

Design Thinking in Menu Development with A Focus on Food Visual Aesthetics: Influence on Consumer Foodstagramming Behavior

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ABSTRACT

The rapid growth of the Food and Beverage (F&B) industry in Surabaya has cultivated a highly competitive landscape, where business success is no longer determined solely by taste but also by visual aesthetics capable of triggering digital interaction. This study aims to identify the food visual aesthetic elements most relevant to Generation Z and Millennials and analyze their influence on foodstagramming behavior on Instagram. Employing a mixed-methods approach with a sequential exploratory strategy, the first phase utilized the Design Thinking framework from Empathize to Prototype to explore visual preferences through in-depth interviews with 24 respondents. Qualitative findings identified five key elements: contrasting colors, highlighted textures, strategic tableware selection, functional garnishing, and compositional balance. These elements were then manifested into three innovative menu prototypes as visual stimuli. In the second phase, quantitative testing was conducted on 139 respondents using Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis. The results demonstrate that visual aesthetic perception has a positive and significant influence on sharing intentions (foodstagramming), with a path coefficient of 0.676. Furthermore, a ceiling effect phenomenon (zero variance) was observed in responses to the innovative prototypes, empirically confirming that the human-centered design intervention achieved a maximum consensus of satisfaction. This study concludes that visual aesthetics are not merely supplementary but serve as a strategic trigger for generating organic promotion through User Generated Content (UGC).

INTRODUCTION

Eating out has become increasingly popular among Indonesians, contributing to the rapid growth of the culinary business sector (Abdullah et al., 2023; Astuty, 2025; Colozza, 2024; Wulandari et al., 2026; Yatusman et al., 2023). According to the Central Statistics Agency of the City of Surabaya, the number of restaurants in 2023 was 2,173, and this increased to 2,780 in 2024. In addition, BPS Surabaya City (2025) released a recapitulation for 2020–2024 regarding the issuance of Tourism Business Registration Certificates (Tanda Daftar Usaha Pariwisata [TDUP]) in the tourism industry, which is dominated by the Food and Beverage (F&B) sector. This indicates that the tourism industry, especially the restaurant sector, remains a preferred business field among entrepreneurs in Surabaya, resulting in increasingly intense

competition within the F&B industry (Iradawati, 2024; Parthasarathi & Ongkowijoyo, 2025; Pratiwi et al., 2025).

This trend is further supported by data from DataIndonesia by Sadya (2023), which recorded that 43% of respondents reported eating out or purchasing takeout food several times a week. This trend has triggered the rapid expansion of the Food and Beverage (F&B) industry in Indonesia. However, in today's digital era, the success of an F&B business is determined not only by the taste of the food but also by its ability to present visually appealing dishes that align with social media trends. The design thinking approach can serve as an effective solution for F&B businesses to address these challenges by enabling them to understand consumers' visual preferences and develop dishes that satisfy not only appetites but also contemporary aesthetic expectations.

The development of technology and social media plays an important role in the growth of the F&B industry (Aldabous, 2024; Sarkis et al., 2025; Singh et al., 2025). By emphasizing visual content, Instagram has become an effective promotional platform for F&B businesses. Instagram functions as a promotional medium requiring relatively low capital investment while exerting a strong persuasive effect through visual imagery alone (Kusumasondjaja et al., 2019). Based on data from NapoleonCat.com (2025), the number of Instagram users in Indonesia reached 90,183,200, equivalent to 32% of the total population, dominated by individuals aged 18 to 34 years old (Gen Z and millennials). In this digital era, the visual presentation of food has transformed into a strategic factor that influences consumer appeal, culinary marketing, and even the success of menu items. According to Johnson (2015), food is the most popular product promoted through Instagram. Creating visually appealing food imagery can stimulate audiences' appetites even before the food is experienced through the senses (Young, 2015). For culinary enthusiasts, food and beverages are no longer viewed solely as necessities to satisfy hunger and thirst. This demonstrates Instagram's significant potential as a platform for showcasing food visual aesthetics and reaching relevant target audiences.

Instagram has become a major platform for food promotion, with active users such as Gen Z and millennials frequently sharing food photographs. Taking and sharing photos of food has become an increasingly common practice within hospitality settings (Tandoh, 2016). The trend of uploading food photographs has become widespread and highly popular in the food service industry (Murphy, 2010). Sharing daily activities on social media has become a social norm, particularly the sharing of food photographs, commonly referred to as foodstagramming (Huynh, 2016), in which individuals upload photos of food to social media before eating. This phenomenon demonstrates that food-sharing behavior is not merely personal but also forms social trends with implications for visual marketing strategies in the culinary industry. Foodstagramming emerged to reflect this social phenomenon in the dining context (Wong et al., 2019). This trend reflects a shift in consumer behavior, where consumers seek not only to fulfill basic needs but also to obtain visual experiences that can be curated and shared online. Consequently, this creates opportunities for F&B businesses to utilize food visual aesthetics as an effective marketing tool.

Menu innovation is an important aspect that must be considered by businesses operating in the culinary sector, such as restaurants and cafés. Menu innovation allows restaurants to continuously update and improve their offerings according to consumer expectations and preferences. By introducing new dishes, variations of existing menu items, or experimenting

with flavors and presentations, restaurants and cafés can address changing consumer demands while providing fresh and exciting culinary experiences. Food presentation is another essential aspect of the culinary world, involving the visual arrangement and presentation of food before it is served to consumers. According to Khan (1998), the appearance of food greatly influences the sense of sight. Visual perception, which is sensitive to intrinsic elements such as color, shape, and texture, becomes a determining factor before food is tasted because visual stimuli trigger strong sensory expectations. The combination of attractive colors, appealing shapes, harmonious food textures, and consistency can stimulate consumers' appetites and enhance enjoyment of the dining experience. Mejova et al. (2016) found that foods with visually attractive elements tend to generate higher levels of interaction on social media, including likes and comments.

In the F&B industry, this phenomenon represents both an opportunity and a challenge. Restaurants no longer compete solely on taste or price but also on their ability to serve Instagrammable menu items, namely dishes that fulfill consumers' visual aesthetic expectations. Visual elements such as creative plating, the use of unique ingredients, and decorative garnishes can create emotional connections with consumers, thereby increasing engagement both within the restaurant and through social media activities (Izzudin et al., 2024). However, creating Instagrammable food requires a strategic approach. Restaurants must understand consumer preferences regarding the visual elements that attract the greatest attention. For example, younger consumers such as Gen Z and millennials are more attracted to foods featuring bright colors, unique shapes, and decorative components such as edible flowers. This trend significantly influences how restaurants design menu items and create memorable dining experiences for consumers. Food visual aesthetics create a new reality in which food is evaluated not only by taste but also by its ability to create visual experiences that encourage interaction on social media, which functions not only as a platform for sharing references but also as a tool for discovering food and restaurant recommendations that influence dining decisions. Research conducted by Zizzi Restaurants, as quoted by Hosie (2017) in *The Independent*, revealed that 18% of consumers choose restaurants based on the visual appeal of food seen on Instagram, while 30% admitted to ordering food simply because it appeared "Instagrammable."

One practice that contributes significantly to food visual aesthetics is food presentation. According to Azizah (2008), food presentation is the final factor in the process of organizing food menus. Even when food is well prepared, its value may not be fully appreciated if its visual presentation is unappealing, as the appearance of food stimulates the sense of sight and influences taste perception. Food styling refers to the technique of preparing and arranging food to make it visually appealing for photography and videography. It involves elements such as color and texture to produce appetizing visual representations of food. On the other hand, food plating focuses on the art of arranging food on a plate or serving container, emphasizing visual composition, balance, and harmony among the dish components. As stated by Rao (2020), "Plating of food refers to the arrangement and presentation of food to help increase the upscale of food in a restaurant," which was further emphasized by Liu et al. (2023), who stated that "plating aesthetics can significantly impact consumers' perceptions of culinary creativity, willingness to try new foods, and dietary hedonism." Therefore, effective food presentation is expected to increase restaurant visits among millennials, Gen Z, and the wider community.

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In the context of the continuously evolving F&B industry and increasingly visual social media environments, the role of menu development is undergoing significant transformation. More than merely a list of dishes, menus are now visual representations of culinary identity capable of capturing attention and influencing consumer preferences. Social media, which has become deeply integrated into daily life, influences attitudes and behaviors toward food (Rini et al., 2024). This review aims to explain the relationship between social media and consumer attitudes and behaviors toward food. The phenomenon of foodstagramming, in which consumers actively share culinary experiences through photos and videos on platforms such as Instagram, has highlighted the importance of food visual aesthetics in restaurant marketing strategies. This activity demonstrates that the value of food extends beyond taste and transforms into visual content capable of triggering cognitive and behavioral responses. This is consistent with the concept of cross-modal synesthesia, in which aesthetic visual perceptions influence sensory expectations and intentions to share content. Engaged consumers demonstrate higher levels of loyalty, satisfaction, empowerment, connection, emotional bonding, trust, and commitment as customers (Brodie et al., 2013).

Considering consumers' increasing expectations regarding food aesthetics, this study is important for exploring how visual elements of food can enhance consumer appeal. In addition, the limited number of studies examining how the design thinking approach can be applied to identify food visual aesthetic elements influencing foodstagramming behavior among Gen Z and millennials represents an important research gap. Addressing this gap is essential for helping culinary business actors remain relevant and competitive in an increasingly visual and digital market.

Existing studies are generally quantitative and deductive in nature. A human-centered and iterative approach, namely design thinking, is needed to identify aesthetic elements genuinely perceived by users before they are quantitatively tested. By employing qualitative methods grounded in human-centered design thinking and emphasizing user needs, it is possible to generate relevant and effective research outcomes. Through iterative and collaborative processes, including the empathy stage, problem formulation during the define stage, and the generation of innovative solutions during the ideate stage, visual elements such as food textures and artistic plating can be designed and directly tested using menu prototypes to ensure optimal visual appeal. Furthermore, the testing stage will employ quantitative methods to evaluate the resulting prototypes more comprehensively.

Based on the research background, the problem formulation of this study focuses on identifying the composition of food visual aesthetic elements through a design thinking approach in menu development and examining how these elements are perceived by Gen Z and millennials, as well as analyzing how menu development emphasizing visual aesthetics can influence foodstagramming behavior on Instagram. In line with this objective, the study aims to identify food visual aesthetic elements that align with the preferences of Gen Z and millennials as a basis for menu design and to analyze their influence on culinary content-sharing behavior on social media. The findings of this study are expected to provide practical guidance for F&B businesses in applying design thinking to create photogenic food presentations and encourage user-generated content (UGC). Furthermore, this research is expected to provide insights for consumers regarding the visual factors influencing their food and restaurant preferences and to contribute to the development of knowledge in the fields of

innovation design management and consumer behavior, particularly in understanding the role of cross-modal visual psychology in product innovation and social media interaction.

METHOD

This study employed a mixed-method approach using a sequential exploratory strategy. In this approach, qualitative data were analyzed in the first phase, followed by quantitative data analysis in the second phase. The quantitative phase was developed based on the findings obtained from the qualitative phase, allowing both forms of data to remain separate yet interconnected throughout the research process.

Specifically, qualitative methods combined with a design thinking approach were used to explore and validate visual aesthetic elements as latent variables, which were then translated into visual prototypes. These prototypes subsequently served as stimuli in the quantitative phase to examine their influence on foodstagramming intention, which functioned as the dependent variable in this study.

This study adopted a mixed-method research design because combining qualitative and quantitative approaches provided a more comprehensive understanding of the research problem. According to Sugiyono (2013), mixed methods combine qualitative and quantitative approaches within a single study to produce more comprehensive, valid, reliable, and objective findings. Sugiyono (2013) further stated that mixed methods are particularly useful when qualitative or quantitative methods alone are insufficient for understanding complex research problems.

According to Creswell (2012), mixed-method research includes several designs, such as convergent parallel, explanatory sequential, exploratory sequential, embedded, transformative, and multiphase designs. This study applied the exploratory sequential design, in which qualitative data collection preceded quantitative data collection. The qualitative phase was conducted to identify important variables underlying the phenomenon, while the quantitative phase was used to examine the relationships among these variables. This design is commonly used in the development of questionnaires or measurement instruments (Fraenkel et al., 2008). In exploratory sequential research, qualitative findings provide the basis for subsequent quantitative data collection, while quantitative results are used to validate and expand qualitative findings.

In addition, Creswell (2012) stated that this design is particularly useful for developing and testing research instruments. The sequential exploratory strategy places greater emphasis on qualitative data, while quantitative data are used to strengthen and expand the qualitative findings through instrument testing. Compared with the sequential explanatory model, this design is considered more practical because the qualitative exploration provides a clear foundation for the quantitative phase (Martono, 2015).

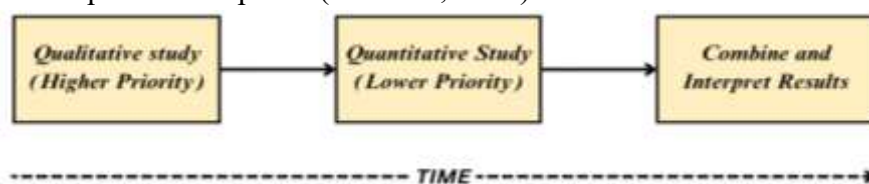


Figure 1 Sequential Exploratory Strategy Model

(Source: Fraenkel et al., 2008)

This model seeks to produce a research that has a main focus on qualitative data with the aim of answering the formulation of the problem with qualitative language. However, answering the problem formulation with qualitative language alone is considered incomplete because there is no concrete data on an explanation. So that the addition of quantitative language obtained from quantitative data sources. So that the results of the research can reflect two things, namely quality supported by quantity.

In this study, the beginning of data collection will be carried out qualitatively with the design thinking method used to answer the formulation of the first problem, namely what visual aesthetic elements of food affect foodstagramming behavior and how Gen Z and millennials perceive these elements towards foodstagramming behavior. Furthermore, to answer the formulation of the second problem, quantitative methods to support research from qualitative methods and to find out how the development of menus with a focus on the visual aesthetics of food influences the foodstagramming behavior of Gen Z and millennials on Instagram.

Based on data from the central statistics agency (2021), Indonesia's population is grouped into six generations, namely Post-Gen Z, Gen Z, millennials, Gen X, Baby Boomer, and Pre-Boomer. From the results of the census conducted throughout February-September 2020, it turns out that the number of Indonesia's population is dominated by young people. Quoted from the results of the 2020 Indonesian population census, the number of Gen Z reached 75.49 million people or equivalent to 27.94% of the total population in Indonesia. Meanwhile, the second most dominant population comes from the millennial generation as many as 69.38 million people or 25.87%. Gen Z itself refers to the population born in the period of 1997-2012 or between 13 and 28 years old. Meanwhile, the millennial generation is those born in the period 1981-1996 or between 29 and 44 years old.

According to the 2020 population census data from BPS Surabaya City, it is recorded that Gen Z is 28.6% of the dominance of the population in the city of Surabaya and millennials are the third highest at 22.4% of the total population of Surabaya City of three million people. In this study, the research subjects are Gen Z and millennials who have active characteristics on social media, especially Instagram and have a habit of taking pictures and sharing food photos (foodstagramming). The selection of Gen Z and millennials as research subjects is based on several reasons:

This age was chosen because this group is the largest and most active social media user in sharing visual content, including food photos. This is reinforced by data from Meltwater, where Instagram ranks first as the most favorite social media for both women and men with dominance in the top three groups of users in the age range of 16 years to age 24, age range 25 to age 34, and age range 35 to age 44 which all fall into the category of Gen Z and millennials.

This age group tends to make purchasing decisions based on visual content on social media. Research by Budiyanto et al. (2022) found that social media, especially Instagram, influences consumer purchasing decisions through engaging visual content. Research by Olivia et al. (2021) found that the visual complexity of food photos on Instagram influences consumers' emotional responses, which in turn increases buying interest. Limilia et al. (2022) explained that early exposure to the internet, social media, and mobile technology makes Generation Z very visual, multitasking, and oriented towards instant and interactive experiences.

Design thinking is a methodology that focuses on understanding human needs in solving problems through five main stages, namely empathize, define, ideate, prototype, and test, but in this study it is only used up to the prototype stage, while the testing stage is carried out with a quantitative approach; In the empathize stage, the researcher seeks to understand the needs, preferences, and motivations of consumers related to the visual elements of food through literature studies, in-depth interviews, and the preparation of empathy maps that include the aspects of says, thinks, does, and feels, with Gen Z and millennial respondents who are active on Instagram, so as to gain deep insights into foodtagramming behavior; Furthermore, at the definition stage, the problem was reformulated based on the results of interview analysis through the preparation of point of view (PoV), problem statement, user persona, and user journey map to identify user needs in a more targeted manner and become the basis for designing innovative solutions.

In the ideate stage, various creative solutions are developed through brainstorming with the help of SCAMPER techniques and Value Proposition Canvas to ensure that the resulting ideas are in accordance with user needs and able to provide value through pain relievers and gain creators, then proceed to the prototype stage by designing and realizing a visually appealing food menu appearance through artistic plating and high-quality photographic documentation to test its appeal on social media; Furthermore, the testing stage was carried out using a quantitative method with Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis using SmartPLS 4 to test the relationships between variables, starting from the evaluation of the outer model through a convergent validity test (outer loading > 0.70 and AVE > 0.50) and reliability (CR > 0.70 and Cronbach's Alpha > 0.60), then continued with the evaluation of the inner model through the value of R^2 and hypothesis test using bootstrapping with the criteria of T-statistics > 1.96 and P-values < 0.05 , so that the results of this analysis are able to comprehensively explain the influence of visual aesthetics on foodtagramming behavior.

RESULT AND DISCUSSION

Evaluation of Measurement Models (Outer Model)

An Outer Model evaluation is conducted to assess the validity and reliability of the instrument before hypothesis testing. Based on the results of the initial analysis, several indicators in the variables P3 (Perception of Tofu Almond Pudding) and P4 (Perception of Coconut Mousse with Strawberry and Cream Custard) and their partners (D3 and D4) were not included in the final model due to the phenomenon of zero variance. Therefore, the evaluation of the measurement model is focused on the P1 (Perception of Visual Aesthetics of Hainan Chicken Rice) and D1 (Sharing Intention) models.

The phenomenon of zero variance) in the P3 and P4 data occurred because the majority of respondents gave a maximum value (perfect score) uniformly to the aesthetics of the innovative prototype. Technically, zero variance indicates a ceiling effect and indicates that the design intervention has reached the maximum level of consensus satisfaction among respondents. Because PLS-SEM requires variance to find causal relationships, the P3 and P4 models cannot be statistically processed. Therefore, the model analyzed quantitatively is the baseline model (P1 \square D1), which aims to statistically validate that visual aesthetic elements

are indeed fundamental in triggering sharing intentions, regardless of the success of the prototype.

1. Convergent Validity Test

The validity test of the indicator was carried out by looking at the Outer Loadings and Average Variance Extracted (AVE) values of each indicator against its latent variables.

Outer Loadings

The validity of the indicator is tested by looking at the Outer Loadings value of each indicator against its latent variable. Based on the convergent validity criteria, an indicator is declared valid and feasible to use if it has a loading factor value greater than 0.70. After the elimination process of the unqualified indicators, the results of the analysis showed that all remaining indicators in the variables of Visual Aesthetic Perception (P1) and Sharing Intention (D1) had met these criteria. As can be seen in Table 4.2 below, the lowest Outer Loading value was recorded at 0.709 (C12) and the highest value was 0.903 (C13). Thus, all indicators in this model are declared valid.

Table 1 Outer Loadings Test Results

Variabel		Outer Loadings
Visual Aesthetic Perception (P1)	C8	0.829
	C9	0.843
	C12	0.709
	C13	0.903
	C14	0.789
Sharing Intent (D1)	C21	0.857
	C22	0.880
	C23	0.766
	C24	0.852
	C25	0.878

Source: SmartPLS Data Processing 4, 2025

2. Construct Validity and Reliability Test

In addition to the loading factor value, the convergent validity is also assessed based on the Average Variance Extracted (AVE) value. The AVE value describes the amount of variance of the indicator that can be contained by its latent variable. The criteria set is that the AVE value must be above 0.50. Furthermore, internal consistency reliability testing was carried out to prove the accuracy and accuracy of the instrument. This test uses two parameters, namely Composite Reliability (CR) and Cronbach's Alpha. A variable is said to be reliable if it has a CR value and Cronbach's Alpha greater than 0.70.

Based on the calculation results presented in Table 4.2 below, the Visual Aesthetic Perception variable (P1) has an AVE value of 0.668, while the Sharing Intention variable (D1) has an AVE value of 0.719 and because the two values > 0.50, the convergent validity is stated to be well met. In terms of reliability, the Composite Reliability values for P1 (0.909) and D1 (0.927) are well above the threshold of 0.70. This figure is strengthened by Cronbach's Alpha values of 0.875 and 0.902, respectively. All of these values are well above the 0.70 threshold, indicating a very high level of internal consistency.

Table 2 Construct Validity and Reliability Test Results

	<i>Cronbach's Alpha</i>	<i>Composite Reliability (CR)</i>	<i>Average Variance Extracted (AVE)</i>	Remarks
Sharing Intent (D1)	0.902	0.927	0.719	<i>Valid & Reliable</i>
Visual Aesthetic Perception (P1)	0.875	0.909	0.668	<i>Valid & Reliable</i>

Source: SmartPLS Data Processing 4, 2025

Based on the summary of results in Table 2 above, it can be concluded that all research variables have met the required measurement standards. With the fulfillment of all criteria of validity and reliability in the evaluation of the measurement model (Outer Model), the instruments and data of this research are declared feasible to proceed to the next stage of analysis, namely the evaluation of the structural model (Inner Model) for hypothesis testing.

Evaluation of Structural Models (Inner Model)

After ensuring that the research instrument is valid and reliable at the Outer Model stage, the next step is to evaluate the structural model (Inner Model) to test the hypothesized causal relationship. Figure 4.19 below shows the estimated results of the path model showing the relationship between visual aesthetic perception and sharing intention.

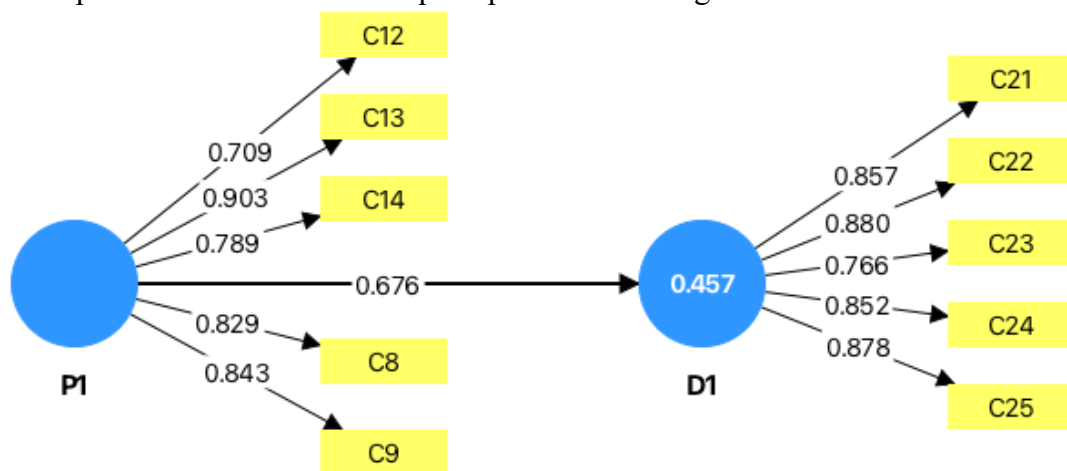


Figure 2 Structural Model Path Analysis Results (Source: Source: SmartPLS Data Processing 4, 2025)

1. Coefficient of Determination (R2)

The first evaluation of the structural model was carried out by looking at the value of the Coefficient of Determination (R2). This value is used to measure how much an independent variable is able to explain the variance of the dependent variable. Based on the results of data processing, the R2 value was obtained as follows:

Table 3 Value of Determination Coefficient (R2)

	R-square	Category
Sharing Intent (D1)	0.457	Moderate

Source: SmartPLS Data Processing 4, 2025

Based on Table 4, the R2 value for the Sharing Intention (D1) variable is 0.457. This indicates that 45.7% of the variation in respondents' foodstagramming intentions can be

explained by perceptions of the visual aesthetics of food (P1). The remaining 54.3% is explained by other variables outside this research model. This value indicates that the model has a fairly substantial (moderate) predictive power.

2. Hypothesis Test

After the R2 evaluation, hypothesis testing was carried out to see the significance of the influence between variables. This test uses a Bootstrapping procedure with a significance level of 5% (95% confidence level). The hypothesis is stated to be accepted if the T-Statistics value > 1.96 and the P-Values value < 0.05. In addition, the Original Sample value (β) is used to see the direction of the relationship (positive/negative).

Table 4 Hypothesis Test Results (Path Coefficients)

Hipotesis	Relationship Pathway	Original Sample (β)	T statistics ((O/STDEV))	P values	Verdict
H1	P1 → D1	0.676	12.557	0.000	Accepted

Source: SmartPLS Data Processing 4, 2025

Based on Table 4 above, testing the effect of Visual Aesthetic Perception (P1) on Sharing Intention (D1) resulted in a positive path coefficient value (β) of 0.676. The statistical results showed a T-Statistics value of 12.557 (> 1.96) and a P-Values value of 0.000 (< 0.05). This proves that there is a positive and statistically significant influence. This means that the higher the respondents' perception of the visual aesthetics of food, the higher the intention to share it on social media. Thus, the research hypothesis (H1) which states that "Visual Aesthetic Perception has a positive effect on Sharing Intention in Gen Z and millennials" is declared ACCEPTED.

Discussion of Quantitative Findings and Design Implications

Based on the results of hypothesis testing and data analysis that has been conducted, there are several strategic findings that provide in-depth insights into the role of visual aesthetics on foodstagramming behavior in Gen Z and Millennials. This discussion outlines the implications of the acceptance of the research hypothesis and the analysis of the ceiling effect phenomenon found in the testing of innovative prototypes.

1. Validation of the Fundamental Role of Visual Aesthetics (P1 → D1 Relationship)

The results of the PLS-SEM analysis showed that visual aesthetic perception in the initial plating (P1) had a positive and significant influence on the intention of sharing (D1) with a path coefficient value (β) of 0.676 and a T-Statistics value of 12.557. These findings validate the basic assumption of the study that visual elements are a determining factor in consumers' decisions to share their culinary experiences. A strong coefficient value ($\beta = 0.676$) indicates a high sensitivity among respondents, meaning that any increase in visual perception will be followed by a substantial increase in sharing intention.

Contextually, these findings are crucial benchmarks. Although standard plating (P1) is considered ordinary descriptively, the visual factor is still proven to be the main trigger for sharing intentions. This underscores the urgency of design innovation: if standard visual quality alone can influence the intention to share, then superior visual design interventions are the right strategy to maximize the potential of digital word of mouth.

2. Interpretation of the Ceiling Effect Phenomenon in Innovative Prototypes (P3 and P4)

In the pre-processing data stage for innovative prototypes, namely Tofu Almond Pudding (P3) and Coconut Mousse with Strawberry and Cream Custard (P4), it was found that there was a statistical phenomenon in the form of Zero Variance, where the measurement indicators had uniform values (homogeneous). In the context of this design research, the phenomenon is not interpreted as an instrument failure, but rather as a strong indication of a ceiling effect. This effect occurs when the majority of respondents give a uniform maximum score (perfect score) to the given question, so that there is no variation in the data that can be processed by the PLS-SEM algorithm.

Qualitatively, these findings provide empirical evidence that design solutions developed through the design thinking stages (Empathize to Prototype stages) have succeeded in achieving the highest satisfaction consensus. The P3 and P4 prototype designs that highlight color contrast, deconstructed techniques, and interactive elements are able to precisely answer the visual preferences of Gen Z and millennials. The Zero Variance phenomenon caused by the ceiling effect on the P3 (Tofu Almond Pudding) and P4 (Coconut Mousse with Strawberry and Cream Custard) prototypes is the strongest qualitative empirical evidence of the success of the design intervention. Statistically, the data cannot be processed due to the homogeneity of the maximum score; however, design-wise, it indicates that solutions developed through Design Thinking (5 key elements) have managed to create superior visual appeal that reaches a saturation point of satisfaction among Gen Z and millennial audiences, far exceeding baseline conditions. Thus, the failure of statistical calculations in P3 and P4 actually confirms the success of the menu development innovation goal. The prototype was proven to have a much superior visual appeal than the baseline condition (P1), until it reached the saturation point of respondent satisfaction.

CONCLUSION

Based on the results of analysis and discussion, this study concludes that visual aesthetics have a positive and significant influence on foodgramming behavior in generation Z and millennials, where visual elements are the main trigger for consumers to share culinary experiences on social media, even on simple displays; Through the design thinking approach, especially the ideate phase, five key elements of visual aesthetics were identified, namely natural and contrasting colors, prominent textures, the selection of supportive tableware, the use of relevant and edible garnishes, and the balance of composition (negative space), which has been proven to be able to create superior visual appeal to give rise to the phenomenon of zero variance or ceiling effect that shows the maximum level of satisfaction of respondents; In addition, design interventions such as the use of contrasting colors, asymmetrical compositions, and aesthetic tableware have proven to be effective in increasing the potential of digital word of mouth, supported by the fact that attractive food displays encourage real customer interaction such as likes, positive comments, and content storage on social media which ultimately becomes free promotion and has an impact on increasing visits and sales; Therefore, culinary business people are advised to make plating a marketing asset by investing in tableware and presentation techniques, as well as monitoring success through social media responses, sales, and customer satisfaction, while paying attention to photogenic aspects such as lighting and composition, while for academic development, further research is recommended

adding moderator variables such as lighting quality and photographic ability, expanding the scale and respondent demographics to address the ceiling effect, as well as integrate Food Design Thinking more comprehensively through a multi-iteration approach and collaboration between chefs and marketing teams to improve business performance in a sustainable manner.

REFERENCE

- Abdullah, K. M., Putit, L., Raji, M. N. A., & Yulia, C. (2023). Malaysian consumers' acceptance of Indonesian food quality and restaurant attributes. *International Journal of Academic Research in Business and Social Sciences*, 13(5), 106–116.
- Aldabous, J. (2024). *Exploring the role and impact of social media in transforming supply chain dynamics within the food and beverage industry* [Doctoral dissertation, Brunel University London].
- Astuty, P. (2025). The impact of the number of restaurant business actors, foreign investment, domestic investment, per capita consumption and digital transactions on the culinary industry in Indonesia. *Journal of Legal, Ethical and Regulatory Issues*, 28, 1–10.
- Aziza, R. F. A. (2020). Analisis kebutuhan pengguna aplikasi menggunakan user persona dan user journey: Studi kasus aplikasi asisten keuangan personal. *Information System Journal*, 3(2), 6–10.
- Budiyanto, A., Pamungkas, I. B., & Praditya, A. (2022). Pengaruh media sosial terhadap minat beli dan keputusan pembelian konsumen: Analisis bibliometrik. *Jurnal Ekonomi Manajemen*, 8(2), 133–142.
- Colozza, D. (2024). A qualitative exploration of ultra-processed foods consumption and eating out behaviours in an Indonesian urban food environment. *Nutrition and Health*, 30(3), 613–623.
- Iradawati, S. N. (2024). The influence of destination image, food and beverage quality, and prices on purchasing decisions at the Surabaya Culinary Tourism Center. *BALANCE: Economic, Business, Management and Accounting Journal*, 21(2), 226–247.
- Izzudin, Z. N., & Yuniawan, A. (2024). Peran inovasi menu makanan, promosi media sosial, dan persepsi harga terhadap pembelian impulsif pelanggan (studi pada Rumah Makan Cowek Lonyot di Semarang). *Al Qalam: Jurnal Ilmiah Keagamaan dan Kemasyarakatan*, 18(2), 1372–1401.
- Limilia, P., Gelgel, R. A., & Rahmiaji, L. R. (2022). Digital literacy among Z generation in Indonesia. *European Proceedings of Social and Behavioural Sciences*.
- Liu, M., Ji, S., Jiang, B., & Huang, J. (2023). Plating for health: A cross-cultural study of the influence of aesthetics characteristics on food evaluation. *International Journal of Gastronomy and Food Science*, 33, 100785.
- Olivia, J., Antonina, D., Jokom, R., & Iskandar, V. (2021). Analisa pengaruh kompleksitas visual pada foto makanan di Instagram terhadap minat beli melalui respon emosional. *Jurnal Manajemen Perhotelan*, 7(2), 84–92.
- Parthasarathi, S., & Ongkowijoyo, G. (2025). Entrepreneurial orientation dimensions, competitive advantage, and Indonesian F&B SMEs performance. *Dinasti International Journal of Economics, Finance & Accounting (DIJEFA)*, 5(6).
- Pratiwi, D. R., Fristya, Z., & Putri, A. D. (2025). The role of halal certification in enhancing competitiveness and social trust: A study on the culinary industry in Surabaya. *ASEAN*

Journal of Halal Study, 2(1), 6–10.

- Rao, A. (2020). *Exploration into the art of plating food: Psychological perspective*. ResearchGate.
https://www.researchgate.net/publication/347888856_Exploration_into_the_Art_of_Plating_food_Psychological_Perspective
- Rini, L., Schouteten, J. J., Faber, I., Frøst, M. B., Perez-Cueto, F. J., & De Steur, H. (2024). Social media and food consumer behavior: A systematic review. *Trends in Food Science & Technology*, 143, 104290.
- Sadya, S. (2023, February 13). Pandemi melandai, makin banyak warga RI makan di luar rumah. *Data Indonesia*. <https://dataindonesia.id/varia/detail/pandemi-melandai-makin-banyak-warga-ri-makan-di-luar-rumah>
- Sarkis, N., Jabbour Al Maalouf, N., & Al Geitany, S. (2025). The power of digital engagement: Unveiling how social media shapes customer responsiveness in the food and beverage industry. *Administrative Sciences*, 15(7), 278.
- Singh, I., Dutt, A., Chauhan, P., & Mehra, P. (2025). Impact of social media marketing practices on purchase intentions in the F&B industry and the mediating effect of trust. *International Journal of Information Technology*, 17(4), 2465–2476.
- Sugiyono. (2013). *Metode penelitian pendidikan pendekatan kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Wulandari, S., Jannah, N., & Harahap, M. I. (2026). Enhancing restaurant business growth in Indonesia: A masalah perspective on culinary industry development. *Tasharruf: Journal Economics and Business of Islam*, 11(1), 23–42.
- Yayusman, M. S., Yaumidin, U. K., & Mulyasari, P. N. (2023). On considering Australia: Exploring Indonesian restaurants in promoting ethnic foods as an instrument of Indonesian gastrodiplomacy. *Journal of Ethnic Foods*, 10(1), 43.