Analysis of the Impact of Visual Elements on Purchase Intention and Product Evaluation Using Kansei (Case Study: Livestock Feed Packaging)

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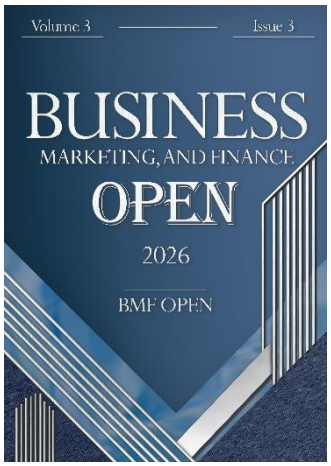

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Abstract: This study aims to examine the influence of visual elements of livestock feed packaging on consumers' product evaluation and purchase intention. The visual elements considered in this research include packaging size, color, font type, and the amount of information displayed on the packaging. In this study, product evaluation by consumers includes assessment of quality, durability, ease of use, safety, and product credibility. Kansei vocabulary in this research was collected using a review of similar studies in the field of industrial product packaging and interviews with practitioners and experts in the livestock feed industry, based on a Kansei engineering approach. The statistical population consisted of livestock feed consumers, and non-probability sampling was applied. Cronbach's alpha was used to assess the reliability of the questionnaire, with an overall reliability coefficient of 0.94 confirming internal consistency, and the questionnaire's validity was approved by marketing experts. Descriptive and inferential statistics were employed to analyze the data. The results obtained from hypothesis testing related to the dimensions of color, size, information display, and font type indicated that all visual elements examined differed in their effects on purchase intention and product evaluation among livestock feed consumers, and that product evaluation and purchase intention vary across different conditions. Therefore, the findings suggest that marketing managers should consider the effects of various packaging elements and design optimal packaging configurations that create competitive advantage for companies engaged in packaging production as well as for commercial firms operating in this sector.

Keywords: Kansei vocabulary, packaging, visual packaging elements, livestock feed, product evaluation, purchase intention.

1. Introduction

Packaging has become a central component of contemporary marketing strategy, functioning not only as a protective container but also as a powerful medium of communication that shapes consumer perceptions, emotions, and behavior at the point of purchase [1, 2]. In cluttered retail environments where many products share similar functional attributes, visual design elements of packaging—such as color, typography, size, and the amount of on-pack information—serve as critical cues that help consumers simplify decisions and infer product quality, safety, and brand credibility [3, 4]. This role of packaging is especially pronounced in low-involvement or habitual categories, where quick, heuristic-based decisions are common and shoppers often rely more on visual impressions than on detailed analytical processing [5, 6]. In such contexts, even subtle changes in visual appearance can tilt attention, influence affective responses, and ultimately drive or deter purchase intention [7, 8].

Within the broader literature on consumer behavior and branding, visual packaging design is typically conceptualized as part of the external stimuli that interact with consumers' internal psychological processes to shape responses such as evaluation, preference, and intention to buy [2, 9]. Research grounded in stimulus–organism–response (S–O–R) models shows that semiotic and aesthetic cues on packaging influence perceptions of brand image, perceived quality, and loyalty, which in turn support stronger purchase intentions [9, 10]. Semiotic elements—such as symbols, color schemes, layout, and typography—carry meaning beyond their literal content, signaling attributes like naturalness, safety, or professionalism [4, 10]. At the same time, broader brand-related factors such as brand familiarity, corporate social responsibility, and brand-based performance also shape how consumers interpret and evaluate packaged offerings, especially when visual cues are ambiguous or when cognitive effort is limited [11-13].

Color is one of the most intensively researched elements of packaging design because it is processed quickly and has strong associations with product attributes and emotions [3, 14]. Empirical studies show that color lightness and hue shape judgments of durability, user-friendliness, and perceived functional performance; darker tones are often linked to robustness and longevity, whereas lighter tones may signal ease of use and accessibility [15]. In food and beverage categories, cross-modal research further demonstrates that visual cues such as color interact with olfactory and other sensory stimuli to alter taste expectations and perceived flavor intensity [16]. These findings underscore that packaging color is not merely an aesthetic choice but a strategic signal that can frame consumer expectations about quality, safety, and performance long before product usage [14, 16]. In categories where functional risk or health-related concerns are salient, such as food and agribusiness, color choices may be particularly consequential for perceived trustworthiness and purchase intention [6, 8].

Typography and the overall graphic layout also play a central role in packaging effectiveness. The choice of font type, size, and hierarchy influences perceived modernity, authenticity, and professionalism, while simultaneously affecting legibility and cognitive load [4, 17]. Studies on displayability and findability of packaged goods show that differentiated design and carefully structured text hierarchies improve shelf visibility and ease of search, enhancing the likelihood that consumers will notice and consider the product in the first place [5, 17]. Label placement, eye-tracking evidence, and layout research further reveal that strategic positioning of key information and symbols on the front of the pack directs visual attention to specific attributes—such as environmental friendliness or health claims—thereby shaping both cognitive evaluation and emotional response [18, 19]. When typography and graphic layout align with category norms and brand positioning, they can reinforce brand image and make the product feel more coherent, reliable, and easy to process [2, 19].

Another important dimension of packaging design is information load and content. On-pack information can reduce perceived risk, support informed decision-making, and signal transparency, but excessive detail may overwhelm consumers or increase perceived complexity [1, 3]. Research indicates that detailed information can enhance perceived credibility and functional value, especially when the product is technically complex or safety-sensitive, whereas more concise information may be preferred in fast-moving, low-involvement purchase situations [8, 11]. Eye-tracking and attention studies suggest that consumers are subject to top-down attentional biases: what they already care about or expect to see directs their focus towards specific textual cues and icons, which in turn influence choice behavior [5]. In agrifood and traditional product contexts, packaging that clearly communicates origin, authenticity, or product benefits can become a persuasive instrument for differentiating brands and persuading buyers at the point of sale [10, 20].

In recent years, Kansei engineering has emerged as a particularly promising approach for systematically linking visual and structural design attributes of products and packaging to the emotions, impressions, and semantic associations they elicit in consumers [21]. Kansei engineering aims to translate consumers' subjective feelings—captured through Kansei words such as "reliable," "luxurious," or "user-friendly"—into concrete design parameters, enabling firms to create products that resonate more deeply at an emotional level [21, 22]. Applications of Kansei methods to packaging have shown that specific combinations of color, typography, shape, and material can be optimized to evoke desired affective responses and improve perceived quality, attractiveness, and willingness to buy [23, 24]. For instance, Kansei-based studies in chocolate and dairy products demonstrate that design configurations tuned to consumer emotions significantly enhance perceptions of taste, trust, and premium value, which, in turn, strengthen purchase intention [23, 24].

Evidence from both international and local markets emphasizes that the influence of packaging aesthetics is not limited to fast-moving consumer goods in urban retail chains. Research on snack food packaging, ready-to-eat products, nuts and dried fruit, and traditional goods all point to the strategic role of visual design elements in shaping attention, brand experience, and purchase decisions [8, 19, 20, 25]. Studies on ready-to-eat products, for example, highlight the importance of aesthetic coherence between imagery, color palette, and typography in forming brand preference and perceived convenience, particularly when time pressure and impulse buying are common [19]. Similarly, content analyses of packaging in categories like nuts and dried fruits show that the presence and configuration of specific visual cues—such as natural imagery, color codes, and quality seals—are associated with stronger intentions to purchase [25]. These findings resonate with the broader literature on visual merchandising and display, which underscores that what consumers "see" on the shelf often shapes what they ultimately "want" and choose [4, 5].

Digitalization and global competition have added further complexity to packaging decisions, as brands must coordinate offline packaging design with online visual communication and evolving consumer expectations [12, 13]. Global segmentation research in fashion and sportswear markets reveals that visual marketing elements must be tailored to diverse cultural segments while still maintaining a coherent brand identity across markets [13]. In parallel, recent studies in visual marketing emphasize how visual elements—ranging from color schemes and imagery to layout and typography—contribute to customer satisfaction, brand experience, and long-term relational outcomes [7, 26]. For instance, empirical evidence in the tea bag category indicates that visual packaging elements shape purchase intention both directly and indirectly through brand experience, suggesting that design decisions should be evaluated not only for their immediate attention-grabbing power but also for their ability to build meaningful, memorable experiences over time [26].

Despite these advances, several gaps remain in the literature. First, much of the research on packaging design focuses on consumer goods such as snacks, beverages, and personal care products, with relatively limited attention to industrial or semi-industrial categories like livestock feed, where purchase decisions may be shaped by a blend of professional expertise, perceived functional risk, and emotional reassurance [8, 25]. Second, although many studies examine individual elements such as color, label placement, or branding in isolation, fewer works integrate multiple visual components—color temperature (warm vs. cool), font type, information load (detailed vs. brief), and packaging size—within a unified Kansei framework that explicitly captures emotional evaluation and purchase intention [14, 18, 23]. Third, there is a need for context-specific research in agrifood and livestock-related markets, where packaging must simultaneously convey technical information (e.g., nutritional content, safety and handling

instructions) and project a reliable, professional, and environmentally responsible image to buyers who often make repeated, high-volume purchases [10, 20].

Taken together, the literature on consumer behavior, visual marketing, and Kansei engineering suggests that visual packaging elements can profoundly influence both product evaluation and purchase intention, but the combined effects of color, typography, information display, and size in the context of livestock feed remain underexplored [1, 2, 14, 21]. Accordingly, the aim of this study is to examine how visual elements of livestock feed packaging—specifically color, font type, information load, and package size—affect consumers' product evaluation and purchase intention using a Kansei engineering approach.

2. Methodology

The present study, in terms of its objective, is classified as an applied research project, and in terms of its nature, it falls within descriptive–survey research. The statistical population of this study consists of livestock feed consumers in Isfahan Province, without considering any specific livestock feed brand. Out of a total of 340 remaining units, 280 units agreed to participate in the questionnaire survey, and using Cochran's formula for a finite population, 162 participants were selected to complete the study. The sampling method was non-probabilistic. To obtain the required information from the statistical population, a researcher-made questionnaire based on semantic differential scales was used to measure the variables on a seven-point Likert scale.

To collect Kansei vocabulary relevant to the study, two sources were utilized: (a) similar research conducted on product evaluation and purchase intention using Kansei vocabulary, and (b) interviews with experts in the livestock and poultry industry, sales representatives, research-and-development managers, and specialists working in livestock production. The relevant Kansei vocabulary was extracted, and at the end, four words with the highest frequency were selected. It should be noted that greater importance was assigned to the vocabulary emphasized by industry experts.

Table 1. Extraction of Kansei Vocabulary Related to the Study from Interviews with Practitioners

Interviewee	Position	Interview Type	Duration	Kansei Words or Expressions Used Regarding Visual Elements
1	Livestock consultant	In-person	40 minutes	Quality, product authenticity, safety, company confidence, durability, sense of history, practicality
2	R&D manager, livestock feed factory	Remote via WhatsApp	30 minutes	Ease of use, user-friendliness, quality, brand popularity, ease of transport, simplicity
3	Livestock feed sales representative	Remote – phone	30 minutes	Product authenticity, attractiveness, user-friendliness, quality, safety, wholesomeness
4	Livestock farm production manager	Remote – Google Meet	35 minutes	Ease of transport, reliable performance, brand maturity, assurance, health, affordability
5	Livestock specialist	Remote – phone	30 minutes	Brand confidence, superior company, authenticity, user-friendliness, resistant, ease of transport
6	CEO, livestock farm	Remote – phone	30 minutes	Cost-effectiveness, luxury, environmental sustainability, simplicity, proven performance, durability, weighing accuracy, ease of transport, brand trust, user-friendliness
7	Livestock consultant	Remote – phone	20 minutes	Product authenticity, brand trust, brand maturity, safety, health, quality
8	Livestock specialist	Remote – phone	25 minutes	Resistant, environmentally friendly, user safety, ease of use (user-friendliness), durability

To collect packaging samples based on Kansei methodology, several livestock feed packages with the desired characteristics (color, size, and information display) were selected from among brands identified in the preliminary

study and then included in the research. Among more than 15 available brands in the Iranian livestock feed market, the sample that possessed the characteristics required for analyzing the four selected visual elements was chosen. Subsequently, the images were modified for inclusion in the questionnaire.

In this study, face validity was assessed, and the opinions of three livestock feed experts, two R&D specialists in animal products, and two professionals in livestock feed packaging design were obtained. The reliability of the measurement tool was calculated using Cronbach's alpha in SPSS 24.

Table 2. Cronbach's Alpha Values for the Study Questionnaire

Scale	Cronbach's Alpha
Red color	0.905
Blue color	0.930
Title font	0.925
Ferdowsi font	0.939
Detailed information	0.946
Brief information	0.945
25-kg weight	0.903
40-kg weight	0.927
Total	0.941

Because the alpha coefficient was equal to or greater than 0.70, the measurement instrument was considered highly reliable.

Figure 1. Packaging Images Used in the Questionnaire

In this research, consumer evaluation was measured based on Kansei vocabulary. Specifically, after displaying an image of the product packaging with one of the selected visual and verbal elements, the Kansei vocabulary evaluation form was presented to the respondent to determine their evaluation. Additionally, at the end of the questionnaire, respondents were asked to select, from among the functional features of packaging listed, the feature

that was evoked in them upon viewing the image. These four selected features were chosen from among ten based on the average scores of respondents' evaluations. In evaluating each of the packaging elements, efforts were made to eliminate the effects of other elements. To remove the effect of brand cues on consumer evaluation, the brand logo was removed from the packaging.

For the purpose of statistical data analysis, after data collection, screening, entry, and database creation, descriptive and inferential statistics were used to test the hypotheses. SPSS 24 was employed for data analysis. Linear regression, ANOVA, and the Friedman test were used as analytical techniques.

3. Findings and Results

The demographic data of the study sample are described as follows:

– 73% of participants in this study were male, and the remainder were female.

– The highest frequency belonged to the age group 41–50 years, with 29.4%, followed by the age group 21–30 years with 21.5%.

– The majority of participants were employed in livestock farms (23.3%), followed by livestock feed factories (20.2%).

– The highest frequencies belonged to participants with a bachelor's degree (41.7%) and a master's degree (31.3%).

– The highest frequency among job positions belonged to managers (36.2%), followed by specialists (31.3%).

Next, the research hypotheses are tested:

1. The use of warm and cool color ranges on livestock feed packaging affects product evaluation.
2. The use of warm and cool color ranges on livestock feed packaging affects purchase intention.

To test this hypothesis, a regression analysis was used, and the results are presented in Tables 3 and 4.

Table 3. Simple Regression for Warm and Cool Color Range on Packaging (Red Color)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.840	0.706	384.159	19.600	$p < 0.001$
Purchase Intention	0.774	0.600	239.703	15.482	$p < 0.001$

The results of the table indicate that the use of warm and cool color ranges on packaging (red color) has a significant effect on product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.840, and the R^2 value is 0.706, showing that 70.6% of the variance in product evaluation feeling is explained by red packaging color. Since the significance level for both the F statistic and t-test is less than 0.001, this relationship is statistically significant.

Furthermore, the effect of red packaging color on purchase intention is also considerable. The path coefficient for this relationship is 0.774, and R^2 equals 0.600, indicating that 60% of the variance in purchase intention is explained by red packaging color. Since the significance levels for both the F statistic and t-test are below 0.001, this relationship is statistically significant.

Table 4. Simple Regression for Warm and Cool Color Range on Packaging (Blue Color)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.848	0.719	409.840	20.244	$p < 0.001$
Purchase Intention	0.855	0.731	434.624	20.484	$p < 0.001$

The results of the table indicate that the use of warm color ranges on packaging (blue color) has a significant effect on product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is

0.848, and the R^2 value is 0.719, showing that 71.9% of the variance in product evaluation feeling is explained by blue packaging color. Since the significance levels for both the F statistic and t-test are less than 0.001, this relationship is statistically significant.

Additionally, the effect of blue packaging color on purchase intention is noteworthy. The path coefficient for this relationship is 0.855, and R^2 equals 0.731, indicating that 73.1% of the variance in purchase intention is explained by blue packaging color. Since the significance levels for both the F statistic and t-test are below 0.001, this relationship is statistically significant.

- The font on the packaging affects product evaluation.
- The font on the livestock feed packaging affects purchase intention.

To test this hypothesis, a regression analysis was used, and the results are shown in Tables 5 and 6.

Table 5. Simple Regression for Packaging Font (Title Font)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.864	0.747	472.377	21.734	$p < 0.001$
Purchase Intention	0.825	0.680	340.289	18.447	$p < 0.001$

The results indicate that the use of the title font in packaging design has a significant effect on product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.864, and the R^2 value is 0.747, meaning that 74.7% of the variance in emotional product evaluation is explained by the title font. The F statistic is 472.377, and the t-value is 21.734; with $p < 0.001$, this effect is statistically significant.

For purchase intention, the results also show that the title font has a significant effect. The path coefficient is 0.825, and R^2 equals 0.680, indicating that 68% of the variance in purchase intention is explained by this font. The F statistic equals 340.289, and the t-value equals 18.447, with $p < 0.001$, confirming statistical significance.

Table 6. Simple Regression for Packaging Font (Ferdowsi Font)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.863	0.744	466.068	21.589	$p < 0.001$
Purchase Intention	0.868	0.753	488.146	22.094	$p < 0.001$

The results show that the use of the Ferdowsi font in packaging design significantly affects product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.863, and the R^2 value is 0.744, meaning that 74.4% of the variance in emotional product evaluation is explained by the Ferdowsi font. The F statistic equals 466.068, and the t-value equals 21.589; with $p < 0.001$, this relationship is statistically significant.

Regarding purchase intention, the results indicate that the Ferdowsi font has a significant effect. The path coefficient is 0.868, and the R^2 value is 0.753, indicating that 75.3% of the variance in purchase intention is explained by this font. The F statistic is 488.146, and the t-value is 22.094; with $p < 0.001$, this effect is statistically significant.

- Packaging size affects product evaluation.
- Packaging size affects purchase intention.

To test this hypothesis, a regression analysis was used, and results are shown in Tables 7 and 8.

Table 7. Simple Regression for Packaging Size (25 kg Weight)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.808	0.653	301.498	17.364	$p < 0.001$
Purchase Intention	0.810	0.654	305.893	17.490	$p < 0.001$

The results show that packaging size (25 kg) has a significant effect on product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.808, and R^2 equals 0.653, indicating that 65.3% of the variance is explained by packaging size. The F statistic equals 301.498, and the t-value is 17.364; with $p < 0.001$, the relationship is statistically significant.

For purchase intention, the path coefficient equals 0.810, and R^2 equals 0.654, indicating that 65.4% of the variance in purchase intention is explained by packaging size. The F statistic equals 305.893, and the t-value equals 17.490; with $p < 0.001$, the relationship is statistically significant.

Table 8. Simple Regression for Packaging Size (40 kg Weight)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.837	0.700	373.150	19.317	$p < 0.001$
Purchase Intention	0.802	0.644	288.991	17.000	$p < 0.001$

The results show that packaging size (40 kg) has a significant effect on product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.837, and R^2 equals 0.700, meaning that 70% of the variance in emotional product evaluation is explained by packaging size. The F statistic is 373.150, and the t-value is 19.317; with $p < 0.001$, this relationship is statistically significant.

For purchase intention, the path coefficient is 0.802, and R^2 equals 0.644, indicating that 64.4% of the changes in purchase intention are explained by packaging size. The F statistic equals 288.991, and the t-value equals 17.000; with $p < 0.001$, this relationship is statistically significant.

- The amount of information displayed on livestock feed packaging affects product evaluation.
- The amount of information displayed on livestock feed packaging affects purchase intention.

To test this hypothesis, regression analysis was used, and the results are shown in Tables 9 and 10.

Table 9. Simple Regression for Displayed Information (Detailed Information)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.854	0.729	233.368	20.757	$p < 0.001$
Purchase Intention	0.832	0.692	223.944	18.970	$p < 0.001$

The results indicate that providing detailed information on the packaging has a significant effect on product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.854, and R^2 equals 0.729, showing that 72.9% of the variance is explained by detailed information. Since $p < 0.001$ for both the F statistic and t-test, this relationship is statistically significant.

For purchase intention, the path coefficient is 0.832, and R^2 equals 0.692, indicating that 69.2% of the variance in purchase intention is explained by detailed packaging information. With $p < 0.001$, the relationship is statistically significant.

Table 10. Simple Regression for Displayed Information (Brief Information)

Variable	Path Coefficient	R^2	F Change	t-Test	Significance Level
Product Evaluation Feeling	0.884	0.781	570.864	23.893	$p < 0.001$
Purchase Intention	0.843	0.710	392.379	19.809	$p < 0.001$

The results show that providing brief information on packaging significantly affects product evaluation feeling and purchase intention. The path coefficient for product evaluation feeling is 0.884, and R^2 equals 0.781, meaning that 78.1% of the variance in product evaluation feeling is explained by brief information. The F statistic equals 570.864, and the t-value equals 23.893; with $p < 0.001$, this relationship is statistically significant.

For purchase intention, the path coefficient equals 0.843, and R^2 equals 0.710, indicating that 71% of the variance in purchase intention is explained by brief packaging information. The F statistic equals 392.379, and the t-value equals 19.809; with $p < 0.001$, this relationship is statistically significant.

4. Discussion and Conclusion

The purpose of this study was to investigate how four key visual packaging elements—color (warm vs. cool), typography (Title vs. Ferdowsi fonts), packaging size (25 kg vs. 40 kg), and information load (detailed vs. brief)—influence product evaluation and purchase intention in the context of livestock feed, using a Kansei engineering approach. The findings across all tested hypotheses consistently demonstrated that each visual element significantly influenced both emotional product evaluation and intention to purchase. These results reinforce the central premise of Kansei engineering that consumers' emotional responses to design attributes can be systematically measured and translated into meaningful behavioral outcomes [21].

The results for color indicated that both warm (red) and cool (blue) tones significantly shaped consumers' perceptions of product quality, safety, and reliability, as well as their willingness to purchase the product. This aligns with long-standing evidence that consumers rely heavily on color as an immediate heuristic for inferring product attributes and evaluating trustworthiness [14]. The high explanatory power of color on product evaluation (over 70% for both hues) is consistent with research showing that color lightness and chromatic features influence judgments of durability, usability, and functional expectations [15]. The strong effect on purchase intention also corroborates studies demonstrating that visual cues—especially color—act as powerful stimuli that shape emotional and cognitive responses before any detailed information is processed [7, 8]. Furthermore, the cross-modal theory that visual stimuli interact with other sensory expectations can help explain why specific colors may influence perceptions of safety and performance even in non-food industrial categories such as livestock feed [16].

The significant effect of typography on both product evaluation and purchase intention is also in line with prior research indicating that font type conveys implicit meanings regarding professionalism, heritage, modernity, and brand credibility [4, 17]. The strong predictive power of both fonts tested (Title and Ferdowsi) supports earlier work suggesting that typographic choices impact findability, readability, perceived quality, and even product distinctiveness on crowded shelves [17]. The emotional resonance detected through Kansei evaluation is consistent with findings from aesthetic packaging research, where typography serves as a key cue for shaping brand personality and trust [19, 24]. Moreover, the effect of typography on purchase intention aligns with global research on visual marketing segmentation, which highlights the role of culturally appropriate and contextually coherent design in enhancing consumer engagement across product categories [13].

The significant impact of packaging size on product evaluation and purchase intention is consistent with studies indicating that structural packaging cues influence perceptions of product value, durability, and practicality [1, 2]. In industrial markets, package size signals economic efficiency, stability, and reliability, attributes particularly relevant to bulk-purchase categories such as livestock feed. The present findings, showing strong predictive power for both 25 kg and 40 kg packaging, align with evidence from food and commodity markets where packaging size shapes not only logistical considerations but also inferred product quality and trustworthiness [8]. The strong

emotional responses captured through Kansei evaluation may reflect perceived fit between packaging size and functional needs, echoing earlier findings that large-format packaging can evoke associations of value, strength, and dependability [6].

Finally, the results for information load revealed that both detailed and brief information significantly influenced product evaluation and purchase intention, though detailed information slightly outperformed concise information in explanatory power. This reinforces previous research showing that information clarity enhances transparency, reduces perceived risk, and fosters credibility—especially in product categories requiring technical knowledge or reassurance regarding quality and safety [11]. At the same time, the strong effect of brief information resonates with findings that consumers often prefer simplified cues in fast decision-making contexts, where cognitive effort is minimized [3]. The dual efficacy of both formats aligns with semiotic packaging research demonstrating that symbolically rich cues—whether textual or visual—serve as meaningful triggers for purchase decisions [10]. The findings also echo work in packaging research showing that information architecture must balance comprehensiveness with accessibility to optimize consumer understanding and behavioral outcomes [18].

Taken together, the study's results confirm that visual packaging elements are not merely aesthetic decisions; rather, they are strategic components of consumer communication that evoke consistent emotional and cognitive responses measurable through Kansei engineering. This finding echoes earlier work demonstrating that visually-driven marketing elements significantly shape satisfaction, brand experience, and consumer reactions across diverse product categories [7, 26]. It also supports research indicating that top-down attentional processes influence consumer choice—what individuals pay attention to visually becomes what they are most likely to evaluate positively and ultimately purchase [5]. The emotional responses identified through Kansei evaluation reinforce the broader theoretical perspective that product design should reflect not only functional performance but also consumer psychology and affective expectations [22, 23].

The convergence of findings across visual elements also speaks to the integrative nature of packaging design. Research consistently highlights that packaging functions as a multi-layered communication system, where color, typography, structure, and information work together to shape holistic brand perception [1, 4]. The strong effects across all tested factors suggest that the livestock feed market, like many other categories, is influenced by the interplay of emotional, cognitive, and functional perceptions shaped by packaging. This complements studies in socially sensitive markets—such as environmentally friendly products, traditional goods, and global sportswear—showing that packaging is an important differentiator and a vehicle for conveying brand values, authenticity, and environmental responsibility [10, 13, 20].

Overall, the study expands the existing literature by demonstrating that Kansei-based packaging evaluation is highly applicable to livestock feed products—an area that has received limited academic attention compared to consumer goods such as snacks, beverages, and household items. By empirically testing multiple visual elements simultaneously, the study provides a more holistic view of how design choices influence emotional evaluation and purchase intention in semi-industrial markets. This contributes to a more comprehensive understanding of packaging's role in shaping buyer perceptions, particularly where product functionality must be communicated alongside emotional reassurance and brand trust [23, 24].

This study, despite its contributions, has several limitations. First, the research was conducted within a single geographical region, which may limit the generalizability of the findings to other provinces or countries with different market dynamics, cultural expectations, or livestock industry structures. Second, the use of non-probability sampling restricts the representativeness of the sample, even though the sample size was adequate for

statistical analysis. Third, the study relied on static images of packaging rather than three-dimensional or tactile interactions, which may not fully capture the multisensory nature of real-world packaging evaluation. Fourth, the study focused solely on four visual elements—color, typography, size, and information load—while other potentially influential elements such as imagery, material texture, label shape, or sustainability cues were excluded. Finally, emotional evaluations were measured using Kansei vocabulary, which may not reflect the full range of nuanced affective responses experienced by consumers in actual purchasing contexts.

Future studies should expand the sample to multiple regions and include different livestock-related product categories to enhance generalizability. Researchers may also consider employing probability-based sampling or mixed-method approaches to increase representativeness and depth of insights. Additionally, incorporating multimodal evaluations—such as tactile interaction, augmented reality simulations, or shelf-display experiments—could capture more realistic consumer experiences. Future work could also explore additional packaging elements, such as materials, graphics, eco-labeling, or structural design innovations, to determine their emotional and behavioral impact. Longitudinal or experimental studies may provide further insight into how repeated exposure to specific packaging attributes influences brand loyalty or long-term purchasing behavior. Finally, integrating neuro-marketing tools such as eye-tracking, EEG, or biometric measures may offer a deeper understanding of subconscious responses to packaging.

Manufacturers and marketers should consider optimizing visual packaging elements to strengthen both product evaluation and purchase intention. Firms may benefit from using color schemes strategically to convey quality, safety, or brand positioning within the livestock market. Typography should be selected to ensure both emotional appeal and functional readability, while packaging size should align with consumer expectations regarding convenience and value. Companies should balance detailed and simplified information based on consumer needs, presenting essential cues clearly while avoiding unnecessary complexity. Finally, adopting a Kansei engineering framework can help firms systematically translate consumer emotions into design features, thereby enhancing product competitiveness and differentiation in increasingly crowded markets.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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