Green Deal. Although this regulation only has an impact within the European Union, the need for sustainable packaging is certainly being observed worldwide.

Another strongly noticeable trend is increasingly diverse and independent consumer behaviour (Min, 2023). These manifest themselves in new needs and expectations on their part. Today's packaging design must also, convey emotional information, provide experiences and meet personalised requirements.

Observation and analysis of current trends in the development of new products leads us to adopt the aim of this thesis as identifying the latest research directions in packaging design.

2. Literature review

According to the European Plastics Converters guidelines, the main functions of packaging include (EPC, 2024):

- Transport.
- Protection and conservation of the environment and of the packed good.
- To minimise environmental impact, packaging design needs to be optimized.
- Reduce waste/spillage.
- Hygiene.
- Help and inform the user.
- Convenience/ergonomics.
- Attract.

Undoubtedly, all of these functions will be under intense pressure from environmental demands, which may prove to be dominant in some areas of the world. According to reports from the World Packaging Organisation, the packaging industry is in constant transformation, driven by the forces of sustainability, technological advances, and consumer demand for innovation (WPO, 2024). In addition to the aforementioned environmental aspects, market issues also seem to be extremely important. Related to consumer perceptions of packaging and persuading them to buy. This is particularly influenced by the highly competitive and self-service economy, in which product packaging is the medium between the consumer and the

producer of a good (Pleyers, 2023). Usefulness, Understandability, and Reliability in primary products are becoming increasingly important in the market (Kozik et al., 2024). Besides, in the food industry, packaging colour, material and font are important to consumers (El Oraiby, Kiygi-Calli, 2023). In non-food products, on the other hand, safety of use is important (Bielak, Marcinkowska, 2022). Understanding consumers' differing preferences for packaging and products and their features is therefore crucial for those responsible for packaging design (Wang et al., 2022).

In conclusion, the main determinants influencing packaging design and development will be the growing needs and demands of consumers. In addition, it will also be very important to identify hitherto unrecognised needs. That is, those that are not being met. So such activities may prove to be extremely beneficial and profitable for companies.

3. Methodology

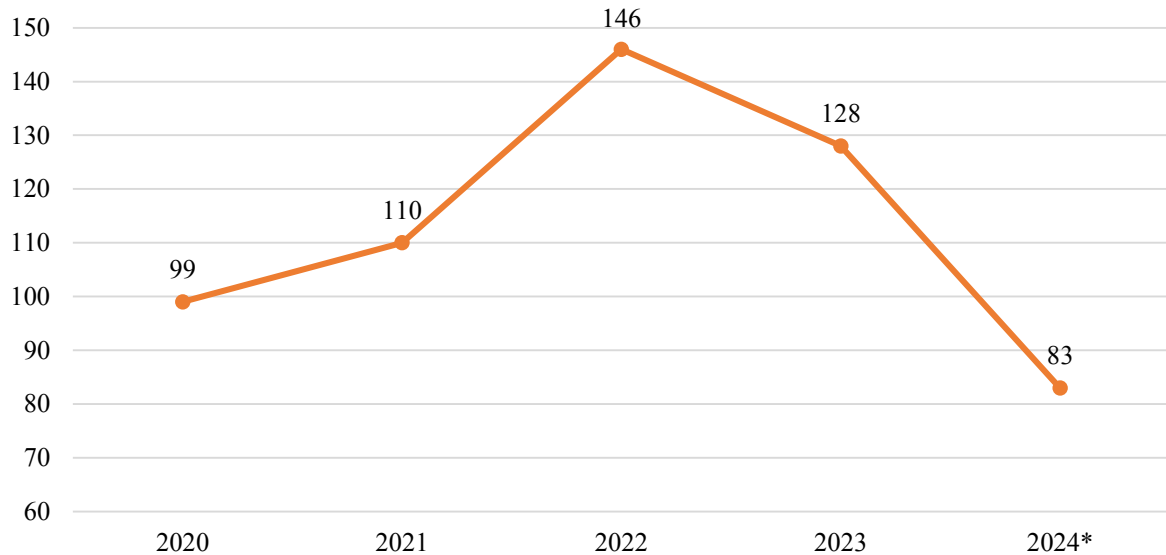
A systematic literature review methodology was used to achieve the stated aim of the study. This method is well-defined in science and is based on clear and rigorous criteria (Thome et al., 2016). A systematic literature review is frequently used in the social and psychological sciences (Fahimnia et al., 2015). As the main research question for this thesis, we adopted:

RQ1: What are the latest research directions in packaging design?

This designation of the research area should be considered new. The Web of Science database, recognized as one of the most relevant and reputable sources of peer-reviewed research (Fargnoli & Lombardi, 2020; Malapane et al., 2022), was used to search for articles. The selected keyword was the term 'packaging design.' A search procedure for titles, keywords, and abstracts was used. This defined and planned procedure allowed the search to be broad enough not to limit the number of studies and, at the same time, sufficiently detailed. The study was limited to articles in English, as this is defined as the international language of science, mainly due to the most prestigious international journals that allow publication only in this language. While analyzing and selecting the titles collected, the publications and their abstracts were reviewed according to the systematic literature review procedure by a single reviewer in the person of the author of this publication. The methodology resulting from the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) procedure was used to review the articles (Page et al., 2021).

4. Results

The implementation of the study began with a quantitative analysis of scientific articles. This data was obtained by searching for the phrase ‘packaging design’ in the Web of Science database. The data obtained are presented in Fig. 1. They show the number of scientific articles in which the search terms appeared in the title, keywords or abstract.



Explanation: *- data up to September this year.

Figure 1. Number of articles on ‘packaging design’ in the Web of Science database.

Source: own research.

As can be seen in the figure presented, the largest number of articles on the topic under study was published in 2022. However, it is worth noting that the 2024 data was not complete. The material presented confirms that packaging design issues are very often addressed by researchers and there are many of them. Due to the considerable amount of research papers identified, the review was limited only to the most recent research results that appeared in 2024. Therefore, only these papers were included for further steps. This was also directly related to the aim of the study, which was to analyse only the most recent research in the field of packaging design.

In a further step of the adopted procedure, after extracting 83 publications from 2024, further verifications were carried out in accordance with PRISMA. A diagram of this process and its results are presented in Figure 2.

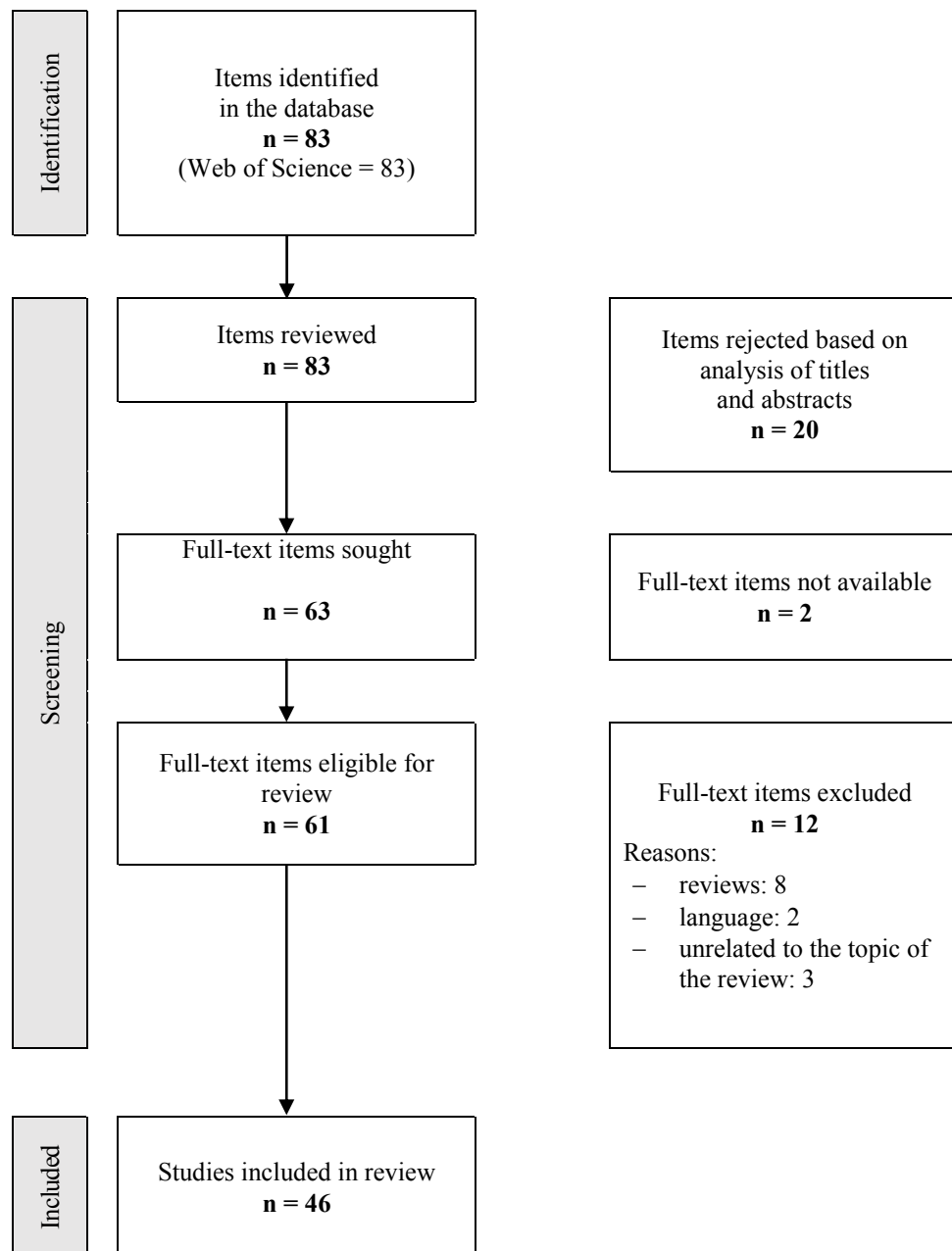


Figure 2. Diagram PRISMA.

Source: own research.

In the first step of the procedure, 83 items containing the searched keywords were obtained. These publications constituted the input den for the analysis. After an initial assessment of the titles and abstracts, 63 items were left that met the objectives of the review. These publications were subjected to further review. For reasons such as the unavailability of the full text or publications not in English, the number of items was reduced. In the final phase of the PRISMA procedure, 46 scientific articles were obtained, which served as input material for the purpose of the study. These publications constituted the main research material in the relevant part of the literature analysis covered in this thesis.

Based on the material that was selected for the purpose, open coding was used and each publication was assigned broader categories, which were then progressively compared and benchmarked. As a result of this analysis, four directions for the most up-to-date research in packaging design were obtained and proposed. The quantitative results of this exercise are presented in Figure 2.

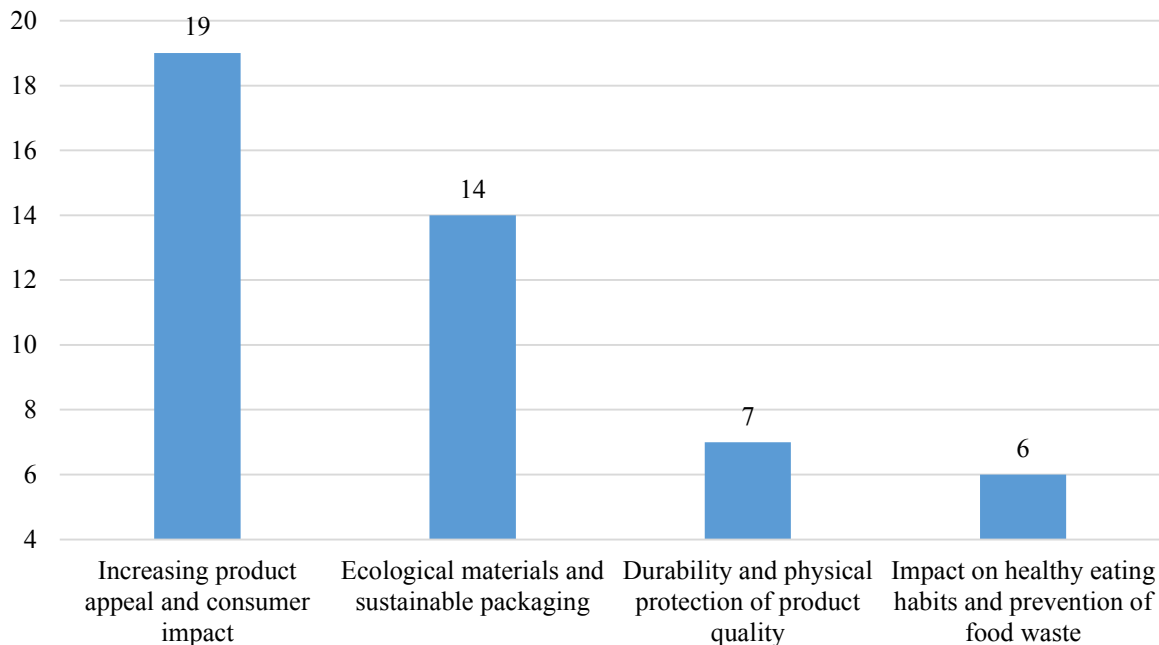


Figure 3. Number of papers on ‘packaging design’ in the Web of Science database.

Source: own research.

Figure 3 presents the results of the analysis of recent scientific research on packaging design. In the course of the literature review, the collected items were assigned to thematic groups that correspond to trends in science. As can be seen, to the greatest extent current research focuses on: enhancing product appeal and consumer impact (41%). Most likely, this state of affairs corresponds to market and scientific demand for this type of study. In second place, the most popular studies concerned ecological materials and sustainable packaging (30%). To a decidedly lesser extent, studies dealt with: durability and physical protection of the product quality (16%) and impact on healthy eating habits and prevention of food waste (13%).

In order to characterise the most popular research direction in more detail, an in-depth assessment was made of the research papers that were assigned to the thematic group: enhancing product appeal and consumer impact. The qualitative analysis carried out made it possible to identify the following research areas. These are presented in Figure 4.

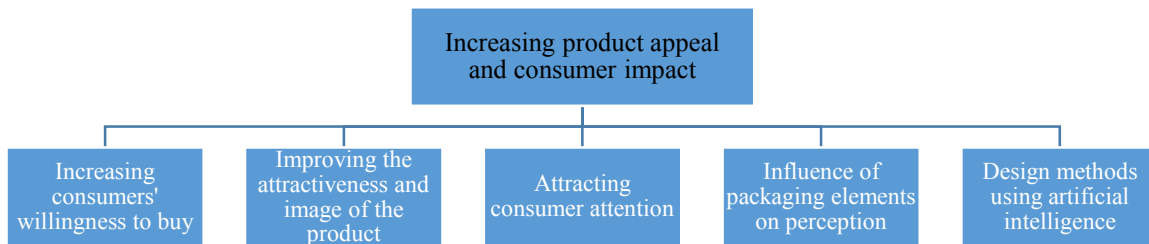


Figure 4. Research areas related to packaging design are assigned to enhance product appeal and consumer impact.

Source: own research.

A word cloud of publication abstracts (fig. 5) was created to visualise the most common themes and threads taken up within the identified and defined direction of packaging design research which was to enhance product appeal and consumer impact. This visualisation provides a quick overview of the key problems and issues that were addressed in this work (Kalmukov, 2021).



Explanation: The words 'design' and 'packaging' were removed from the cloud, and the words 'consumer' and 'product' were aligned.

Figure 5. Word cloud created from abstracts of scientific papers attributed to studies grouped under enhancing product appeal and consumer impact.

Source: own research.

As can be seen in the presented Figure 5. to the greatest extent, the themes of the specific direction concerned products and consumers. That is, the main elements that marketing is concerned with. It is also worth noting that a large part of the research was about food, as evidenced by the large size of the word.

5. Summary

The study carried out achieved its objective and provided an answer to the research question posed. As a result, the most popular research direction related to packaging design in 2024 was identified as enhancing product appeal and consumer impact. More in-depth analyses identified four areas of research within this direction. These activities provided an opportunity to conclude that the current mainstream research focus is currently on packaging marketing. Only in second place in terms of the number of studies was a direction identified that was given the name: green materials and sustainable packaging.

The results obtained may come as a surprise, given the much-publicised discussions about the climate crisis in many forums. As can be seen from this example, the scientific world and researchers have taken as their main focus of packaging-related research topics topics with a marketing background. That is, they have mainly oriented their research towards consumers and products. The aim of this research has generally been to increase consumers' willingness to buy, to improve the attractiveness and image of the product, to attract consumer attention. And also research into the influence of packaging elements on perception and the application of design methods from the field of artificial intelligence. These topics empirically confirm that product packaging is treated by science mainly as a marketing tool.

The limitations of this work include the relatively short period from which the research was selected. In contrast, an attempt to analyse publications from several years could exceed the quantitative limitations of this publication.

It remains to be believed that socially important topics such as environmental issues, food health or food waste will become mainstream and research directions in the coming years. Certainly, packaging as common products and frequent tools with multiple functions can be used to achieve these aforementioned goals as well. And the effects and impacts of their implementation can bring more collective benefits to society. Influence on research directions can be achieved through the creation of dedicated grant schemes.

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