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Packaging Attractiveness and Perceived Value in Purchase Intentions toward Frozen Dumplings

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ABSTRACT: Packaging provides cues for evaluating frozen foods before purchase. This study examined the relationships between packaging attractiveness, functional, emotional, and convenience value, behavioral attitude, and purchase intention toward frozen dumplings in Mongolia. It also tested whether time pressure moderated the attitude–intention relationship. Data from 391 respondents were analyzed using partial least squares structural equation modeling in SmartPLS. Packaging attractiveness was positively associated with all three value dimensions, which were positively associated with behavioral attitude. Behavioral attitude was positively associated with purchase intention, and all three sequential indirect pathways through perceived value and attitude were statistically significant. Time pressure exhibited a positive main effect on purchase intention, but its interaction with behavioral attitude was not significant ($\beta = 0.012$, $p = 0.560$). The model explained 66.0% of the variance in behavioral attitude and 77.3% in purchase intention. However, substantial measurement overlap between functional and emotional value and between attitude and intention limits interpretation of the distinct pathways. The findings provide context-specific evidence on packaging evaluations and frozen dumpling purchase intentions, without establishing causal effects.

Keywords: *packaging attractiveness; frozen dumplings; perceived value; behavioral attitude; purchase intention; time pressure; Mongolia*

I. Introduction

Packaging plays a role in food purchasing decisions because consumers often evaluate a product before they can taste or use it. At the point of purchase, the package provides visible information about the food and may shape expectations about its quality, appearance, and ease of use. Visual features such as color and imagery, together with information on the package, can influence consumer evaluations and choice (Silayoi & Speece, 2007). These features are particularly relevant to frozen dumplings, whose taste and quality cannot be directly assessed before purchase. How the food is displayed is an important packaging decision. A transparent window allows consumers to inspect the frozen dumplings inside, whereas a product image shows how they may look after preparation. A package without either feature relies on text and graphic design to communicate the product's identity. Research has shown that transparent elements and product imagery can affect food evaluations, although transparency does not consistently produce more favorable responses across product categories (Ma et al., 2020; Simmonds & Spence, 2017; Simmonds et al., 2018). It is therefore useful to compare these approaches for frozen dumplings rather than assume that one design will be preferred.

Previous research in Mongolia provides a foundation for examining frozen food purchasing. Ganbold et al. (2024) found that brand reputation, price perception, social media influencers, convenience, product quality, and social influence were associated with consumers' attitudes toward frozen foods. A favorable attitude was also associated with stronger purchase intention. Building on this research, the present study focuses on frozen dumplings and examines how packaging attractiveness relates to perceived value and purchase intention. It also compares consumers' preferences among three proposed packaging designs.

Packaging preference alone cannot explain why consumers intend to buy frozen dumplings. Consumers may also consider the product's expected quality and taste, the feelings associated with buying it, and the time and effort it may save. The theory of consumption values proposes that different forms of value contribute to consumer choice (Sheth et al., 1991). Perceived value has likewise been examined as a multidimensional construct (Sweeney & Soutar, 2001). In the context of prepared dishes, Zheng et al. (2024) examined functional, emotional, and convenience value in relation to behavioral attitude and purchase intention. Together, these studies provide a basis for investigating how packaging evaluations and perceived value contribute to frozen dumpling purchase intention. Time pressure may also be relevant to frozen food purchasing. Previous research considered eating situations in convenience food consumption (Verlegh & Candel, 1999), while Zheng et al. (2024) examined time pressure as a moderator of relationships between perceived value and behavioral attitude. The present study examines a different placement: whether time pressure changes the relationship between behavioral attitude and purchase intention toward frozen dumplings. The primary objective is to examine how

packaging attractiveness is associated with perceived functional, emotional, and convenience value, how these value dimensions relate to behavioral attitude, and how attitude relates to purchase intention. The model additionally examines time pressure as a moderator of the attitude–intention relationship. A separate research question concerns preference among three proposed packaging designs: a transparent window package, a package displaying prepared dumplings, and a package using text and graphics without a product image. The structural analysis and the design-preference comparison address different questions and are interpreted separately.

II. Theoretical Background and Hypotheses

2.1. Packaging attractiveness and perceived value

Packaging attractiveness is operationalized here as a broad favorable evaluation of packaging, encompassing visual appeal, perceived functional design, and perceived sustainability. This operationalization extends beyond visual aesthetics, and the dimensional structure of the combined measure requires further validation. Visual and informational packaging attributes can affect choice (Silayoi & Speece, 2007), while seeing food through or on a package can shape product evaluation (Ma et al., 2020; Simmonds & Spence, 2017; Simmonds et al., 2018). The theory of consumption values provides a basis for examining the benefits consumers expect from a product (Sheth et al., 1991). In this study, functional value concerns expected taste, quality, and nutrition; emotional value concerns positive feelings and reassurance; and convenience value concerns expected ease of storage and preparation and savings in time and effort. Convenience is included as a context-specific dimension following Zheng et al. (2024), rather than as an original dimension of the theory of consumption values. An attractive package may provide favorable cues about these expected benefits. Therefore:
H1: Packaging attractiveness is positively associated with perceived functional value.
H2: Packaging attractiveness is positively associated with perceived emotional value.
H3: Packaging attractiveness is positively associated with perceived convenience value.

2.2. Perceived value and behavioral attitude

Behavioral attitude is a consumer's favorable or unfavorable evaluation of buying frozen dumplings. The theory of planned behavior identifies attitude toward a behavior as a determinant of the intention to perform that behavior (Ajzen, 1991). To explain how such an attitude may form, this study considers consumers' expectations about the value of frozen dumplings. Research on perceived value supports examining different forms of value separately (Sheth et al., 1991; Sweeney & Soutar, 2001), while Zheng et al. (2024) examined the relationships between functional, emotional, and convenience value and behavioral attitude in the prepared-dishes context. Consumers who expect frozen dumplings to offer good taste and quality may view buying them as beneficial. Positive feelings associated with the product may also support a favorable attitude. Similarly, consumers who expect frozen dumplings to be easy to store and prepare may evaluate the purchase more positively. Accordingly:
H4: Perceived functional value is positively associated with behavioral attitude toward buying frozen dumplings.
H5: Perceived emotional value is positively associated with behavioral attitude toward buying frozen dumplings.
H6: Perceived convenience value is positively associated with behavioral attitude toward buying frozen dumplings.

2.3. Behavioral attitude and purchase intention

Purchase intention refers to a consumer's stated willingness or plan to buy a product in the future. According to the theory of planned behavior, a more favorable attitude toward performing a behavior is associated with a stronger intention to perform it (Ajzen, 1991). Applied to the present study, consumers who regard buying frozen dumplings as beneficial and satisfying are expected to express a stronger intention to purchase them. Zheng et al. (2024) also examined this relationship in the context of prepared dishes. Therefore:
H7: Behavioral attitude is positively associated with purchase intention toward frozen dumplings.

2.4. The moderating role of time pressure

Time pressure refers to the perception that there is insufficient time to complete everyday tasks. Research on convenience food has examined the relevance of eating situations (Verlegh & Candel, 1999). Zheng et al. (2024) examined time pressure as a moderator of relationships between perceived value and behavioral attitude toward prepared dishes. The present analysis examines a different position by considering whether time pressure moderates the relationship between behavioral attitude and purchase intention toward frozen dumplings. A favorable attitude toward buying frozen dumplings may not translate into the same level of purchase intention under different time constraints. Consumers experiencing greater time pressure may attach greater immediate relevance to a convenient meal option, potentially strengthening the association between their favorable evaluation and purchase intention. Conversely, time constraints may restrict consumers' ability to act on their

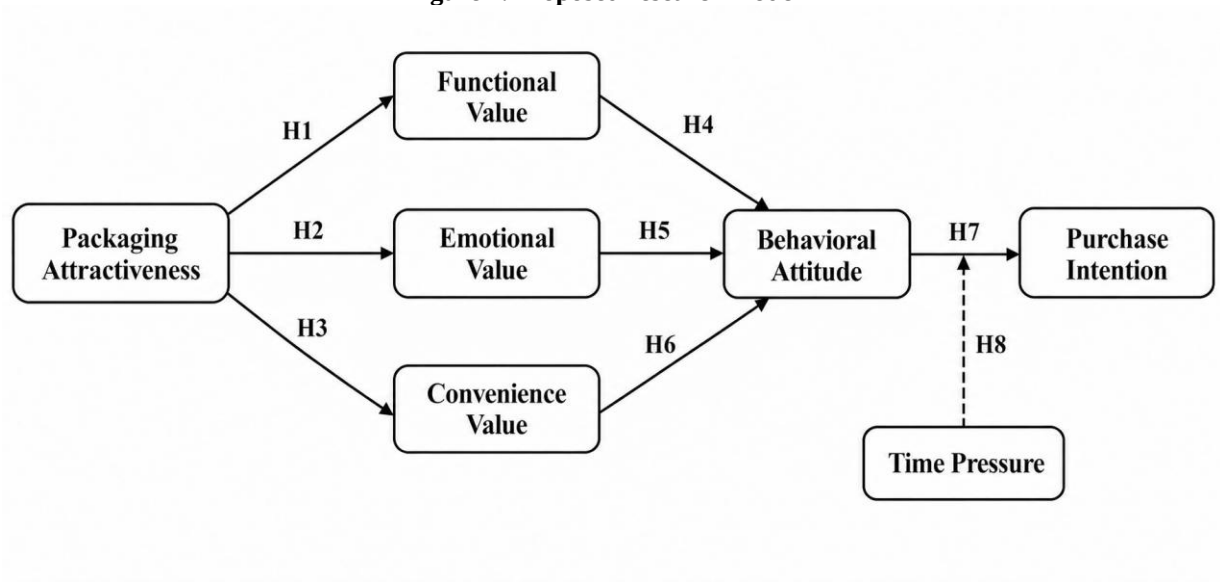
preferences. Time pressure may therefore serve as a boundary condition for the attitude–intention relationship. Given these competing possibilities, the moderating relationship is examined without specifying its direction:
H8: Time pressure moderates the relationship between behavioral attitude and purchase intention toward frozen dumplings.

2.5. Consumer preference among packaging alternatives

In addition to testing the proposed model, a separate research question compares three new packaging designs for frozen dumplings. The first has a transparent window through which consumers can see the frozen product. The second is opaque but displays an image of prepared dumplings. The third is opaque and uses text and graphic elements without a dumpling image. Studies of transparency and product imagery provide a basis for comparing these designs, but their findings do not establish which alternative consumers in Mongolia will prefer for frozen dumplings (Ma et al., 2020; Simmonds et al., 2018). Thus, the design comparison is stated as a research question rather than a directional hypothesis:

RQ1: Which of the three proposed frozen dumpling packaging designs do consumers prefer?
The design-preference question is separate from the structural model. Comparisons among the three alternatives require documentation of their presentation order, the package evaluated in the scale items, and whether brand, quantity, price, and essential information were held constant.

Figure 1. Proposed research model



III. Methodology

3.1. Design and participants

This study employed a cross-sectional online survey conducted in Mongolia through Google Forms from September 15 to October 10, 2026. The minimum sample size was calculated using an assumed population of 3.5 million, a 95% confidence level, a 5% margin of error, and an expected population proportion of 50%. The calculation yielded a minimum requirement of approximately 385 respondents. The final sample comprised 391 respondents, exceeding this numerical requirement. The demographic characteristics of the respondents are presented in Table 1.

3.2. Stimuli and measures

The questionnaire covered packaging attractiveness, functional value, emotional value, convenience value, behavioral attitude, purchase intention, and time pressure. Appendix A presents the English item wording supplied with the manuscript. Packaging attractiveness was estimated as one reflective construct using six indicators covering visual appeal (VA1–VA2), functional design (FD1–FD2), and perceived sustainability (SUS1–SUS2). The other constructs were also specified reflectively. The value, attitude, intention, and time-pressure items were adapted from Zheng et al. (2024). All construct items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire items and their source attributions are presented in Appendix A.

3.3. Analysis

Partial least squares structural equation modeling (PLS-SEM) was conducted in SmartPLS. The measurement model was evaluated using indicator loadings, Cronbach's alpha, rho_A, composite reliability, and average variance extracted, following the reporting framework discussed by Hair et al. (2019). Discriminant validity was examined using the heterotrait–monotrait ratio (HTMT; Henseler et al., 2015), with 0.90 used as the assessment threshold. The structural model included H1–H8, the main effect of time pressure on purchase intention, and the interaction between time pressure and behavioral attitude. Bootstrap t statistics and p values were used to assess the path coefficients and specific indirect relationships. R^2 values summarized in-sample explained variance. The cross-sectional results were interpreted as associations. PLS-SEM was used to estimate the model incorporating multiple perceived value dimensions, sequential indirect relationships, and an interaction effect. Statistical significance was assessed at the 5% level ($p < .05$). Time pressure was included both as a predictor of purchase intention and as a moderator of the relationship between behavioral attitude and purchase intention.

IV. Results

4.1. Respondent characteristics

Table 1. Demographic characteristics of respondents

Characteristic	Category	Frequency	Percentage (%)
Age	18–25 years	190	48.6
	26–35 years	65	16.6
	36–45 years	104	26.6
	46–55 years	22	5.6
	56 years and above	10	2.6
Gender	Male	127	32.5
	Female	264	67.5
Education	High school	143	36.6
	Bachelor's degree	188	48.1
	Master's degree or above	60	15.3

Note. N = 391.

The sample comprised 391 respondents. Women represented 67.5% of participants, while men accounted for 32.5%. Respondents aged 18–25 years constituted the largest age group (48.6%), followed by those aged 36–45 years (26.6%). Regarding educational attainment, 48.1% held a bachelor's degree, 36.6% reported high school education, and 15.3% held a master's degree or above.

4.2. Measurement model assessment

Table 2. Indicator loadings, reliability, and convergent validity

Construct	Indicator	Loading	Cronbach's α	rho_A	CR	AVE
Packaging attractiveness	FD1	0.839	0.872	0.874	0.904	0.610
	FD2	0.837				
	SUS1	0.727				
	SUS2	0.738				
	VA1	0.763				
	VA2	0.776				
Functional value	FV1	0.916	0.912	0.912	0.944	0.850
	FV2	0.936				
	FV3	0.914				
Emotional value	EV1	0.798	0.859	0.881	0.915	0.782
	EV2	0.926				
	EV3	0.922				
Convenience value	CV1	0.908	0.904	0.904	0.940	0.839
	CV2	0.923				
	CV3	0.916				
Behavioral attitude	BA1	0.954	0.906	0.907	0.955	0.914
	BA2	0.958				

Purchase intention	PI1	0.948	0.926	0.929	0.953	0.872
	PI2	0.953				
	PI3	0.900				
Time pressure	TP1	0.901	0.876	0.877	0.924	0.802
	TP2	0.934				
	TP3	0.850				

Note. CR = composite reliability (rho_C); AVE = average variance extracted.

Table 2 presents the indicator loadings, internal consistency reliability, and convergent validity results. Indicator loadings ranged from 0.727 to 0.958. Cronbach's alpha ranged from 0.859 to 0.926, rho_A ranged from 0.874 to 0.929, and composite reliability ranged from 0.904 to 0.955. AVE values ranged from 0.610 to 0.914, indicating substantial shared variance among the indicators of each specified construct. The particularly high composite reliability values for behavioral attitude and purchase intention warrant consideration of potential indicator redundancy. Packaging attractiveness was estimated using six indicators covering visual appeal, functional design, and perceived sustainability; these reliability statistics alone do not establish the unidimensionality of this combined measure.

Table 3. Discriminant validity assessment using HTMT

Construct	BA	CV	EV	FV	PA	PI	TP
BA	—						
CV	0.543	—					
EV	0.885	0.568	—				
FV	0.833	0.555	**0.934**	—			
PA	0.560	0.730	0.607	0.562	—		
PI	**0.950**	0.542	0.853	0.817	0.601	—	
TP	0.559	0.632	0.559	0.512	0.715	0.596	—

Note. BA = behavioral attitude; CV = convenience value; EV = emotional value; FV = functional value; PA = packaging attractiveness; PI = purchase intention; TP = time pressure. Bold values exceed 0.90.

Most HTMT values were below 0.90. However, the HTMT value between functional and emotional value was 0.934, while that between behavioral attitude and purchase intention was 0.950. Discriminant validity was therefore not fully established under the 0.90 criterion (Henseler et al., 2015). These findings indicate substantial empirical overlap between the two construct pairs and require caution when interpreting their structural relationships and distinct mediating roles.

4.3. Explained variance

Table 4. Explained variance of endogenous constructs

Endogenous construct	R^2	Explained variance (%)
Functional value	0.255	25.5
Emotional value	0.280	28.0
Convenience value	0.417	41.7
Behavioral attitude	0.660	66.0
Purchase intention	0.773	77.3

Note. Results correspond to the model including time pressure and the BA × TP interaction.

Packaging attractiveness explained 25.5% of the variance in functional value, 28.0% in emotional value, and 41.7% in convenience value. The three value dimensions jointly explained 66.0% of the variance in behavioral attitude. Behavioral attitude, time pressure, and their interaction jointly accounted for 77.3% of the variance in purchase intention. These results describe the explanatory performance of the model within the analyzed sample.

4.4. Structural model and hypothesis testing

Table 5. Structural relationships and hypothesis testing

Hypothesis / effect	Path	β	t	p	Result
H1	PA → FV	0.505	11.543	<0.001	Supported
H2	PA → EV	0.529	12.496	<0.001	Supported
H3	PA → CV	0.646	15.444	<0.001	Supported
H4	FV → BA	0.303	4.827	<0.001	Supported
H5	EV → BA	0.489	8.243	<0.001	Supported
H6	CV → BA	0.092	2.667	0.008	Supported
H7	BA → PI	0.803	30.353	<0.001	Supported
TP main effect	TP → PI	0.139	4.128	<0.001	Significant
H8	BA × TP → PI	0.012	0.583	0.560	Not supported

Note. β = original-sample path coefficient. Statistical support is assessed at $p < 0.05$ within the specified model, subject to the measurement limitations reported above. H8 concerns time pressure as a moderator of the BA → PI relationship; TP → PI is its main effect.

As shown in Table 5, packaging attractiveness was positively associated with functional value (β = 0.505, t = 11.543, $p < 0.001$), emotional value (β = 0.529, t = 12.496, $p < 0.001$), and convenience value (β = 0.646, t = 15.444, $p < 0.001$). These results provided statistical support for H1, H2, and H3. Functional value (β = 0.303, t = 4.827, $p < 0.001$), emotional value (β = 0.489, t = 8.243, $p < 0.001$), and convenience value (β = 0.092, t = 2.667, p = 0.008) were positively associated with behavioral attitude, supporting H4, H5, and H6. Emotional value exhibited the largest estimated coefficient among the three value dimensions, although differences between these coefficients were not formally tested. Behavioral attitude was positively associated with purchase intention (β = 0.803, t = 30.353, $p < 0.001$), supporting H7. Time pressure also exhibited a positive main effect on purchase intention (β = 0.139, t = 4.128, $p < 0.001$). However, its interaction with behavioral attitude was not statistically significant (β = 0.012, t = 0.583, p = 0.560). Thus, the results did not provide evidence that time pressure moderated the relationship between behavioral attitude and purchase intention.

4.5. Indirect relationships

Table 6. Specific indirect relationships

Indirect path	β	t	p	Result
PA → FV → BA	0.153	4.194	<0.001	Significant
PA → EV → BA	0.259	7.265	<0.001	Significant
PA → CV → BA	0.059	2.673	0.008	Significant
FV → BA → PI	0.243	4.704	<0.001	Significant
EV → BA → PI	0.393	7.922	<0.001	Significant
CV → BA → PI	0.074	2.671	0.008	Significant
PA → FV → BA → PI	0.123	4.107	<0.001	Significant
PA → EV → BA → PI	0.208	7.122	<0.001	Significant
PA → CV → BA → PI	0.048	2.670	0.008	Significant

Note. Statistical significance is assessed at $p < 0.05$. Indirect relationships ending in PI refer to the reference level of time pressure used in the moderation model.

Table 6 reports the specific indirect relationships. Packaging attractiveness was positively associated with behavioral attitude through functional value (β = 0.153, $p < 0.001$), emotional value (β = 0.259, $p < 0.001$), and convenience value (β = 0.059, p = 0.008). Furthermore, functional value (β = 0.243, $p < 0.001$), emotional value (β = 0.393, $p < 0.001$), and convenience value (β = 0.074, p = 0.008) exhibited positive indirect relationships with purchase intention through behavioral attitude. All three sequential indirect pathways from packaging attractiveness to purchase intention were statistically significant within the specified model. These pathways operated through functional value and behavioral attitude (β = 0.123, $p < 0.001$), emotional value and behavioral attitude (β = 0.208, $p < 0.001$), and convenience value and behavioral attitude (β = 0.048, p = 0.008). The pathway through emotional value had the largest numerical coefficient, although differences between the indirect coefficients were not formally tested. The findings are consistent with indirect associations through perceived value and behavioral attitude. However, the cross-sectional design does not establish causal mediation.

Full or partial mediation cannot be classified because the corresponding direct relationships were not estimated alongside these pathways. The observed overlap between functional and emotional value, and between behavioral attitude and purchase intention, also limits conclusions about the distinct mechanisms represented by these indirect relationships.

V. Discussion and Conclusion

5.1. Discussion

This study examined the relationships between packaging attractiveness, perceived value, behavioral attitude, and purchase intention toward frozen dumplings among consumers in Mongolia. It also investigated whether time pressure moderated the relationship between behavioral attitude and purchase intention. The findings suggest that favorable packaging evaluations are associated with purchase intention through consumers' perceptions of functional, emotional, and convenience value and their attitudes toward buying frozen dumplings. However, the measurement overlap between certain constructs requires caution when interpreting these relationships.

Packaging attractiveness was positively associated with all three perceived value dimensions. The coefficient was numerically largest for convenience value ($\beta = 0.646$), followed by emotional value ($\beta = 0.529$) and functional value ($\beta = 0.505$). Differences between these coefficients were not formally tested. These findings suggest that consumers' evaluations of packaging extend beyond its visual appearance and are associated with expectations about the benefits of the product. This interpretation is consistent with the consumption values perspective, which recognizes that consumer choices involve multiple forms of value (Sheth et al., 1991). Nevertheless, the packaging measure combined visual appeal, functional design, and perceived sustainability. Its association with convenience value may therefore partly reflect the inclusion of packaging functionality, particularly ease of storage.

Functional, emotional, and convenience value were each positively associated with behavioral attitude. Emotional value exhibited the largest estimated coefficient ($\beta = 0.489$), followed by functional value ($\beta = 0.303$) and convenience value ($\beta = 0.092$). This pattern suggests that positive feelings, comfort, and reassurance may be relevant to consumers' evaluations of buying frozen dumplings, alongside expected taste, quality, and nutrition. Convenience value also contributed positively, although its coefficient was relatively small when the other value dimensions were included. One possible explanation is that consumers regard convenient storage and preparation as expected characteristics of frozen dumplings. This interpretation remains tentative because the study did not directly measure whether convenience was considered a basic product requirement.

The positive relationship between behavioral attitude and purchase intention ($\beta = 0.803$) is consistent with the attitude–intention proposition of the theory of planned behavior (Ajzen, 1991). Consumers who evaluated buying frozen dumplings more favorably expressed stronger intentions to purchase them. This finding also complements previous Mongolian research linking favorable attitudes toward frozen foods with purchase intention (Ganbold et al., 2024). However, the HTMT value of 0.950 between behavioral attitude and purchase intention indicates substantial measurement overlap. Consequently, the magnitude of this relationship should not be interpreted as unequivocal evidence of a strong relationship between empirically distinct constructs.

The specific indirect relationships provide additional insight into the proposed process. Packaging attractiveness was indirectly associated with purchase intention through each value dimension and behavioral attitude. The pathway through emotional value had the largest numerical coefficient ($\beta = 0.208$), followed by functional value ($\beta = 0.123$) and convenience value ($\beta = 0.048$). These results are consistent with the proposed sequence in which packaging evaluations relate to perceived benefits, which are associated with attitude and purchase intention. They do not establish the temporal or causal order of this process. Furthermore, the HTMT value of 0.934 between functional and emotional value limits conclusions about their distinct mediating contributions.

Time pressure exhibited a positive main effect on purchase intention ($\beta = 0.139$), but its interaction with behavioral attitude was not significant ($\beta = 0.012$, $p = 0.560$). Thus, consumers reporting greater time pressure expressed stronger purchase intentions after accounting for attitude and the interaction term, but the analysis did not provide evidence that time pressure changed the strength of the attitude–intention relationship. This distinction indicates that time pressure may be relevant as an additional correlate of purchase intention without necessarily functioning as a moderator at this particular stage of the model.

5.2. Theoretical and practical implications

The study applies a multidimensional value perspective to packaging evaluations in the Mongolian frozen dumpling market. It connects packaging attractiveness with functional, emotional, and convenience value, while incorporating behavioral attitude as an intervening construct. The results suggest the usefulness of examining packaging evaluations alongside different expected product benefits rather than treating packaging preference alone as an explanation of purchase intention. However, stronger measurement differentiation is

necessary before firm conclusions can be drawn about the separate roles of functional and emotional value. For practitioners, the findings suggest that packaging development should consider consumers' evaluations of appearance, usability, and environmental characteristics together with the benefits communicated about the product. Information concerning taste, quality, nutrition, storage, and preparation may help consumers evaluate frozen dumplings before purchase. Such information should accurately reflect the product's characteristics. The emotional value findings also suggest potential benefits from packaging communication that supports reassurance and positive expectations. Clear preparation instructions, legible product information, and credible quality and food-safety information are practical options to evaluate in subsequent packaging tests. Their individual effectiveness was not tested in the present study. Finally, the structural results do not establish whether a transparent window, a prepared-product image, or a text-and-graphics design is the most effective packaging alternative. Recommendations concerning these specific formats require the separate packaging-preference results and, ideally, controlled comparisons of the designs.

5.3. Limitations and future research

Several limitations should be acknowledged. First, the cross-sectional design prevents causal inference and does not establish whether packaging evaluations precede perceived value, attitude, and purchase intention. Longitudinal studies and controlled experiments could examine these relationships more directly. Second, discriminant validity was not fully established between functional and emotional value or between behavioral attitude and purchase intention. Future research should review item wording, improve conceptual separation, and validate revised measures using an independent sample. Packaging attractiveness also requires further examination because its indicators cover three different content domains. Third, the sample contained a relatively high proportion of women and respondents aged 18–25 years. These characteristics limit the generalizability of the findings to the wider Mongolian consumer population. Future studies could recruit more balanced samples and examine differences across demographic and consumption groups. Fourth, purchase intention was self-reported and may not translate into actual purchasing behavior. Subsequent research could incorporate observed product choices, willingness to pay, or purchase records. The use of a single questionnaire also leaves open the possibility of common method influences. Finally, the nonsignificant interaction applies specifically to time pressure as a moderator of the attitude–intention relationship. It does not establish that time pressure is irrelevant to other stages of consumer decision-making. Future studies could examine theoretically justified alternative relationships using designs and analysis plans specified before testing.

5.4. Conclusion

This study examined the relationships between packaging attractiveness, perceived functional, emotional, and convenience value, behavioral attitude, and purchase intention toward frozen dumplings among 391 consumers in Mongolia. It also assessed whether time pressure moderated the relationship between behavioral attitude and purchase intention. By examining packaging evaluations alongside multiple dimensions of perceived value, the study provides a context-specific account of consumers' purchase intentions in the Mongolian frozen dumpling market.

The results showed that packaging attractiveness was positively associated with all three perceived value dimensions. Functional, emotional, and convenience value were subsequently associated with more favorable behavioral attitudes, which were positively associated with purchase intention. The model explained 66.0% of the variance in behavioral attitude and 77.3% of the variance in purchase intention within the analyzed sample. These findings suggest that consumers' evaluations of frozen dumplings involve a combination of expected product performance, emotional benefits, and convenience.

The three sequential indirect pathways from packaging attractiveness to purchase intention through perceived value and behavioral attitude were statistically significant. The pathway involving emotional value had the largest numerical coefficient, although differences between the indirect pathways were not formally tested. This pattern suggests that positive feelings and reassurance deserve attention alongside taste, quality, nutrition, and ease of preparation when investigating frozen dumpling purchasing decisions.

Time pressure was positively associated with purchase intention, but its moderating effect on the attitude–intention relationship was not statistically significant. Therefore, the findings do not support the proposition that greater time pressure strengthens or weakens the relationship between favorable attitudes and purchase intention in this sample. Its positive main effect instead suggests that time pressure may contribute separately to consumers' interest in purchasing frozen dumplings.

For manufacturers and marketers, the findings highlight the relevance of considering packaging appearance, perceived functionality, and credible product communication together. Packaging decisions may benefit from communicating the product's expected functional and convenience benefits while supporting positive consumer evaluations. However, the structural analysis does not identify which of the three proposed packaging formats consumers prefer or which format would increase actual purchases.

The conclusions should be interpreted within the study's methodological boundaries. The cross-sectional design establishes associations rather than causal effects, and purchase intention does not necessarily translate into purchasing behavior. In addition, the substantial measurement overlap between functional and emotional value, and between behavioral attitude and purchase intention, limits conclusions about their distinct contributions. Future research should strengthen measurement differentiation and test the proposed relationships through controlled packaging experiments and behavioral outcomes. With these qualifications, the study offers an empirical foundation for further research on packaging, perceived value, and frozen food purchasing in Mongolia.

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Appendix A. Questionnaire items and packaging alternatives

The table presents the English item wording supplied for the study. Source labels distinguish adapted items from packaging-related conceptual sources; the final wording and provenance should be confirmed against the questionnaire administered to respondents. Package preference is a separate question from the construct ratings.

Table A1. Questionnaire

Factors	Code	Items	References
Functional Value	FV1	Frozen prepared dishes have a great flavor.	Adapted from Zheng et al. (2024)
	FV2	Frozen prepared dishes are of good quality.	
	FV3	Frozen prepared dishes are very nutritious.	
Emotional Value	EV1	I don't worry about food safety when I eat frozen prepared dishes.	Adapted from Zheng et al. (2024)
	EV2	Frozen prepared dishes make me feel good.	
	EV3	I feel comfortable after consuming frozen prepared dishes.	
Convenience Value	CV1	Frozen prepared dishes are easy to store.	Adapted from Zheng et al. (2024)
	CV2	Frozen prepared dishes are easy to cook.	
	CV3	Frozen prepared dishes save me time and energy in cooking.	
Behavioral Attitude	BA1	For me, the act of buying frozen prepared dishes is beneficial.	Adapted from Zheng et al. (2024)
	BA2	For me, the act of buying frozen prepared dishes is satisfying.	
Purchase Intention	PI1	I will try to buy frozen prepared dishes in the future.	Adapted from Zheng et al. (2024)
	PI2	I would like to purchase frozen prepared dishes in the future.	
	PI3	I intend to purchase frozen prepared dishes in the future.	
Time Pressure	TP1	"So much to do, so little time" is a great quote for me.	Adapted from Zheng et al. (2024)
	TP2	I need more time to get my work done.	
	TP3	I feel like no matter how hard I try, I'll never catch up.	
Visual Appeal	VA1	The colors and visual design of this package are attractive.	Conceptual background: Wei et al. (2014); Schifferstein et al. (2022); item provenance to confirm
	VA2	The overall appearance of this package is aesthetically pleasing.	
Functional Design	FD1	This package appears easy to open.	Conceptual background: Holmes and Paswan (2012);

	FD2	This package appears easy to store.	item provenance to confirm
Sustainability	SUS1	This packaging appears environmentally friendly.	Adapted from Gaiser (2020), drawing on Krah et al. (2019) and Taufik et al. (2020)
	SUS2	This packaging appears to be made from environmentally responsible materials.	