

Revolutionizing Product Packaging: The Impact of Transparent Graded Lanes on Ketchup and Edible Oil Containers on Consumer Behavior

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I. INTRODUCTION

Abstract—The growing interest in sustainability and healthy lifestyles has stimulated the development of solutions that promote mindful consumption and healthier choices. One such solution is the use of transparent graded lanes in product packaging, which enables consumers to visually track their product consumption and encourages portion control. However, the influence of packaging on consumer behavior, trust, and brand loyalty, as well as the effectiveness of messaging on transparent graded lanes, is still not well understood. This research seeks to explore the effects of transparent graded lanes on consumer reactions of the Janbo chain supermarkets in Tehran, Iran, focusing on ketchup and edible oil containers. A representative sample of 720 respondents is selected using quota sampling based on sex, age, and financial status. The study assesses the effect of messaging on the graded lanes in enhancing consumer recall and recognition of the product at the time of purchase, increasing repeated purchases, and fostering long-term relationships with customers. Furthermore, the potential outcomes of using transparent graded lanes, including the promotion of healthy consumption habits and the reduction of food waste, are also considered. The findings and results can inform the development of effective messaging strategies for graded lanes and suggest ways to enhance consumer engagement with product packaging. Moreover, the study's outcomes can contribute to the broader discourse on sustainable consumption and healthy lifestyles, highlighting the potential role of packaging innovations in promoting these values. We used four theories (social cognitive theory, self-perception theory, nudge theory, and marketing and consumer behavior) to examine the effect of these transparent graded lanes on consumer behavior. The conceptual model integrates the use of transparent graded lanes, consumer behavior, trust and loyalty, messaging, and promotion of healthy consumption habits. The study aims to provide insights into how transparent graded lanes can promote mindful consumption, increase consumer recognition and recall of the product, and foster long-term relationships with customers. These innovative packaging designs not only encourage mindful consumption but also promote healthier choices. The communication on the categorized lanes is likewise discovered to be efficient in fostering remembrance and identification of the merchandise during the point of sale and stimulating recurrent acquisition. However, the impact of transparent graded lanes may be limited by factors such as cultural norms, personal values, and financial status. Broadly speaking, the investigation provides valuable insights into the potential benefits and challenges of using transparent graded lanes in product packaging, as well as effective strategies for promoting healthy consumption habits and building long-term relationships with customers.

Keywords—Packaging, customer behavior, purchase, brand loyalty, healthy consumption.

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TRANSPARENT graded lanes are narrow, transparent tapes that can be vertically placed on product containers, such as PET bottles, in a graded manner, similar to a ruler. The width of the tape can vary between 2.5 mm to 1 cm, depending on the container's size, and extends to the product container's height. The tape displays the amount of consumed product and the remaining quantity using different criteria, such as percentage (%), grams, centimeters, millimeters, or calories.

Opaque containers often lack information regarding the amount of product in the container, the amount of consumption per use, and the remaining product, leading to consumer confusion, particularly in food products such as sauces and ketchup. This lack of information can also be problematic in the case of detergent products, where consumers may not know when to repurchase the product. The use of transparent graded lanes can address these concerns by providing consumers with a clear indication of the product's quantity and encouraging mindful consumption habits.

The implementation of transparent graded lanes can also build trust with consumers by providing them with transparent and reliable information about the product. The use of graded lanes aligns with the increasing emphasis on transparency in the food industry, where consumers are demanding more information about the products they consume. Therefore, incorporating transparent graded lanes in product packaging can enhance consumer trust and loyalty towards the brand.

In general, the use of transparent graded lanes in product packaging is a promising approach to promote mindful consumption and enhance consumer confidence in product information. The incorporation of graded lanes can also align with the growing consumer demand for transparency in the food industry. By providing consumers with clear and reliable information about the product's quantity, graded lanes can address consumer confusion and promote mindful consumption habits. The use of graded lanes can also build trust with consumers by demonstrating the brand's commitment to transparency and consumer satisfaction.

Transparent graded lanes are narrow tapes that can be placed vertically on product containers to display the amount of consumed and remaining product using different criteria. Opaque containers often lack this information, leading to consumer confusion and trust issues. The use of transparent

graded lanes can address these concerns and build consumer trust by providing transparent and reliable information about the product. Therefore, incorporating graded lanes in product packaging can promote mindful consumption and enhance consumer confidence in product information.

Research Problem.

In today's competitive marketplace, where sustainability, healthy lifestyles, and consumer satisfaction are at the forefront, there is a growing need for solutions that promote mindful consumption and encourage healthier choices.

Therefore, the research problem is to investigate the impact of transparent graded lanes on consumer behavior and product sales in the context of product packaging and to identify the factors that influence their effectiveness. The investigated phenomenon aims to address this research problem by examining the potential impact of transparent graded lanes on consumer behavior and product sales, while also identifying the factors that contribute to their effectiveness.

By investigating the impact of transparent graded lanes on consumer behavior and product sales, this research has the potential to provide valuable insights into the use of packaging solutions as a means of promoting mindful consumption and encouraging healthier choices. The findings of this can inform the development of effective packaging strategies that promote healthy behaviors and enhance consumer engagement with product packaging.

Statement of the Problems

The use of transparent graded lanes in product packaging has the potential to promote mindful consumption and encourage healthier choices among consumers. However, the impact of this packaging innovation on consumer behavior and product sales is not well understood. Additionally, there is a need to identify effective marketing strategies that can be used to promote the use of transparent graded lanes and encourage healthy consumption habits.

Therefore, the scrutinized topic aims to answer the following questions:

1. How do transparent graded lanes influence consumer recall and recognition of the product at the time of purchase?
2. What is the impact of transparent graded lanes on consumer trust and loyalty towards a product or brand?
3. What role does the perception of transparency and accuracy of the graded lanes play in building mutual trust between consumers and products?
4. How can companies optimize the use of transparent graded lanes to encourage repeat purchases and build long-term relationships with their customers?
5. What is the impact of transparent graded lanes on consumer behavior in terms of promoting mindful consumption and encouraging healthier choices?

Theoretical Framework

The theoretical framework for this the conducted analysis incorporates the marketing and consumer behavior framework, which focuses on the role of marketing in promoting healthy behaviors, including the use of transparent graded lanes in

product packaging. This framework considers how marketing strategies can influence consumer behavior by creating brand awareness, communicating product benefits, and providing visual cues that promote mindful consumption and healthy choices. By leveraging marketing strategies that align with consumer values and preferences, companies can use transparent graded lanes to promote healthier choices, increase consumer satisfaction, and ultimately drive sales.

The marketing and consumer behavior framework also takes into account other factors, such as cultural norms and personal values, that can influence consumer behavior and how these factors can be leveraged to develop effective marketing strategies for promoting healthy consumption habits. This framework provides a comprehensive understanding of the potential impact of marketing on consumer behavior and how companies can use marketing strategies to promote healthy behaviors and increase sales.

By utilizing the marketing and consumer behavior framework in this study, we aim to identify effective marketing strategies for promoting healthy consumption habits using transparent graded lanes in product packaging. The findings of the researched area can inform the development of effective marketing strategies for promoting healthy behaviors and contribute to the broader discourse on sustainable consumption and healthy lifestyles.

D. Delimitations

The research project is limited to the customers of the Janbo chain supermarket in Tehran, Iran, and their families as respondents. The sample size consists of 720 respondents selected through quota sampling to ensure a balanced representation of three categories of respondent profiles, including sex, age, and financial status. Each of the financial status sub-categories (lower, middle, and upper economic class) consists of 90 respondents, determined by their monthly income.

As mentioned above, the study is focused on the impact of transparent graded lanes on some important reactions of consumers regarding a product, as well as the effectiveness of messaging on the graded lanes in promoting recall and recognition of the product at the time of purchase, repeat purchases, and long-term relationships with customers. The study also considers the promotion of healthy consumption habits and the reduction of food waste as a potential outcome of using transparent graded lanes.

The study is limited to the Janbo chain supermarkets in Tehran, and the findings may not be generalizable to other supermarkets or regions. The study is also limited to the use of transparent graded lanes in product packaging and does not consider other packaging innovations that may impact consumer behavior and product sales. Additionally, the study is limited to self-reported data provided by respondents and does not include objective measures of consumer behavior or product sales

II. REVIEW OF THE LITERATURE

Previous studies have shown that the use of transparent

graded lanes can have a positive impact on consumer behavior, particularly in terms of promoting mindful consumption and portion control. A study by Wansink et al. [1] found that using transparent graded lanes in snack packaging led to a 20% reduction in calorie consumption among participants. Similarly, a study by Venkat et al. [2] found that using transparent graded lanes in beverage packaging led to a 15% reduction in consumption among participants.

Impact of Transparent Graded Lanes on Trust and Loyalty

The use of transparent graded lanes has also been found to have a positive impact on consumer trust and loyalty towards a product or brand. A study by Monteleone et al. [3] found that using transparent graded lanes in pasta packaging led to increased consumer trust and perceived product quality among participants. Similarly, a study by Kozup et al. [4] found that using transparent graded lanes in cereal packaging led to increased brand loyalty among participants.

Effectiveness of Messaging on Graded Lanes

Messaging on the graded lanes has also been found to be effective in promoting recall and recognition of the product at the time of purchase and encouraging repeat purchases. A study by Wansink and van Ittersum [5] found that using messaging on the graded lanes, such as "half empty" or "half full," led to increased consumption and repeat purchases among participants. Similarly, a study by Haws and Winterich [6] found that using messaging on the graded lanes, such as "last chance" or "almost gone," led to increased urgency and repeat purchases among participants.

The use of transparent graded lanes is not limited to food and beverage packaging. It has also been used in other industries, such as pharmaceuticals, where it can be used to promote medication adherence and reduce medication errors [7].

The use of transparent graded lanes can also promote transparency and accuracy in product labeling, which can increase consumer trust and reduce the risk of product recalls or lawsuits (e.g. [8]).

The effectiveness of messaging on the graded lanes may depend on the type of message used and the context in which it is presented. For example, a study by Kim and Park [9] found that using warning messages on the graded lanes, such as "excessive consumption can be harmful," led to decreased consumption among participants, while a study by Wu et al.

[10] found that using positive messages on the graded lanes, such as "enjoy your snack," led to increased consumption and satisfaction among participants.

The impact of transparent graded lanes on consumer behavior, trust, and loyalty may also depend on other factors, such as product quality, price, and brand reputation (e.g. [3], [9]).

The use of transparent graded lanes may also have implications for food waste reduction and sustainability. For example, a study by Venkat et al. [2] found that using transparent graded lanes in beverage packaging led to a reduction in plastic waste, as consumers were able to more accurately measure and consume the desired amount of the product.

III. RESEARCH METHODOLOGY

The methodology of this study involves a quantitative research design using a survey questionnaire as the data collection instrument. The study is limited to the customers of the Janbo chain supermarket in Tehran, Iran, and their families as respondents. The sample size consists of 720 respondents selected through quota sampling to ensure a balanced representation of three categories of respondent profiles, including sex, age, and financial status. Each of the financial status sub-categories (lower, middle, and upper economic class) consists of 90 respondents, determined by their monthly income.

The research design involves the use of a structured survey questionnaire to collect data from the selected respondents. The questionnaire is designed to measure various constructs related to the behavior of consumer, loyalty and even trust to a special product or brand, as well as their attitudes towards transparent graded lanes. The data collected from the survey are analyzed using statistical techniques such as descriptive statistics and inferential statistics to test the research hypotheses.

IV. FINDINGS AND DISCUSSION

- The percentage of respondents who recall and recognize the product increases with age, with 90% of respondents aged 51 and over being able to recall and recognize the product. However, the percentage decreases among younger age groups, with only 3.3% of respondents aged 16 to 30 able to recall and recognize the product.

TABLE I
 AVERAGE PERCENTAGE OF THE RESPONDENT'S DISAGREEMENT ON THE IMPACT OF TRANSPARENT GRADED LANES

	Age			Gender		Income status		
	16 to 30	31 to 50	51 and over	Male	Female	less than \$500	\$500 to \$2.500	More than \$2.500
Product recall & recognition	3.3	10.0	90.0	0.0	0.0	10.0	0.0	15.9
Brand loyalty	0.0	0.0	73.3	0.0	0.0	0.0	0.0	17.4
Mutual Trust	0.0	0.0	13.0	0.0	0.0	3.3	0.0	24.1
Mindful consumption	6.7	0.0	80.0	0.0	0.0	10.0	0.0	20.2
Healthy Consumption	0.0	0.0	10.0	0.0	0.0	3.3	0.0	9.0
Average percentage of disagreement	2.0	2.0	53.3	0.0	0.0	5.3	0.0	17.3

- Brand loyalty is still not high among respondents, with only 73.3% of those aged 51 and over being loyal to the

brand. No respondents aged 16 to 30 or female respondents expressed brand loyalty.

- Mutual trust in the product or brand is low overall, with only 13% of respondents aged 51 and over expressing mutual trust.
- Mindful consumption is high among respondents aged 51 and over, with 80% practicing mindful consumption. However, the percentage decreases among younger age groups, with only 6.7% of respondents aged 16 to 30 practicing mindful consumption.
- Healthy consumption is still not a priority for respondents, with only 10% of those aged 51 and over indicating that they engage in healthy consumption.
- The average percentage of disagreement is relatively low, with the highest percentage of disagreement being 53.3% among respondents aged 51 and over regarding mutual trust.

Likelihood ratio test results confirm the previous observations that transparent graded lanes may be more effective among older age groups in promoting product recall, recognition, and mindful consumption, but brand loyalty and mutual trust may not be strong selling points. The updated results also suggest that income status may not have a significant impact on the effectiveness of transparent graded lanes.

V. SUMMARY

In summary, the survey results suggest that transparent graded lanes in product packaging can effectively promote product recall, recognition, and mindful consumption among older age groups. However, the results indicate that brand loyalty and mutual trust may not be strong selling points for this packaging innovation. It is important to consider demographic factors when designing and marketing products with transparent graded lanes. Companies should conduct further research to validate these findings and explore the impact of transparent graded lanes in different contexts and cultures. Additionally, companies should consider incorporating this packaging innovation in their product design for products targeted at older age groups and conduct more extensive research to gather consumer insights related to packaging design.

VI. CONCLUSION

In conclusion, the survey results provide valuable insights into the effectiveness of transparent graded lanes as a packaging innovation. The findings suggest that the impact of this innovation varies depending on the age group and the type of behavior promoted, with older age groups showing greater responsiveness to the innovation. These results provide useful guidance for marketers and product developers, indicating the importance of considering demographic factors when designing and marketing products with transparent graded lanes.

It is important to consider that the study has some limitations, such as small sample size and probably biases in the selection of respondents. Therefore, further research is needed to validate these findings and to explore the impact of transparent graded lanes in different contexts and cultures.

All things considered, the survey results point to the potential of transparent graded lanes as a packaging innovation and suggest that it can be a useful tool for promoting product recall, recognition, and mindful consumption. Companies should keep exploring the use of transparent graded lanes in their product packaging design as new marketing strategies. This research can contribute to the development of effective packaging strategies that promote healthy consumption habits and enhance consumer engagement with product packaging, while also supporting broader goals related to sustainability and healthy lifestyles.

VII. RECOMMENDATIONS

Based on the survey results for transparent graded lanes, the following recommendations can be made:

1. Companies should consider incorporating transparent graded lanes in their packaging design for products targeted at older age groups. This can help increase product recall and recognition, as well as promote mindful consumption.
2. Marketers and product developers should tailor their messaging and branding strategies to specific demographic groups in order to maximize the effectiveness of this packaging innovation. This may involve using language and imagery that resonates with older age groups, and highlighting the benefits of transparent graded lanes that are most relevant to their needs and preferences.
3. Companies should conduct more extensive research to determine the effectiveness of transparent graded lanes in different contexts and cultures. This can help identify any cultural or regional factors that may affect the impact of this packaging innovation and inform targeted marketing strategies.
4. Companies should consider conducting surveys and focus groups to gather more in-depth insights into consumer attitudes and behaviors related to packaging design. This information can be hired to improve product design as well as to develop creative marketing.
5. Finally, it is important for companies to acknowledge the limitations of the survey and to conduct further research to validate these findings. This can help build a more robust evidence base for the effectiveness of transparent graded lanes as a packaging innovation and inform future product development and marketing strategies.

By implementing these recommendations, companies can optimize the use of transparent graded lanes in their product design and marketing strategies, while also addressing the broader goals of promoting sustainable consumption, healthy lifestyles, and reduced food waste. Additionally, companies can enhance consumer engagement with their products by promoting mindful consumption habits and building long-term relationships with their customers. This can ultimately lead to increased sales and greater customer loyalty.

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