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RESEARCH PAPER

Packaging Information Cues and Willingness to Pay Premium for Private-Label Functional Foods: The Mediating Role of Brand Attachment

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ABSTRACT

This study seeks to investigate the influence of packing information cues on willingness to p premium price, in private label function food context, and the mediating role of bra attachment. Packaging information cues are an important part of the consumer decisio making process. Understanding the relationship between these cues and consumer willingne to pay premium prices is crucial to retailers who want to position themselves competitive while the mediating role of brand attachment in this relationship has been under-explored the functional food context. The study used a cross-sectional quantitative approach using da gathered from 384 consumers of private-label functional foods using a fully-structur questionnaire. The sample population was composed of consumers frequently purchasi private-label functional food products. Date analysis was performed using partial lea squares-structural equation modelling (PLS-SEM) by Smart PLS software. The autho concluded that packaging information cues have important implications for consume willingness to pay a premium price for private-label functional foods. Brand attachment w found to partially mediate the relationship demonstrating that not only did packagi information cues directly influence price premium willingness, but they worked indirectly building greater brand attachment. These results highlight the dual pathway through whi packaging information influence consumer purchasing behavior in functional food market. is recommended that retailers use their packaging strategy to keep their own bran competitive. Future research should examine the effectiveness of specific elements packaging information for functional foods to identify whether certain health benefits nutritional claims are more effective to trigger consumer responses than others.

KEYWORDS Private Label, Functional Foods, Packaging Information Cues, Brand Attachment, Willingness to Pay Premium

Introduction

Private labels, or store brands, are distributor-owned brands designed and manufactured specifically for cost-effective solutions for retailers; however, they are promoted under retailers' brand names instead of a national brand (Gielens et al., 2023). Private label brands are a strategic resource to retailers that cannot be viewed in the usual cost terms. They form an excellent source of competitive advantage and organizational performance. Specifically, using private-label products serves as a means of retailer differentiation, allowing the stores to offer unique products that cannot be found anywhere else and develop customer loyalty for a particular retail chain (Maesen, 2025). A recent global survey conveys that the percentage of global consumers buying private-label products has grown upto 53% (NielsonIQ, 2025).

Functional foods and dietary supplements are some of the health-oriented products that are increasingly becoming a characteristic of the private label segment in the food industry. They are primarily marketed because they help in weight management, enhance

gastrointestinal health, and boost immunity (Horská et al., 2022). These products target the health-conscious consumers who are mindful of what goes into the body (Sarkar, 2007). These customers would take time to make purchase decisions based on their ingredient transparency, nutritional value, and certification as organic, non-GMO (Genetically Modified Organism), or third-party tested products (Chen et al., 2024). It has been identified that health-conscious consumers are more engaged in processing the information regarding a product and are ready to pay more to derive a perceived health benefit (Rodrigues et al., 2024). Furthermore, buying behavior is determined by factors such as brand trust, scientific evidence of the health claims, and medical professional advice (Bukhari et al., 2023). The same group of consumers is also more interested in low-processed and natural products than conventional ones, particularly in the post-pandemic consumer behavior patterns (Gasparre et al., 2024).

From a marketing management perspective, packaging is a vital element that provides product information and attracts customer attention as it is a part of the marketing mix (Kakaria et al., 2023; Krishna et al., 2017). Packaging has undergone a major transformation in its usage, becoming a sophisticated marketing tool that communicates brand philosophies, product characteristics, and quality markers through carefully considered visual and information cues (Vila-López & Küster-Boluda, 2019). According to Steenkamp (1990), intrinsic cues are believed to be the best predictors of real product quality since the quality is inherent in the product itself. The work of Brečić et al. (2017) concluded that, considering the crucial quality factor, packaging could only be changed with the help of product changes. The food-industry literature also provides evidence to support these findings, showing that information cues such as color, texture, and sensory properties continue to be the primary predictors of product quality (Rodrigues et al., 2024). This study addresses the gaps in the product packaging literature, specifically focusing on information cues. The significance of this study will help retailers to explain crucial aspects of packaging strategies and to ensure that the private label products remain in a competitive position. Moreover, it will help them develop and effectively deploy packaging information cues.

Literature Review

Functional Food

Functional foods represent an important strategic part of the food industry, going beyond basic nutritional sufficiency to provide measurable health effects that exceed conventional nutrition (Kakaria et al., 2023). These products are systematically fortified with bioactive compounds, essential nutrients, vitamins, minerals, and functional ingredients that provide quantifiable human health and wellness benefits (Sumaedi et al., 2023). Prior literature shows a wide range of functional foods in different and diverse cultural environments and geography. Amaranth, a conventional Mexican cereal grain, is an example of the potential of culturally valuable foods with a strong nutritional composition and health-promoting effect (Rojas-Rivas et al., 2019). In 2021, the world market of functional foods and beverages was about USD 281.14 billion. It shows a high-growth market, expected to be USD 23.5 billion in 2023, and is predicted to reach USD 38.5 billion by 2033 (Statista, 2023). According to empirical evidence, the rate at which consumers embrace using private-label products has grown significantly, mainly because of the health-conscious consumers' enhanced quality expectations and elevated value-consciousness (Rashidinejad, 2024). It is believed that more and more consumers are utilizing private-label functional foods as good substitutes for the national brands, particularly with the help of well-communicated health benefits.

Attachment Theory

Attachment theory is a prominent theory in the behavioural sciences, initially proposed by John Bowlby in the 1960s (Bowlby, 1969) and further advanced during the

1970s through the empirical investigations of developmental psychologist Mary Ainsworth (Bretherton, 2000). The model describes emotional attachment's nature and evolutionary significance, especially between young children and their parents/guardians during early Development (Bosmans et al., 2020). Attachment theory also suggests that interactions throughout childhood, and particularly those relationships formed with parents/guardians, are hugely influential in the formation of human behavior and regulation. In evolutionary terms, infants have an innate desire for secure and caring attachments which signals a need for protection, support and safety (Bowlby, 1982). The quality of such attachment sequence patterns open other emotional and behavioral development channels leading to confidence, security, and personal value. Bowlby theorizes that these attachment experiences may lead to the development of inner working models, cognitive skills for developing relationship expectations and self-esteem (Tottenham & Vannucci, 2025). It has been demonstrated that attachment style can be observed among business relationships, love relationships, and other interpersonal relationships (Liu & Hogg, 2018).

Brand Attachment

Brand attachment refers to an emotional attachment that consumers develop towards a brand (Pereira et al., 2024). This significant association, in turn, leads to enhancements in affective intentions of affection, trust, and loyalty towards the brand (Bentley et al., 2025). Further, it extends the understanding of product/service satisfaction and is a highly personal relationship that creates commitment and loyalty and can lead to long-term, high-quality relationships (Hemsley-Brown, 2023). Brand attachment can be embedded in different theories from the psychological literature that put together a strong conceptual base (Bowlby, 1969). It theorized that emotional attachment between children and their parents/guardians can be re-formulated into consuming brand emotional attachment and psychological needs (Nyamekye et al., 2021). Brand loyalty is a measurable phenomenon that reflects its influence on consumer behavior through various psychological mechanisms and procedural channels that ultimately results in tangible effects in behavior. In essence, this is the affective relationship between the consumer and the brand, the emotional link that keeps long-lasting relationships alive and is expressed through different consumer behavior patterns. From the empirical point of view, there's an empirical evidence that brand attachment is ultimately linked to brand advocacy, positive word-of-mouth, willingness to pay a premium price, and brand forgiveness for the brand's misbehavior (Nyamekye et al., 2021; Park et al., 2010). In addition, the protection role of brand attachment had been recently investigated in brand misconduct environments such as the market slow-down scenario, where robust brand attachment might assist in maintaining consumer-brand relationships after brand misconduct has occurred (Shimul, 2022). However, other research has also found possible dark sides of brand attachment, including impulsive buying behaviour, obsessive-compulsive purchasing, and negative word-of-mouth about competing brands (Japutra et al., 2022).

Packaging Information Cues

The packaging information cues relate to product properties which cannot be replaced without changing its essential characteristics. Such as the ingredients, product formulation, design, and other physical factors affect product performance (Mehta et al., 2024). The intrinsic cues, like color and texture, are vital in initial judgment for generating product evaluation. As empirical research has shown, visual stimuli that alter taste and flavour perception create strong sensory expectations based on food-intrinsic cues, including product colour/shape, and significantly influence customer experience (Han et al., 2024). This fact is notable as the human being is a visually dominant organism, where visual intrinsic cues often override other sensations in early analyses of food products. Texture is a central intrinsic cue for consumer judgments of product quality, freshness, and overall acceptability. Intrinsic food cues are identified directly through relevant sense organs, including sight, smell, taste, touch and sometimes sound. Recently, the sensory science is

giving great attention to intrinsic sensory stimuli in the consumer's evaluation process (Mehta et al., 2024). The multidimensional model for the analysis of the internal cues is a novelty for the conceptualization of how consumers process the information regarding the products (Rodrigues et al., 2024).

Willingness to Pay Premium Price

The willingness to pay premium price (WTPP) concept dominates consumer behavioural literature and marketing theory to explain consumers' willingness to pay a premium for products/services they perceive to be of higher functionality, value, and quality (Munaqib et al., 2024). Based on microeconomic assumptions, WPP has grown to be a complex tool of analytical perspective that explains consumer choice and market forces. The willingness to pay a premium price (WTPP) is a psychological, economic, and social aspect of purchasing that goes beyond utilitarian. The Brand Equity Model describes that strong brands could extract a premium by increasing perceived value and building consumer confidence (Aaker, 1991). The work by Laradi et al. (2024) found that brand strength, brand attachment, and brand loyalty have a substantial and positive impact on the consumer's willingness to pay a premium price, with brand attachment and brand loyalty mediating the relationship between brand strength and pricing acceptance. Furthermore, product involvement has a great influence on WTPP. Dwivedi et al. (2018) found that the price elasticity of high-involvement categories of products, such as luxury goods, automobiles, and technology products, is significantly higher than low-involvement categories. Such behavioral patterns are also cultural factors. The cultural dimension theory by Hofstede (1991) presented a tool to explain cross-cultural differences in the acceptability of premium pricing. In individualistic cultures, the WTPP of consumers to products that would allow them to express themselves and differentiate socially is higher. In collectivistic cultures, they moderate their pricing decisions to uphold group harmony and conformity.

The willingness to pay premium price (WTPP) construct has prevailed in the recent literature of consumer behaviour and marketing theory. It describes the willingness of consumers to pay a premium price for products/services perceived to be of higher functionality, value and quality (Munaqib et al., 2024). Based on microeconomic principles, WPP has evolved into a complex instrument of analytical vision for understanding consumer choice and market forces. The willingness to pay premium price (WTPP) is a psychological, economic and social element of purchasing behavior that transcends utilitarianism. Stronger brands have the ability to set a premium price via perceptions of value added and confidence, according to brand equity model (Aaker, 1991). Laradi et al. (2024) concluded that brand strength, brand attachment and brand loyalty have significant and positive effect on willingness to pay premium price, brand attachment and brand loyalty have mediating role in the relation between brand strength and pricing acceptance. Additionally, product involvement has a huge impact on WTPP. Dwivedi et al. (2018) reported that the price elasticity for high-involvement types of products, namely, luxury goods, automobiles, and technological products, is much greater than the low involvement types. Such behavioral patterns also are cultural influences. Hofstede (1991) cultural dimension theory was used as a tool for explaining the cross cultural variability in the acceptability of premium pricing practices. In individualistic cultures consumers' WTPP for products that would enable them to express themselves and differentiate socially is higher.

Hypotheses

The relationship between the attachment to the brand and the consumer's WTPP involves complex behavioural and psychological processes. As empirical studies showed, brand attachment greatly correlates with consumer behavioural constructs, such as WOM, repurchase intentions, and satisfaction (Sarkar & Roy, 2016). Özhan et al. (2023) conducted a similar study investigating the influence of brand reputation on the willingness to pay a premium price. Self-brand connection has a strong impact on WTPP. The deeper self-brand

connections are, the higher the brand attachment and WTPP. Sarkar et al. (2021) discussed a scenario where the consumers view the brand as an extension of their identity, which affects the price sensitivity, and the decision to choose to pay the high price is re-coded as an investment in self-concept rather than a pure cost of transaction (Sarkar et al., 2021). Honora et al. (2024) establish that the hedonic value and brand engagement determine the consumer's WTPP in social media settings. Based on these findings, it is possible to conclude that the involvement in hedonic value and engagement with the brand increases the likelihood of the customers being WTPP.

H_1: Brand attachment is significantly positive with consumers' willingness to pay a premium price.

Packaging information cues are vital in creating brand attachment through the complex interaction of visual and sensory processing systems, which foster an emotional connection between consumers and brands. Su & Wang (2024) showed that the color elements of the packaging are effective in attracting the attention of consumers. They also find that the perceived fluency can be increased by manipulating the color of the packages, which eventually influences consumer purchase intentions. Informational cues on packaging enhance brand attachment by facilitating a complex information-processing mechanism, allowing consumers to integrate visuals and text to determine product quality and evaluate brand credibility. Mehta et al. (2024) showed that the choice of packaging material, visual aesthetics, and nutritional labeling influence the consumer purchasing behavior and drive the formation of expectations and cognitive simulation. Berthold et al. (2024) concluded that extensive use of traditional color schemes to convey product variety on packaging impacts coherent information cues in understanding and building consumer confidence. Such cognitive tactics allow the brand to build associations and foster affective relationships through repetitive exposure combined with positive experience results. Thus, it is proposed that.

H2: Packaging information Cues have a significant positive impact on brand attachment.

By delivering behavioural signals that extend beyond the product's functional attributes, packaging information cues significantly affect the WTPP. The trend is especially noteworthy in the context of green product packaging. It enhances awareness regarding the significance of environmentally friendly packaging, leading consumers to choose green product packaging more than its available alternative options. (Ton et al., 2024). Thus, consumers with higher environmental awareness are more likely to pay a premium for green products (Yan et al., 2025). Moreover, the psychology of color has also been established as an important factor determining the acceptance of premium pricing. Empirical evidence showed that harmonizing the packaging color with the product category enhances purchase intentions through the fluency-based mechanisms suggested by cognitive psychology. This outcome can be explained by the fact that color-consistent stimuli take place with increased fluency, which contributes to more positive affective reactions and justifies premium pricing (Su & Wang, 2024).

H3: Packaging information cues significantly positive impact on Willingness to Pay a Premium Price.

Information and visual cues influence consumer purchase intentions, but the process involved is not well defined (Steenkamp, 1990). According to Batra & Ahtola (1991), cues do not directly influence the behavioral intentions but rather through the mediators of cognition and emotion. Such suggestions are supported by scholars, such as Javeed et al. (2022) concluded that information cues impact product/service perceived quality in emerging markets. A comprehensive analysis of brand attachment highlighted the changing dynamics and mechanisms of how brands influence consumer behaviour (Shimul, 2022). Prior studies also revealed that a strong brand attachment emerges when both intrinsic and

extrinsic attributes match the profile of an individual's personal needs and self-concept. Customers who are emotionally attached tend to be less price sensitive and tend to try the product (Basu & Sondhi, 2024).

H4: Brand attachment positively mediates the relationship between product information cues and consumer willingness to pay a premium price.

In the proposed framework, as shown in Figure 1, the stimuli the consumer is exposed to when evaluating a product are identified as packaging visual cues. Brand attachment as a mediator is the most significant factor in translating the packaging stimuli into behavioral intentions. The psychological processes in which the visual and informational stimuli influence consumer responses find their reflection in these constructs. Willingness to pay a premium price (WPP) summarizes the final behavioral intention that organizations are trying to evoke due to strategic packaging-design efforts and their execution.

Figure 1: Conceptual Framework

Material and Methods

The data was collected from 500 Pakistani consumers who frequently shop at major retailers in major cities of Punjab, Pakistan, such as Alfateh, Imtiaz, Metro, and two online platforms, Virsa and Himalayan, through mall intercept and online survey. The respondents were selected by convenience sampling, yielding 384 valid responses. The questionnaire used in the study was adopted from prior studies; packaging information cues items were adopted from Kuvykaite et al. (2009), brand attachment items were from Park et al. (2010), and willingness to pay premium items were borrowed from Anselmsson et al. (2014). The items were measured on a 5-point Likert scale in which 1 = strongly disagree and 5 = strongly agree. The empirical study used the partial least squares structure equation modelling (PLS-SEM) for analysis using Smart PLS 4. Hair et al. (2019) claimed that PLS-SEM can deal with the measurement-related parameters and provides structural-model attributes to test hypotheses and verify validity and reliability.

The respondents are distinguished by the demographic profile as shown in Table 1. The sample in the current case is composed mostly of men, 66.4%. The age bracket 37-45 is the highest, with a proportion of 37.5 % of the cohort. There is a high degree of concentration on the middle and upper income brackets, with respondents in the PKR 100,001-150,000 bracket having 26% of the sample size, and closely followed by the PKR 150,001-250,000 bracket with 25.8% of the sample. Occupational status observes employed, 44%, as the highest. Lastly, the proportion of employed respondents is 44 % of the sample size.

Table 1
Demographics Profile

Particulars	Frequency	Percentage	Particulars	Frequency	Percentage
Gender			**Age in Years**		
Male	255	66.4	13-18	13	3.4
Female	129	33.6	19-24	74	19.3

Income in PKR			25-36	123	32.0
Below 50,000	18	4.7	37-45	144	37.5
50,000 -100,000	63	16.4	Above 45	30	7.8
100,001 -150,000	100	26.0	**Occupation**		
150,001 - 250,000	99	25.8	Student	87	22.7
250,001 - 400,000	92	24.0	Employee	169	44.0
400,001 and Above	12	3.1	Self Employed	126	32.8
			Housewife	2	0.5

Regarding the consumption patterns, Ponam by Imtiaz and Virsa online brand had a market share of 25% and 20.3% respectively. It is worth mentioning that health consciousness turned out to be the main purchasing determinant; 42.7% answered that they always consider health factors, and 41.7 % responded that they often pay attention to the nutritional value, as shown in Table 2.

Table 2
Respondent Profile

Particulars	**Frequency**	**Percentage**
Private-label consuming brands		
Poonam	96	25.0
Fine Life	77	20.1
Virsa	78	20.3
Dali	74	19.3
Himalayan	59	15.4
Considering health factors while purchasing		
Rarely	14	3.6
Sometimes	46	12.0
Often	160	41.7
Always	164	42.7

Results and Discussion

This study followed a twofold approach: measurement model and structural model. Measurement models are looked at prior to structural models. When evaluating the outer model of the measurement model, construct reliability and construct validity are measured; in the inner model evaluation, convergent validity, discriminant validity, and structural model fit are evaluated. Several measures and criteria exist in the assessment of the outer model. The reliability of constructs is evaluated based on Cronbach's alpha values and composite reliability values, fulfilling the threshold of 0.70 or higher (Waseem et al., 2022). The convergent validity is assessed regarding factor loading and average variance extracted (AVE); most factor loadings and AVE exceed 0.70 (see Table 3), meaning convergent validity is acceptable.

Table 3
Construct Reliability & Convergent Reliability

Construct	**Items**	**Factor Loading**	**Cronbach Alpha**	**CR**	**AVE**
Brand Attachment	BA1	0.720	0.931	0.933	0.645
	BA2	0.876			
	BA3	0.846			
	BA4	0.745			
	BA5	0.81			
	BA6	0.815			
	BA7	0.831			
	BA8	0.861			
	BA9	0.795			
Packaging Information Cues	IC1	0.817	0.904	0.906	0.636
	IC2	0.81			
	IC3	0.789			
	IC4	0.772			

	IC5	0.831			
	IC6	0.805			
	IC7	0.795			
Willingness to Pay Premium	WPP1	0.897	0.841	0.848	0.758
	WPP2	0.859			
	WPP3	0.826			

Discriminant validity is measured with the help of the Fornell-Larcker criterion by verifying that the conceptually different constructs do not overlap. Cross-loadings were also considered a complement to the Fornell-Larcker criterion, see Table 4, where each item had to show the highest loading on the construct to which it was related and a lower loading on other constructs (Waseem et al., 2022). The discriminant validity is also supported using the heterotrait-monotrait ratio of correlations (HTMT) criterion, whereby all the correlation values were below the cut-off value of 0.85 or 0.90 for each construct.

Table 4
Fornell-Larcker criterion

Construct	Brand Attachment	Packaging Information Cues	Willingness to Pay Premium
Brand Attachment	0.803		
Packaging Information Cues	0.667	0.797	
Willingness to Pay Premium	0.641	0.582	0.871

The cross-loading presented in Table 5 showed that for each construct, the values are higher than other items in the same column. The cross-loading also validates that each item is loaded with its construct, does not create heteroscedasticity, and supports discriminant validity.

Table 5
Cross Loadings

	Brand Attachment	**Packaging Informational Cues**	**Willingness to Pay Premium Price**
BA1	**0.742**	0.532	0.498
BA2	**0.776**	0.492	0.529
BA3	**0.846**	0.535	0.498
BA4	**0.745**	0.441	0.446
BA5	**0.81**	0.521	0.484
BA6	**0.815**	0.542	0.535
BA7	**0.831**	0.541	0.537
BA8	**0.861**	0.564	0.536
BA9	**0.795**	0.628	0.555
IC1	0.554	**0.817**	0.459
IC2	0.517	**0.81**	0.449
IC3	0.483	**0.789**	0.427
IC4	0.457	**0.772**	0.465
IC5	0.591	**0.831**	0.476
IC6	0.544	**0.805**	0.46
IC7	0.561	**0.754**	0.503
WTP1	0.603	0.532	**0.897**
WTP2	0.583	0.509	**0.859**
WTP3	0.477	0.474	**0.856**

Assessment of the Structural Model

Variance Inflation Factor (VIF) values were also computed to determine multicollinearity in the current regression models, whereby the independent variables are highly correlated. The effect that multicollinearity has on the outcomes of structural equations is discussed. Any VIF score of 3.0 or above shows high multicollinearity issues in structural equation modeling (Hamledari & Fischer, 2021). The Table 6 results show that all

the VIF values were less than 3.0, and therefore the independent variables in the study at hand were not associated with multicollinearity and thus yielded accurate regression coefficients.

Table 6
Variance Inflation Factor

Construct	VIF	R2
BA1	1.858	0.445
BA2	2.209	
BA3	2.962	
BA4	2.073	
BA5	2.506	
BA6	2.683	
BA7	2.977	
BA8	2.989	
BA9	2.512	
IC1	2.777	
IC2	2.677	
IC3	2.506	
IC4	2.300	
IC5	2.792	
IC6	2.662	
IC7	1.783	
WPP1	2.241	0.454
WPP2	1.822	
WPP3	2.040	

Hypotheses Testing

The empirical evidence supports all three hypotheses as each has a statistically significant direct effect. H2 (IC→BA) records the highest one, β = 0.667, t = 19.827, H1 (BA→WPP) shows a moderate level of significance, β = 0.456, t = 7.591; and H3 (IC→WPP) reveals the lowest, but still significant, direct effect, β = 0.277, t = 4.471, as shown in Figure 2.

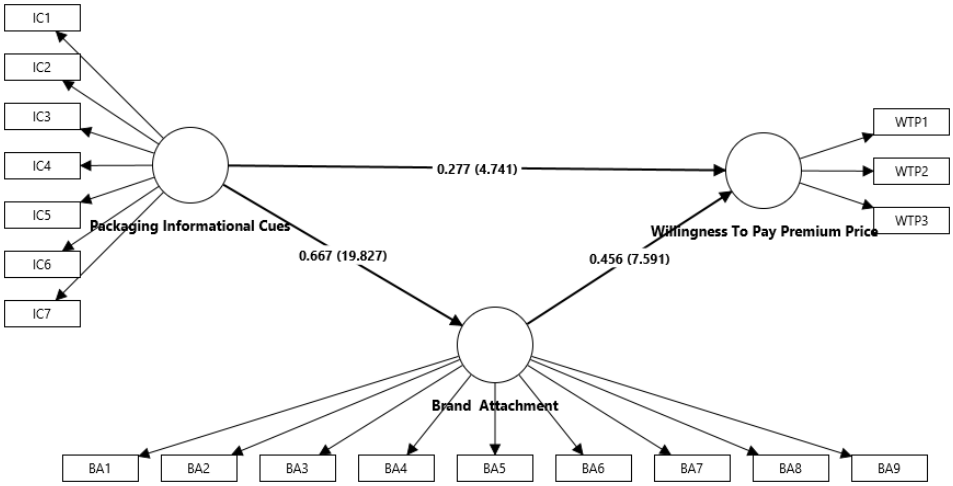

Figure 2: Results of Hypothesis Testing

The fact that the t-value and the beta are higher with H_2 highlights the importance that packaging information cues have the most significant impact on brand attachment. Table 7 presents the direct hypothesis showing that all hypotheses are accepted at $p<0.05$.

Table 7
Direct Hypotheses Testing

Hypothesis	Beta	T-Value	P-Value	C.I 12.5%	C.I 97.5%	Remarks
H1 BA-WPP	0.456	7.591	0.000	0.337	0.573	Accepted
H2 IC-BA	0.667	19.827	0.000	0.002	0.732	Accepted
H3 IC-WPP	0.277	4.471	0.000	0.165	0.395	Accepted

The indirect effect with $\beta = 0.295$, $t = 6.989$, $p < 0.001$, also confirmed the mediation hypothesis (H4), see Table 8. Hence, this provided evidence that the hypothesis of partial mediation was true. The effect size (0.304) observed suggests a medium intensity of relationship between the variables, thus concluding that the mediator significantly influences the relationship between the predictor. The hypothesis is accepted as a complementary partial mediation.

Table 8
Hypotheses Testing (Mediation)

Hypothesis	Beta	T-Value	P-Value	C.I 12.5%	C.I 97.5%	Remarks
H4 IC-BA-WPP	0.295	6.989	0.000	0.222	0.393	Complimentary Partial Mediation
H3 IC-WPP	0.277	7.741	0.000	0.165	0.395	Accepted

Discussion

The study's findings imply that packaging information cues significantly effect willingness to pay a premium price. The detailed and clear information on the label is a significant factor that increases consumers' perceptions of the product's value and, consequently, their willingness to pay a premium price. The product attachment is enhanced when consumers get sufficient information regarding the functional benefits, nutritional composition, and quality attributes via packaging, which promotes premium payment behavior. The research showed that brand attachment mediates the relationship between packaging information cues and consumers' willingness to pay a premium price. It implies that packaging information cues not only directly influence the consumer's willingness to pay a premium but also act indirectly in the presence of brand attachment. The fact that consumers respond to packaging cues and show willingness to pay a premium indicates that emotional bonds do not replace rational decision-making but support it.

The study found that information cues on packaging are the main determinants of consumer-brand associations in functional foods. The results align with Li et al. (2024), who suggested that packaging cues that focus on particular product qualities significantly increase consumer perceptions and purchase intentions compared to generic product displays. The large effect size implied that well-designed packaging information cues, including clear health claims and credible graphics, can significantly influence emotional relationships between consumers and functional food brands. It is crucial in the functional food markets, where consumers depend on the information in the packaging to decide on the health benefits they doubt before purchasing.

The relationship between brand attachment and willingness to pay higher prices suggested that brand attachment to functional food brands could be converted into economic value. This finding is consistent with recent study findings that consumers show willingness to premium price on healthier food products, with older adults, women, individuals with obesity, and health-conscious consumers (Alsubhi et al., 2023). The result implied that the functional food companies should focus more on the emotional connection using a proper branding approach instead of competing based on price, since attached consumers are more willing to spend on perceived healthier health benefits and brand reliability. The direct influence of information cues on the willingness to pay premium prices showed that effective packaging communication offers direct economic value in addition to the mediated values through brand attachment. These results also align with Chen et al. (2024), who concluded that many consumers expressed readiness to spend extra money on

products with clear informational labeling, indicating that consumers are more aware and concerned with the product characteristics. However, this direct relationship is not as strong as the mediated relationship between credible packaging information cues and willingness to pay a premium price. Thus, it confirmed that credible packaging information cues can have an independent effect on the willingness by decreasing perceived risk and increasing perceived authenticity of the product, giving functional food manufacturers two routes to achieve premium pricing strategies.

The results of mediation analysis shows that there is a significant indirect effect between the packaging information cues on consumers' willingness to pay premium prices through brand attachment. The results confirmed the findings of MacKinnon & Fairchild (2009), who proposed a model for the consumer decision-making process. It shows complex relationships between packaging information cues and willingness to pay a premium. Furthermore, as suggested by the indirect effect on brand attachment, brand attachment plays a mediating role in the relationship between information cues and willingness to pay a premium price. It is in line with Wang et al. (2024) who found that health motivated food consumption processes occur in sequential stages in which the products' characteristics influence attitudes which then influence the behavioral response.There is a partial mediation of the relationships, such that brand loyalty mediates the relationship while relationships between information cues and high product prices remained significant (Ballen & Salehi, 2021).

The medication effect indicated that functional food firms could optimally utilize their pricing tactics by taking two paths: communicating product benefits directly and building brand attachment indirectly. Although brand attachment plays a considerable mediating role for the impact of the packaging stimuli, the findings suggest that information elements have direct effects on pricing acceptance and provide different strategic possibilities for functional food marketers in this rapidly growing market segment. This study also supports the findings of Mehta et al. (2024) in relation to the perception of packaging and the role it plays in shaping consumer decision-making, Laradi et al. (2024) that guides brand attachment to support premium pricing strategies. Italso substantiates the findings of Su & Wang (2024) in relation to the impact of packaging and Alsubhi et al. (2023) on willingness to pay a premium price for foods with a healthy label.

Conclusion

The study concluded that the packaging information plays an important role in decision-making processes of consumers in functional food markets. These visual and textual features such as color schemes and design aesthetics are major marketing tools and could effectively communicate the benefit of the products to health-conscious consumers to improve the perceived quality of the products. Effective functional cues reduce the cognitive load and help consumers make quick product judgments and build a credibility, through scientific jargon and visual stimuli that appeal to customers.

The study found that packaging information has an important role to play in consumer decision making within functional food markets. In particular, visual and textual features such as color schemes and design aesthetics are important marketing tools that could be successful in conveying the benefits of the products to health-conscious consumers in order to enhance perceived product quality. Good working prompt reduces cognitive burden and make it possible for consumers to make quick product decisions and build credibility at the same time through scientific terms and imagery that attracts customers.

The research gives empirical evidence that shows the two-fold mechanism by which packaging information impacts on consumer behavior, directly and indirectly, through the establishment of brand attachment. This mediating role of brand attachment enlightens us about the fact that consumers form an emotional relationship with products based on cues

in the packaging and this in turn affects their willingness to pay a premium price. The findings identify the psychological mechanisms of consumer responses to functional food packaging, where informational elements can be used as quality signals to alleviate perceived risk and uncertainty in the purchase decision. Furthermore the study establishes that the packaging design may also be used as a source of competitive advantage for private label products, as a result of increasing its perceived legitimacy and trustworthiness, as compared to national brands. The strategic use of packaging information cues helps retail companies market their private label functional foods as higher quality products which in turn justify higher profit margins alongside consumer expectations of quality and efficacy in health-oriented products.

Recommendations

It is recommended that retailers optimize their packaging strategy so as to maintain their private-label product competitive positioning. It is further recommended to ensure that their private-label products have competitive positioning based on the use of visual and textual elements of the information cues that communicate product benefits to health-conscious consumers. Strategic implementation of functional information cues can help retailers distinguish their private labels from national brands, justify premium pricing through increased value perception, and help build greater brand attachment that facilitates long-term consumer loyalty and repeat buying behavior. Retailers should be concerned with the integration of scientific terms and credible health claims, as well as attractive design aesthetics that minimize cognitive load and simultaneously maximize the credibility and perceived quality of products in the competitive functional food marketplace.

Future research should examine the effectiveness of certain elements of packaging information for functional foods, in order to understand how certain health benefits or claims about nutrition may be more effective at stimulating consumer response than others. The study acknowledges limitations inherent in cross-sectional designs in learning consumer behavior dynamics over a period of time. Future research should use experimental designs to differentiate among packaging information cues and use longitudinal research design to identify temporal links between packaging cues, brand attachment and willingness to pay premiums. Research should also include situational factors influencing actual purchasing behaviour in real life, such as shopping situation, time pressure, availability of competing products, etc., as well as involve behavioural observation techniques to generate objective information about consumer reaction in different retail contexts and groups, etc.

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