

Beyond the label: Examining packaging effects on consumer purchase intention for healthy snacks with generational and gender moderation

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Product packaging, purchase intention, Generation Z, Generation Millennials, packaging color, packaging label, packaging material, packaging graphics.

Abstract

Manufacturers are considering healthy snack as a growing consumer market, and have extended investment in the production of healthy snack, However existing literature paid limited attention to examine how the gender and generational differences moderate the relationship between product packaging and purchase intentions in the Egyptian healthy snack industry, this highlights a significant research gap that this study addresses.

This study adopts a qualitative & quantitative approach, & non probability Quota sampling technique to examine the impact of product packaging elements (colors, labels, graphics, and materials) on consumer purchase intention in the healthy snacks sector. With 215 responses out of 384, from different genders and different generations, the results showed that packaging colors and packaging materials has the highest impact on purchase intentions, the results stated also a statistically significant variation among Generations Z and millennials, where the young Generation Z responded less significantly than older Generation Z in their intention to buy healthy snacks due to packaging elements. In contrast, results indicating no statistically significant difference in purchase intention between male and female respondents, and these results align with the two industry experts from healthy snacks retailers in Egypt.

Our study's findings suggest that enhancing packaging materials and colors can increase consumers' purchase intentions towards such snacks, so manufacturers can focus on drivers to purchase intention thereby enhancing the appeal of healthy snacks in a market full with options. where packaging material & colors explains 56.3% effect on Purchase Intention of healthy snacks market, with also significant need to further explore the young Generation Z drivers to purchase intentions in the healthy snack market.

Introduction

The Demand has increased among Egyptian consumers in choosing healthier snack options, and that is driven by the rise of health consciousness among Egyptian consumers in different age groups (Statista, 2025), that is accompanied by the increase of brands offering healthy snacks alternatives, where The Egyptian healthy snacks market was valued at approximately USD 1.28 billion in 2025 and is projected to reach USD 2.21 billion by 2034 (Deep Market Insights, 2025). Within these insights, the product packaging then plays a vital role in affecting consumer purchase intention to buying healthy snacks, In addition, the aspect of creativity in the design of packaging is increasingly becoming an area of focus for academic scholars. By using the optimal arousal model, (Shukla et al. 2022) showed that creativity in packaging design, which is achieved through the use of dimensions of divergence and relevance, has an effect on the curiosity, persuasion, and purchasing behavior of customers, its found to be the key factor affecting

purchase intention. This research, differentiating between visual cues (size, color, material, graphics) and information cues, is still one of the most cited classifications on packaging.

To provide a deeper understanding if there is generational differences related to the product packaging effect on purchase intention, each generation was divided into two age-based cohorts. Rather than treating Generation Z and Millennials as one group, based on an industry expert interview, it was suggested that even within the same generation, different consumer attitudes and decision-making patterns due to differences in life stage, purchasing power, financial independence, and accumulated consumption experience could be detected. Furthermore, there is a lack of research that explores how demographic moderators such as Generation Z and Millennials and gender can moderate the relationship between packaging and its dimensions (colors, graphics, labels, material) and purchase intention, particularly in the healthy snacks industry which is an emerging market, that is still in its growth phase to examine how consumers interpret cues of packaging that guides marketers of how far to invest in packaging elements depending on its effect on purchase intention.

Literature Review and research hypotheses:

Packaging as a marketing tool:

Packaging was historically viewed as a logistics tool which primarily aimed at the protection and transport of the product. However, as time passed, a more extended concept of packaging was formed. One of the earliest and highly significant reconceptualization was offered (Rundh, 2005) suggested that packaging performs not only the function of logistics but also serves as a marketing tool.

It was a key turning point for academic research in this field. (Silayoi and Speece, 2007) took this work forward when they used conjoint analysis to prove that package design is the main medium through which consumers communicate with the brand. (Wang et al. 2023), while studying the phenomenon of snack food packaging, pointed out that consumers tend to view packaging as the "silent salesman on the shelf," which serves as the live brand representative in the absence of any sales representatives. The combination of all evidence states that packaging does not represent the neutral container or the means of information delivery, but the encoded system where the visual and information components of packaging interact to form systematic, measurable and business-related consumer reactions. In this theoretical context, the current research studies four characteristics of packaging – color, labeling, graphics, and material as predictors of purchase intentions among different generations and genders.

H1: There is a significant relationship between packaging and customer purchase intention

Packaging colors:

Packaging color serves as an inexpensive and available heuristic that consumers apply when cues intrinsic to the item (such as taste and nutritional content) are not available before the purchase decision is made. And this accurately describes the case where shoppers consider purchasing healthy snacks. Color is one of the first packaging features that attracts people's attention, and its impact on the product evaluation process at an early stage is much greater than the impact of either shape or typography (Su & Wang, 2024).

Moreover, it empirically demonstrated that the use of warm colors on packaging increased consumers' intentions to buy products that signal that those products are pleasing in taste but unhealthy, while cool colors increased intentions to purchase snacks that are healthier but less tasty.

A large body of experimental literature examines the role of various aspects of colors in making health inferences. (Mai et al. 2016) found, that light and pale colors increase perceived healthiness but negatively influence perceived taste; this negative taste effect is especially strong when no tasting is possible and the healthiness is not the main goal of the consumer. In spite of some uncertainties about what specific color attribute is the most important one, three consistent conclusions can be drawn from the literature review and relevant for our study: (1) the color of the package is a powerful extrinsic stimulus that can capture attention and elicit affective response even before the consumer processes the information provided by the label; (2) the inferences about the healthiness and quality of the product made by consumers based on the color are incorporated into their evaluations of the product; and (3) the evaluations in turn influence

purchase intention. Since healthy snacks belong to the category of products that rely heavily on visual cues for their health communication - Accordingly, the following hypothesis is proposed:

H1.1: there is a significant relationship between packaging color and customer purchase intention.

Packaging Graphics:

The term “packaging graphics” refers to the non-color components of the visual design of a product’s packaging, comprising images either photographic or illustrative that form the overall visual identity of the package excluding its color (Wang, 2013).

Some of the more recent multi-characteristics studies confirm this finding and show that graphic, along with color and logo, have a direct effect on purchase intentions that are partially mediated by brand experience (Liu, Samsudin, & Zou, 2025). According to construal level theory, as shown by (Septianto et al. 2019), illustrations have more persuading power than photographs in advertisements for organic food due to their increased visual abstraction.

In the study by (Schnurr 2019) using healthy snack packaging as stimuli, "cute" packaging designs (with playful colors and cartoon imagery) made the product seem tastier yet less healthy, this had different effects on purchase intention: cute graphics increased purchase intention for those healthy snacks. There is an agreement among the existing literature that packaging graphics including images, icons, typography, and style have an effect on attention, quality perception, emotions, trust and purchase intention. However, there is also consensus that the effect of graphics is reliant: their impact varies depending on how consistent the style is with the health orientation of the product, (b) which particular graphic element we analyze (e.g., style of images, typefaces, characters) and (c) whether tastiness or healthiness is the more relevant attribute within this specific product category. Since healthy snacks involve a conflict between two aspects (enjoyment and health) of consumer expectations, well-designed congruent graphics are expected to resolve this conflict and make evaluation easier, thus increasing purchase intention. Given the convergence of evidence, taking into account the contingencies, the following hypothesis is advanced:

H1.2: there is a significant relationship between packaging graphics and customer purchase intention

Packaging Labels:

Package labels include nutrition facts, health claims, ingredients list, and logos from third parties certifying the product to be organic. Package labels provide information regarding the composition and origin of the product as well as the health-related aspects of the product (Ikonen et al., 2020), and that labeling increases consumers’ skills in detecting healthier foods and affects product attitudes in a positive way. However, its effect on real purchase decisions is considerably less pronounced compared to other perceptual effects, which highlights an important attitude-behavior gap that is highly relevant for research that examines purchase intentions, like the current one. On the other hand, a study conducted by (Prates et al. 2022), which focused on cereal bars, cookies, and savory snacks, indicated that the use of nutrition claims may work against nutrition labeling. This is because nutrition claims may distract consumers from warning labels and make it difficult for them to comprehend the actual nutrition value of the food item objectively, despite increasing health perceptions and purchase intentions.

Labels work as credibility enhancers in the formation of perceptions of the healthiness and quality of the items but have less and less consistent effects on purchase intentions than on perception and attitudes (Ikonen et al., 2020). Secondly, the combined use of several label components – claims, & labeling scheme, can result in both additive and interference effects depending on the product type, which means that healthy snacks cannot be considered to respond to the labeling process in the same way as other products (Prates et al., 2022). Thirdly, trust can be identified as the mediating factor of the relationship between labels and purchase intention and plays an especially critical role in case of certification and organic labeling (Watanabe et al., 2021). Despite this gap, there is a strong support from the majority of evidence for the general proposition that packaging labels affect positively consumers' purchase intentions by increasing perceived credibility, healthiness, and quality of the product. Therefore, the following hypothesis is formulated:

H1.3: There is a significant relationship between packaging labels and customer purchase intention.

Packaging material:

The packaging material is the physical material used for containing and protecting the product, which includes typical materials like plastic and glass, fiber-based materials like paper and cardboard, and sustainable materials like biodegradable, compostable, and recyclable materials. Based on the theory of cue utilization, the relevant literature considers packaging material as an important extrinsic cue through which consumers derive information about intrinsic properties of products such as quality, naturalness, and environmental effects before processing any other aspect of the package (Steenis et al 2017).

To consider the effects of packaging on health-related factors, (d'Astous ,2021) conducted an empirical study involving two mediators in two studies and revealed that responsibility of food packaging (being recyclable, reusable, or compostable) had a significant impact on purchase intention. This sequence-mediation finding is theoretically relevant as it explains the mechanism by which a mere physical packaging characteristic (material) can affect health perception of the product in question irrespective of the lack of nutritional information associated with the material. This is supported by (Ruan et al. 2026), who showed in three studies that environmentally friendly packaging increases perceptions of healthiness due to heuristics related to nature, sustainability, and morality, thereby increasing purchase intention.

(Lignou and Oloyede 2021) conducted an experiment using prototypes of biscuit and meat packaging based on paper and tested it among a sensory panel and 130 participants. Even though some types of sustainable packaging scored equally well in terms of liking compared to traditional one, purchase intention was still low for the former across all product categories. Overall, literature converges on the general principle that packaging material serves as an extrinsic cue to quality, naturalness, environment-friendliness, and, in turn, purchase intention, with sustainable and fiber-based packaging materials usually surpassing traditional plastic packaging materials in terms of these attributes. At the same time, the literature reviewed is inconsistent: the effect of sustainable packaging material is conditional on product category fit (Magnier et al., 2016); on the type of food and its perceived environmental impact (Ruan et al., 2026). Thus, based on the literature reviewed, it is hypothesized that:

H1.4 there is a significant relationship between packaging material and customer purchase intention

Purchase intention:

Traditionally, purchase intention is viewed as the subjective probability of the individual engaging in some form of purchase behavior related to the product or brand. In their comprehensive review spanning almost three decades of organic food studies, where a common assumption that health consciousness is the key driver of intentions to purchase healthy food. The literature on packaging agrees with the behavioral approach by showing that cues at the level of packaging can serve as significant but imperfect drivers of purchase intention. The following three core insights can be extracted from the literature review and applied to conceptualizing the current study. Firstly, purchase intention is a well justified dependent variable; however, taking into account the intention behavior gap pointed out by (Rana and Paul 2017), the results should not be considered an indirect reflection of sales but as the consumers' disposition concerning healthy snack packaging instead. Secondly, in classical theories, the predictor to intention to buy was health consciousness, meaning that packaging cues, which can influence not only the perception of the food's healthiness but also its value and quality, could play a significant role in the current context. When viewed together with (Rana and Paul 2017), an interesting but under explored pattern appear, where despite having positive attitudes towards health products, consumers can fail to make a purchase due to negative prices or values associated with this purchase.

Moderating Role of Generations:

According to the definition, generations are considered to be groups of people who were born during some time interval and developed similar values. Every generation is characterized by its own formation experience: prosperity and mass-media for Baby Boomers; digitalization and distrust of marketing messages for Generation X; internet and social networks for Generation Y; and mobile and social technologies for Generation Z (Makowska, 2024).According to (Makowska et al. 2024), conducted within a

study involving several thousand participants across four generations, Baby Boomer and Generation X cohorts paid more attention to quality and country of origin when purchasing food items, while members of the younger cohorts (Generation Y and Generation Z) focused relatively more on price.

This lack of consistency forms a substantial limitation in the contemporary academic discourse about generational consumer behavior: most of the existing papers focus on certain aspects (decision antecedents such as price, quality, convenience) while at the same time ignoring the role of generation membership with regard to healthy packaging-intention interaction. Combining all the information from the literature, about three specific points directly connected to the research design proposed in this study. The concept of generational cohort membership is a theoretically sound and empirically proven segmentation variable influencing food-related values, decision criteria and the strength of cue-behavior association, rather than a trivial demographic control variable. Thus, the following hypothesis is proposed:

H2. Generation moderates the relation between packaging and consumer purchase intention.

Moderating Role of Gender:

Gender is considered as a social construction of roles, expectations, and ways of processing information in regards to male and female categories. For many years now, gender has been known as an important variable of segmentation since it affects the way consumers perceive marketing stimuli like packaging of products (Arslanagic et al., 2014). According to the latter, women are supposed to process available cues more extensively than men, who tend to use selective heuristics when evaluating products; this approach affects directly how each gender processes multiple attribute packages (Arslanagic et al., 2014), this study on healthy food packaging information found out that women's perception of packaging information value was determined primarily by advertisement cues, while men were guided both by advertisement and the credibility of the packaging information, this asymmetry suggests that there is a possibility that credibility-boosting packaging signals, including certification labels, list of ingredients, and credible claims, have gender-related impact on consumer persuasions and decisions.

The evidence of gender effect on packaging cue salience and persuasive effectiveness justify the formulation of the current study hypothesis that gender moderates the link between packaging elements and purchase intentions for healthy snacks. Thus, the following hypothesis is proposed:

H3: Gender moderates the relation between packaging and consumer purchase intention.

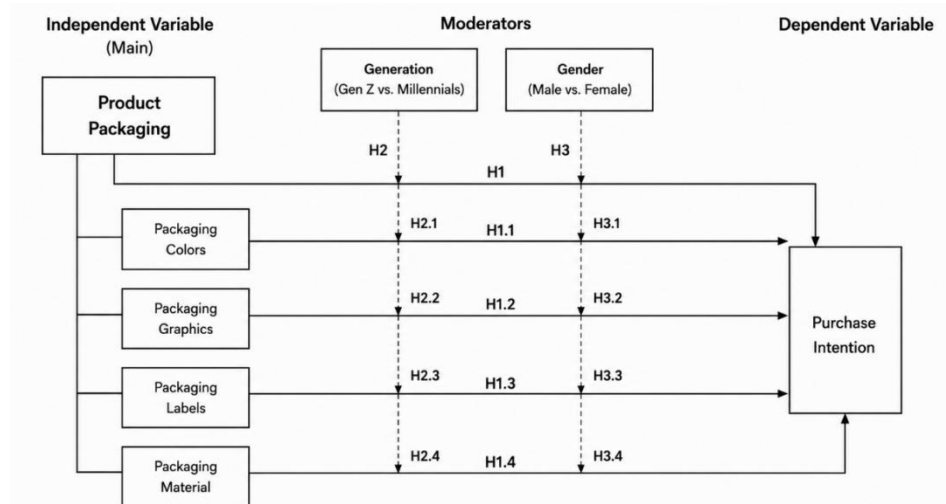


Figure 1-Conceptual Framework

Research Methodology

Sample and procedure:

This study adopts a qualitative & quantitative, descriptive research design to examine the effect of packaging elements (colors, labels, graphics, and materials) on consumers' purchase intention toward healthy snack products using non-probability Quota sampling to reach fair representation of generational cohorts & genders. The study also investigates the moderating role of generation (Generation Z and Millennials) and gender in these relationships, empirical testing of hypotheses using quantitative data, so enhancing the depth and validity of the research findings (Creswell & Plano Clark, 2017). This study adopts a survey based quantitative method to collect standardized data for measuring constructs using structured questionnaires, followed by a reliable statistical analysis and lead to the generalization of findings. (Hair et al., 2019).

Data Collection

The questionnaire consisted of five constructs: customer purchase intention, , packaging color, graphics, labels, and packaging material. Customer purchase intention was measured using five items adapted from Yeo et al. (2020). The color construct included seven items adapted from Yeo et al. (2020) and Olawepo and Ibojo (2023), while the graphics construct comprised five items adapted from the same sources. The labels construct was measured using eight items, and the packaging material construct consisted of six items, both adapted from Yeo et al. (2020) and Olawepo and Ibojo (2023). All items were assessed using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), enabling respondents to indicate their level of agreement with each statement. A total of 215 out of 384 valid responses were collected and used for data analysis after excluding incomplete or inconsistent entries.

Qualitative Findings from Industry Expert Interviews

Semi structured interviews were conducted with two marketing professionals from leading companies operating in Egypt's healthy snacks sector- Abu Auf & Breadfast. The selected healthy snack manufacturing brands were chosen because they are one of the initiators of healthy snacks in Egypt, offering variety of healthy snacks. of their popularity with consumers of various demographic segments.

Both experts agreed that the growing health consciousness among Egyptian consumers was the reason why they started their healthy snacks offerings and they agree that packaging play's vital role and affects consumers' purchase intention in the healthy snack market. where consumers often have limited previous experience with healthy snacks so they tend to focus on the packaging for details. According to two industry experts, packaging seemed to have a more important role than just the protective element of the product, yet it serves as a tool that transports health claims, brand credibility, ingredient transparency, and product quality.

Besides, both industry experts agreed that packaging effect on consumers will differ noticeably between different age groups, even within the same generation. They explained that younger consumers (approximately 16–21 years) are generally more attracted to visually colorful packages of snacks, since it reflects a less boring content inside the back, also innovative designs encourage them to try out the snacks. Yet, late Generation Z (22–30 years) were different since they held greater implications towards nutritional facts, ingredient honesty and visibility, sustainability aspects to packaging material, and value for money as their purchasing decisions become progressively health oriented since they are financially independent unlike early Generation Z.

Likewise, both experts stated differences within the Millennial generation, Where Consumers aged 31–40 years seemed to like look for packages attractiveness and the nutritional facts on the label. Yet, late Millennials 41–50 years relied more on attributes not package elements, like the authenticity and the size, and nutrition portion. According to both experts, gender didn't play any role significant to them regarding packaging and purchase intent cause the health consciousness is a common interest for both, yet generational differences are logical and expected since it shows how the changes in lifestyle, family cycle, purchasing power, affects consumers decision making.

Overall, the qualitative findings reinforce the theoretical foundation that product packaging for sure influences the purchase intention in the healthy snacks market, while they supported the subgrouping of

age and generations as a important analytical direction to deeper investigate the generational differences to packaging cues and purchase intention.

Research Results

Descriptive statistics to profile the sample

This section presents an overview of the demographic characteristics of the respondents included in the study. A total of 215 valid responses of 111 female (51.6%) and 104 male (48.4%), age intervals where 8.8% less than 21 years, 21-30 50.2%, 31-40 18.1%, 41-50 15.3% and 51-60 7.4%, as for the education level, 9.8% where high school students, 77.2% bachelor degree holders, 10.2% master degree holders, 2.8% doctorate degree holders.

Measuring reliability and validity

To ensure the rigor of the research instrument, both validity and reliability were carefully assessed. Validity refers to the extent to which the measurement instrument accurately captures the concepts it is intended to measure. In this study, content validity was established through a thorough review of the questionnaire items based on existing literature related to packaging elements and purchase intention. The measurement items were adapted from previously validated scales and were reviewed to ensure their relevance, clarity, and alignment with the research objectives. Additionally, the questionnaire was pre-tested on a small group of respondents to identify any ambiguities or inconsistencies, leading to minor revisions before final data collection.

Reliability refers to the consistency and stability of the measurement instrument. To assess internal consistency, Cronbach's alpha coefficient was calculated for the study constructs. Accordingly, the reliability analysis was conducted on the devised questionnaire indicating excellent internal consistency with Cronbach's alpha more than 0.8, suggesting that the items are highly reliable and consistently measure the related constructs according to the acceptance level of Cronbach's alpha score.

Table 1-Reliability Test

Variable	# of Questions	Cronbach's alpha	Reliability
Packaging Colors	6	0.826	Very Reliable
Packaging Graphics	5	0.867	Very Reliable
Packaging Labels	8	0.924	Very Reliable
Packaging Material	5	0.812	Very Reliable
Customer Purchase Intension	4	0.908	Very Reliable

Correlation Matrix

Table 5 shows the correlation matrix between the independent variables (Product packaging, packaging, colors, packaging graphics, packaging labels and material) and the dependent variable (customer purchase intention). Correlation coefficient is used to test the strength of the relationship between the variables.

Table 2-Correlation

		Correlations				
		AVE of Colors	AVE of Graphics	AVE of Labels	AVE of Materials	AVE of Purchase Intention
AVE of Colors	Pearson Correlation	1	.763**	.614**	.653**	.596**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	215	215	215	215	215
AVE of Graphics	Pearson Correlation	.763**	1	.763**	.425**	.388**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	215	215	215	215	215
AVE of Labels	Pearson Correlation	.614**	.763**	1	.298**	.287**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	215	215	215	215	215
AVE of Materials	Pearson Correlation	.653**	.425**	.298**	1	.644**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	215	215	215	215	215
AVE of Purchase Intention	Pearson Correlation	.596**	.388**	.287**	.644**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	215	215	215	215	215

**. Correlation is significant at the 0.01 level (2-tailed).

A person correlation analysis was conducted to examine the relationship between the four independent constructs and the dependent construct. The results revealed a moderate statistically significant positive correlation between the dependent (Purchase intentions) and packaging colors and materials. There is also multi-collinearity between packaging colors and graphics, and between packaging graphics and labels leading us to use Step-wise regression in the coming section.

Regression

Step1: to check test the theoretical framework relationships

Regression analysis is conducted via SPSS , where the dependent variable is Customer intension and the independent variables are Product Packaging, Packaging Colors, Packaging Labels, Graphics and Material. Also, normality of the error term is satisfied as the value of Durbin Watson 2.068 in the second round of the modeling.

Results indicate that packaging colors and packaging materials managed to explain 46.4% of the total variation in customer Purchase Intention, while the remaining 53.6 % is due to other variables are not included in the model, other variables can be shown by (Rana and Paul 2017) where intention is predicted by attitude, health-consciousness, and perceived value, the influence of intention on consumer behavior is often reduced and this can be due to other factors such as pricing, availability, and consumption habits.

Table 3-Regression

Model Summary^a

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.644 ^a	.415	.412	.723	
2	.685 ^b	.469	.464	.691	2.061

a. Predictors: (Constant), AVE of Materials

b. Predictors: (Constant), AVE of Materials, AVE of Colors

c. Dependent Variable: AVE of Purchase Intention

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78.906	1	78.906	150.883	.000 ^a
	Residual	111.392	213	.523		
	Total	190.298	214			
2	Regression	89.175	2	44.587	93.475	.000 ^b
	Residual	101.123	212	.477		
	Total	190.298	214			

a. Predictors: (Constant), AVE of Materials

b. Predictors: (Constant), AVE of Materials, AVE of Colors

c. Dependent Variable: AVE of Purchase Intention

Table 4-Anova Test

Coefficients^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	1.280	.238		5.378
	AVE of Materials	.695	.057	.644	12.283
2	(Constant)	.637	.266		2.391
	AVE of Materials	.479	.071	.444	6.717
	AVE of Colors	.369	.080	.307	4.640

a. Dependent Variable: AVE of Purchase Intention

Only two independent variables / constructs (packaging colors and material) were found statistically significant at 5% significance level. The packaging materials had a higher impact Consumer Purchase Intention followed by Packaging colors.

Table 5-Anova Test

Model Summary^f					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.626 ^a	.392	.389	.737	
2	.685 ^b	.469	.464	.691	
3	.720 ^c	.518	.511	.659	
4	.750 ^d	.562	.554	.630	
5	.757 ^e	.574	.563	.623	2.201

a. Predictors: (Constant), I like packaging color of a product.

b. Predictors: (Constant), I like packaging color of a product., I can recall a brand when the similar color is viewed.

c. Predictors: (Constant), I like packaging color of a product., I can recall a brand when the similar color is viewed., The quality of packaging material of a product does not matter to me.

d. Predictors: (Constant), I like packaging color of a product., I can recall a brand when the similar color is viewed., The quality of packaging material of a product does not matter to me., The Standard of the Picture Quality should be Appetizing

e. Predictors: (Constant), I like packaging color of a product., I can recall a brand when the similar color is viewed., The quality of packaging material of a product does not matter to me., The Standard of the Picture Quality should be Appetizing, The quality of packaging material of a product means the product is better.

f. Dependent Variable: AVE of Purchase Intention

Step 2: To devise detailed recommendations: Regression analysis is conducted via SPSS , where the dependent variable is Customer intension and the specific questions of all four suggested independent variables Product Packaging, Packaging Colors, Packaging Labels, Graphics and Material. Also, normality of the error term is satisfied as the value of Durbin Watson 2.201 in the fifth round of the modeling.

Table 6-Anova Test**Model Summary^f**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.626 ^a	.392	.389	.737	
2	.685 ^b	.469	.464	.691	
3	.720 ^c	.518	.511	.659	
4	.750 ^d	.562	.554	.630	
5	.757 ^e	.574	.563	.623	2.201

a. Predictors: (Constant), I like packaging color of a product.

b. Predictors: (Constant), I like packaging color of a product, I can recall a brand when the similar color is viewed.

c. Predictors: (Constant), I like packaging color of a product, I can recall a brand when the similar color is viewed., The quality of packaging material of a product does not matter to me.

d. Predictors: (Constant), I like packaging color of a product, I can recall a brand when the similar color is viewed., The quality of packaging material of a product does not matter to me., The Standard of the Picture Quality should be Appetizing

e. Predictors: (Constant), I like packaging color of a product, I can recall a brand when the similar color is viewed., The quality of packaging material of a product does not matter to me., The Standard of the Picture Quality should be Appetizing, The quality of packaging material of a product means the product is better.

f. Dependent Variable: AVE of Purchase Intention

Results indicate that the following specific questions managed to explain 56.3% of the total variation in customer Purchase Intention, while the remaining 43.7 % is due to other variables are not included in the model, this validates the results of the above mentioned hypotheses that packaging materials and packaging colors has the most significant effect on purchase intentions, the below table states the most significant statements measuring the constructs, it also indicates that graphics highest significant statement was related to picture quality which might interrelate with the color statements which act as the visual attraction to the consumer.

Table 7-Anova Test**Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
5	(Constant)	.397	.244		1.627	.105
	I like packaging color of a product.	.220	.053	.254	4.125	.000
	I can recall a brand when the similar color is viewed.	.193	.053	.218	3.665	.000
	The quality of packaging material of a product does not matter to me.	.129	.030	.212	4.299	.000
	The Standard of the Picture Quality should be Appetizing	.244	.057	.229	4.280	.000
	The quality of packaging material of a product means the product is better.	.114	.049	.129	2.352	.020

a. Dependent Variable: AVE of Purchase Intention

Table 8-Anova Test

ANOVA ^f						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.566	1	74.566	137.236	.000 ^a
	Residual	115.732	213	.543		
	Total	190.298	214			
2	Regression	89.165	2	44.583	93.457	.000 ^a
	Residual	101.133	212	.477		
	Total	190.298	214			
3	Regression	98.533	3	32.844	75.520	.000 ^c
	Residual	91.765	211	.435		
	Total	190.298	214			
4	Regression	107.005	4	26.751	67.446	.000 ^d
	Residual	83.293	210	.397		
	Total	190.298	214			
5	Regression	109.153	5	21.831	56.228	.000 ^a
	Residual	81.145	209	.388		
	Total	190.298	214			

Only 5 independent variables were found statistically significant at 5% significance level. These results support the previous output of regression through the 4 independent variables related to packaging color & materials, and ads to it only one variable from packaging graphics related to the appeal of the picture used.

Testing of Hypothesis

With respect to the age intervals, ANOVA was used to test if there is a significant difference between the various age intervals with respect to Consumer Purchase Intention, and the result was significant indicating that there is a significant difference in Consumer Purchase Intention between the age intervals.

Table 9-Anova Test

ANOVA					
AVE of Purchase Intention					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.575	4	3.144	3.715	.006
Within Groups	177.723	210	.846		
Total	190.298	214			

The Tukey HSD test indicated that there is a significant difference between young generation Z (16-20 years old) and Millennials (30-45 years old). This states that hypothesis number 2 is partially supported as respondents from young generation z aged from 16 to 21 their effect isn't significant on purchase intention compared with the elder group of Generation Z and millennials.

Table 10-Tukey HSD test

Multiple Comparisons

AVE of Purchase Intention
Tukey HSD

(i) Age Intervals	(j) Age Intervals	Mean Difference (i-j)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than 21 years old	21-30 years old	-.361	.229	.515	-.99	.27
	31-40 years old	-.714*	.257	.047	-1.42	.00
	41 - 50 years old	-.842*	.265	.015	-1.57	-.11
	51-60 years old	-.592	.312	.322	-1.45	.27
21-30 years old	Less than 21 years old	.361	.229	.515	-.27	.99
	31-40 years old	-.353	.172	.244	-.83	.12
	41 - 50 years old	-.481	.183	.068	-.98	.02
	51-60 years old	-.231	.246	.881	-.91	.45
31-40 years old	Less than 21 years old	.714*	.257	.047	.01	1.42
	21-30 years old	.353	.172	.244	-.12	.83
	41 - 50 years old	-.128	.218	.977	-.73	.47
	51-60 years old	.122	.273	.992	-.63	.87
41 - 50 years old	Less than 21 years old	.842*	.265	.015	.11	1.57
	21-30 years old	.481	.183	.068	-.02	.98
	31-40 years old	.128	.218	.977	-.47	.73
	51-60 years old	.250	.280	.900	-.52	1.02
51-60 years old	Less than 21 years old	.592	.312	.322	-.27	1.45
	21-30 years old	.231	.246	.881	-.45	.91
	31-40 years old	-.122	.273	.992	-.87	.63
	41 - 50 years old	-.250	.280	.900	-1.02	.52

*. The mean difference is significant at the 0.05 level.

With respect to the gender, two independent sample were used to test if there is a significant difference between the gender with respect to Consumer Purchase Intention, and the result was insignificant indicating that there is no significant difference in Consumer Purchase Intention between the two genders when it comes to measuring the effect of packaging on purchase intention.

Table 11-Anova Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
AVE of Purchase Intention	Equal variances assumed	1.738	.189	-.795	213	.428	-.102	.129		-.356	.152
	Equal variances not assumed			-.791	204.081	.430	-.102	.129		-.358	.153

Further analysis with respect to Age Intervals, we noticed that ANOVA test indicated a significant difference with respect to: Average of Purchase intention across young Generation Z compared to elder generation Z & millennials, Average of Package Colors across young Generation Z compared to elder generation Z & millennials, Average of Package Materials across young Generation Z compared to elder generation Z & millennials, However a non-significant result on the graphics and labels constructs, which coincide with the regression output .

Table 12-Anova Test

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
AVE of Purchase Intention	Between Groups	12.575	4	3.144	3.715	.006
	Within Groups	177.723	210	.846		
	Total	190.298	214			
AVE of Colors	Between Groups	5.931	4	1.483	2.488	.044
	Within Groups	125.139	210	.596		
	Total	131.071	214			
AVE of Graphics	Between Groups	3.761	4	.940	1.450	.219
	Within Groups	136.179	210	.648		
	Total	139.940	214			
AVE of Labels	Between Groups	3.399	4	.850	1.109	.353
	Within Groups	160.935	210	.766		
	Total	164.333	214			
AVE of Materials	Between Groups	11.061	4	2.765	3.818	.005
	Within Groups	152.084	210	.724		
	Total	163.145	214			

The next table indicates that the score of all constructs (packaging color, packaging graphics, packaging labels, packaging materials) was less among Young generation Z (16-20 years old) in comparison to other age intervals. This leads us to believe that further detailed research is required to cover Young generation Z (16-20 years old) and may include generation Alpha as well.

Table 13-Anova Test

Age Intervals			AVE of Purchase Intention	AVE of Colors	AVE of Graphics	AVE of Labels	AVE of Materials
Less than 21 years old	N	Valid	19	19	19	19	19
		Missing	0	0	0	0	0
	Mean		3.66	3.825	3.95	3.776	3.63
	Std. Deviation		.859	.8597	.995	.8287	.764
21-30 years old	N	Valid	108	108	108	108	108
		Missing	0	0	0	0	0
	Mean		4.02	4.059	4.15	3.906	4.03
	Std. Deviation		.884	.7871	.835	.8357	.831
31-40 years old	N	Valid	39	39	39	39	39
		Missing	0	0	0	0	0
	Mean		4.37	4.355	4.39	4.103	4.39
	Std. Deviation		.953	.5950	.633	.9656	.738
41 - 50 years old	N	Valid	33	33	33	33	33
		Missing	0	0	0	0	0
	Mean		4.50	4.273	4.33	4.136	4.39
	Std. Deviation		.942	.8456	.856	1.0243	.898
51-60 years old	N	Valid	16	16	16	16	16
		Missing	0	0	0	0	0
	Mean		4.25	4.385	4.34	4.180	4.00
	Std. Deviation		1.095	.7834	.578	.5682	1.189

Discussion

This study examined the impact of Product packaging and its dimensions packaging colors, packaging labels, packaging graphics and packaging material expertise on purchase intentions measuring the moderation effect of both generation and genders this within the healthy snack industry. Based on the findings the first hypothesis was partially accepted indicating that within the healthy snack sector not all packaging dimensions (Colors, Labels, Graphics, Materials) affects the purchase intentions, however packaging still affects the purchase intentions and this align with the work of (Mehta et al. 2024) states that in the case of healthy foods, consumers always use extrinsic cues from the package to assess product quality and safety before experiencing intrinsic cues like taste or texture.

This also aligned with the results of (Li et al., 2024) stating that in healthy food markets, consumers concurrently evaluate healthiness, sustainability, convenience, and product quality, making positive packaging attributes more obvious than others. However, the finding also proposes that trusting solely on an attractive package is insufficient to fuel purchase intention unless the package deliver meaningful health related benefits.

For the sub-hypothesis 1.1 the results showed that packaging color significantly impacts the purchase intentions, our results are aligned with the work of (Kunz et al., 2020) stating that color can be considered the chromatic characteristics of the outer packaging of products, which include types, value, and saturation and which people perceive before experiencing the product. Our results also aligned with the results of (Su & Wang, 2024) stating that color is one of the first packaging features that attracts people's attention, and its impact on the product evaluation process at an early stage is much greater than the impact of either shape or typography. However a study previously was done by (Theben et al., 2019) reported that packaging color did not significantly influence consumers' purchase intentions for healthy yogurt products. This discrepancy might be due to differences in product categories, as healthy snacks are usually purchased through quick, low involvement decisions where colors has a higher impact on the choice than in dairy products. Also work done by (Mai et al. 2016) contradicts with our findings as they measured the shades of colors used for example light and pale colors increase perceived healthiness but negatively influence perceived taste which may result in demotivating customers to purchase this product.

For the sub-hypothesis 1.2 the results showed that packaging graphics insignificantly impact the purchase intentions, our result is aligned with of Li et al. (2024), who argued that consumers purchasing healthy foods prioritize functional cues related to health benefits over packaging graphics features. But our result contradicts with most of previous studies for example in contradicts with the results of (Liu, Samsudin, & Zou, 2025) stating that packaging graphics have a direct effect on purchase intentions, Also Retamosa et al. (2024) stated that graphics improve product attractiveness and increase purchase intention by grabbing the customers attention.

For the sub-hypothesis 1.3 contrary to the expectations packaging labels didn't significantly affects purchase intention, leading us to reject the third hypothesis, this finding align with the work of (Ikonen et al., 2020) and (Croker et al., 2020) stating that Labels work enhances the credibility of perceptions towards the product healthiness and quality of the items but have less consistent effects on purchase intentions than on perception and attitudes. However, our results contradict with several studies as (Watanabe et al., 2021) stating that labels can have an impact on increasing product trust which will improve the purchase intentions, our result also contradicts with the findings of Retamosa et al. (2024), who found that labels on healthy snack packaging appeals substantial visual attention and positively effects both product choice and purchase intention. We can explain this as customers in the present study may already expecting healthy snack products to show nutritional claims like "high protein," "low sugar," or "natural ingredients." As a result, labels may have become standardized market necessities rather than a point of difference between competitors.

For the sub-hypothesis 1.4 results showed that a positive impact of packaging materials on purchasing intentions in the healthy snacks sector, this result aligned with the work of (Steenis et al., 2017) stating that packaging material as an important extrinsic cue by which consumers got information about essential properties of products such as quality, naturalness, and environmental effects. Our result also aligned with the findings of (d'Astous and Labrecque 2021) revealed that responsibility of food packaging (being recyclable, reusable, or compostable) had a significant impact on purchase intention. This result is also supported by (Ruan et al. 2026), who showed in three studies that environmentally friendly packaging increases perceptions of healthiness thereby increasing purchase intention. Li et al., 2024) also aligns with our results showing that environmentally friendly packaging materials positively impacts customer's perceptions of sustainability, product quality, and healthfulness which might lead to increasing the purchase intentions. However, our result is contradicting with (Lignou and Oloyede 2021) conducted an experiment using prototypes of biscuit and meat packaging stating that the packaging materials impact on purchase intention was still low.

For the second hypothesis results showed that generation partially moderates the relation between product packaging and purchase intentions, this was due to the results of the rest of the sub hypotheses related to the moderation effect as results stated that for the sub hypothesis 2.1 that there is a significant difference between young generation Z (16-20 years old) and Millennials (30-45 years old). Same applies to the sub hypothesis 2.4 stating that packaging materials differs between young generation Z and elder generation z and Millennials, by which elder in generation Z with Millennials are affected by packaging materials with regards to their purchase intentions in the healthy snack sector. However for the sub hypotheses 2.2 and 2.3 measures the moderating effect of packaging graphics and packaging labels on purchase intentions results showed a non-significant impact of product graphics on purchase intentions, same applies to sub hypothesis 2.3 as results stated that non-significant effect of product labels on purchase intentions. This states that the second hypothesis is partially supported as respondents from young generation z aged from 16 to 21 their effect isn't significant on purchase intention compared with the elder group of generation z and Millennials. , the data about snack and beverage consumption suggest that younger generations, especially Gen Z, may prioritize taste, price, and convenience over health or nutrition-related cues more often than other generations, which means that the relative impact of color, graphics, labels, and packaging materials on purchase intentions might differ among generations In total, (Wahyuningsih et al., 2022; Makowska, Boguszewski, & Hrehorowicz, 2024) show that the connection between generational membership and different preferences can not only change the nature of the correlation between marketing constructs but also influence its strength. This contradicts with the research results by (Lassen et al. 2016), after studying intentions to buy healthy food, revealed that women preferred healthier and sustainable menus as well as reacted better to labeling by indicating healthy foods, while men focused more on promotions and more satisfying foods ,Another important observation of the study is the continued use of habits, taste, and price as key factors of the choices of both genders, also confirmed by (Arslanagic et al. 2014) and (Lassen et al. 2016) that women are more attentive to details and have more concern for health, sustainability, and packaging in general. However, it should be pointed out that according to (Chirilli et al. 2022), there was evidence that men were more concerned about some features of

environmental packaging. Moreover (Chirilli, Molino, and Torri 2022), while studying food-packaging sustainability among 646 consumers, they have observed significant differences between men and women in terms of their attitudes and awareness about packaging sustainability aspect in material used.

Nevertheless, our results is aligned with the industry experts' interviews. For the third hypothesis results showed that gender doesn't moderate the relation between the product packaging and the purchase intentions, this means that male and females both have the same perception of product packaging with regards to their purchase intentions. Those results are also aligned with the results of the interviews done by industry experts suggesting that the influence of packaging whether visual or informational operates consistently across males and females' customers within the Egyptian healthy snack sector. Both male and female customers show comparable effects on purchase intentions when evaluating healthy snacks, focusing more healthy attributes, nutritional impact, and product usefulness.

Conclusion:

This research examined the effect of product packaging and its sub variables (color, label, graphics & material) on the purchase intention in the Egyptian healthy snacks market, moderated by the generational differences and genders. The results showed that the packaging effect explained 46.4% on purchase intention meaning that there are other variables than the product packaging that affects the purchase intention to be tested.

Packaging color & packaging material had significant effect on purchase intention when it comes to purchase intention in the healthy snacks market, yet packaging graphics and labels were not significantly affecting purchase intention and the hypothesis was rejected.

Moreover, the moderation of generational differences showed that Generation Z which was divided into two subgroups (16–21 years and 22–30 years) showed great significance with the young Generation Z compared to late Generation Z & Millennials, which were divided into two subgroups (31–40 years and 41–50 years). This division enabled the examination of generational variations in the effect of product packaging and purchase intention. According to the expert interview, younger consumers of each generation may respond differently to packaging elements than the other older cohort, this could be due to differences in how they tend to buy either online or offline, their purchasing power, lifestyle, family responsibilities, and exposure to marketing communications, especially social media influencers and response to in store activities, which aligned with this research results, Finally the moderation of gender revealed that there is no significant difference, thus both genders had the same interpretation of packaging elements with regard to purchase intention, which supports the industry experts' interviews.

Recommendations:

As much as packaging is important and has an effect on purchase intention but when applied on the Egyptian healthy snacks industry, it's recommended for Companies to invest only in packaging material to be more appealing, Eco friendly and of high quality since it conveys quality to consumers seeking healthy snacks, and on packaging color, where studying the meaning that colors imply to these Generations is advised based on the research results. Particularly marketers should not focus on the packaging elements, like packaging graphics and packaging label since they had no significant effect on purchase intention among Generation Z, nor Millennials.

Moreover, marketers should not create gender-based variations in packages, since results revealed that both genders had no change in their intention to buy driven by packaging and its elements for Egyptian consumers in healthy snacks market.

Further Research:

The results indicated that the generations' breakdown led to difference among the young Generation Z respondents who had no significant effect of product packaging on the purchase intention, which leads the way to further research among those aged 16 to 21 years old and even further research what drives purchase intention to alpha generation since they seem to act differently than elder Generation Z & millennials as supported by the industry expert interviews & prior research. Moreover, use price as a mediating variable

in order to examine more precisely the effect of packaging on the purchase intention to better understand consumers behavior. It's also valuable to examine the healthy snacks purchase when applied on digital platforms, that may influence purchase intention differently than physical stores.

Further research is suggested to compare several Generations like X & baby boomers as well to apply the packaging elements and its effect in another healthy product category like healthy beverages, organic food, to assess the pattern with several sectors, also its suggested to test the effect on a high involvement product category.

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