Lunday Research Journal
ISSN Print: 2984-8288
ISSN Online: 2984-8385

Volume 7-Number 1-2025-4

Packaging QR Code Content Optimization Based on Consumer Preferences and Market Trends

Hazleih Joy Casabar
Saint Louis University, Baguio City, Philippines / 2160032@slu.edu.ph
Michelle Adiwang
Saint Louis University, Baguio City, Philippines

Abstract

The study aimed to understand consumer preferences to improve the adoption of QR code technology in food product packaging, employing Structural Equation Modeling (SEM) to investigate consumer motivation, content preferences, visual appeal, and scanning convenience as key factors affecting scanning intention and satisfaction. The research involved using a survey questionnaire and gathering data on participants' demographics and responses to measurement items related to the key factors through a 5-point Likert Scale. Results indicated that content preferences and convenience significantly influence consumer satisfaction, highlighting that consumers value perceived usefulness and ease of use in adopting QR code technology for packaging. The study concludes that consumers prefer to access relevant product information for food product packaging, offering insights into designing and implementing a QR code that provides food quality and safety information that can be conveniently scanned.

Keywords: convenience, food packaging, product information, QR code, Structural Equation Modeling (SEM)

Introduction

Using QR codes in innovative packaging is emerging as a highly promising technology that can give consumers enhanced information and influence their purchasing behavior (Rotsios et al., 2022). A large amount of information can be contained in a single QR code, occupying only a tiny space in print and digital media (Nath & Varghese, 2020).

In food packaging, the government requires most of the information to be provided in the design. Through the QR Code, manufacturers do not need to spend additional packaging material to provide additional content that is not required by regulations but promotes consumer understanding and appreciation of the product (Tsao & Tu, 2017).

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Although QR codes are widely known, the challenge is the low level of adoption or usage (Demir et al., 2015). While consumers can correctly identify a QR code when they see it, various factors limit its usage, such as lack of access to a smartphone, difficulty in usage, and unawareness of the benefits and purpose of the code (Nath & Varghese, 2020).

Consumers' lack of interest in the content or services provided by QR codes contributes to low usage rates. One identified problem is that the consumers' motivation to scan a QR code does not align with the content they receive when they do so. Customer expectations and attitudes are crucial for businesses to form better strategies in using QR codes for customer engagement. The efficiency of the QR code is enhanced by understanding the type of content that drives the willingness of consumers to scan it and maximize the benefits of this marketing tool (Ales, 2019).

Most research studies have focused on the adoption of QR code technology concerning consumer attitudes, motivation, and limitations in the context of online shopping and print media in general. However, studies regarding the effective use of QR codes, including consumers' motivation and content preferences on interactive packaging, in the Philippines are limited. This study aimed to understand consumers' motivation, content preferences, visual attraction, and convenience in scanning QR codes related to food product packaging to explain strategies for local businesses to optimize the effective use of this technology. The context examined is the packaging of locally produced food products.

The main objective of the research was to optimize the use of QR codes on product packaging by understanding customer usage satisfaction and scanning intentions. The research specifically intended to answer the following:

1. How does motivation influence the intention of consumers to scan QR codes on product packaging?

2. How does the attraction of consumers toward the visual design of the QR code on packaging affect their intention to scan it?

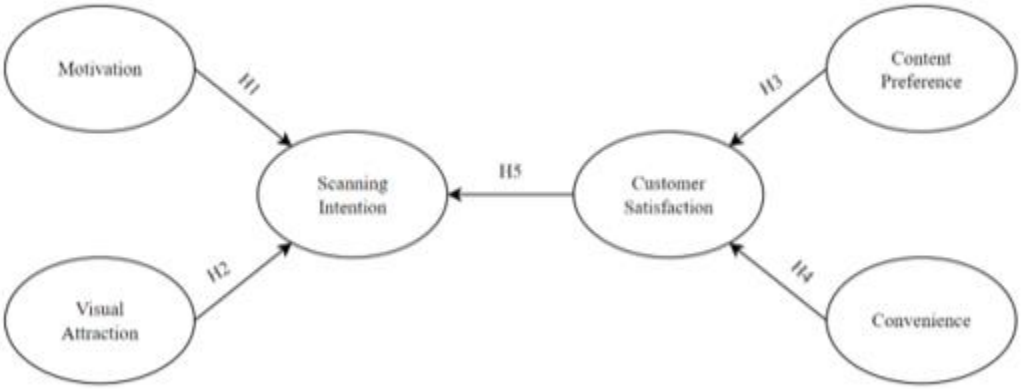
3. How do consumers' preferences influence customer satisfaction with the content accessed through the QR code?

ISSN Print: 2984-8288
ISSN Online: 2984-8385

4. How does convenience impact customer satisfaction toward the use of QR codes on product packaging?

5. How does customer satisfaction influence consumers' intention to scan QR codes on product packaging?

Figure 1
Conceptual Framework



Review of Related Literature and Study

The scanning intention was based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which includes performance expectancy, effort expectancy, and social influence as factors that drive behavioral intention (Momani, 2020). In addition to the three factors, a study identified facilitating conditions as one of the factors that significantly impact consumers' intention to use QR codes (Luitel, 2023). For instance, in QR code usage, the absence of a smartphone limits consumers from scanning QR codes (Nath & Varghese, 2020).

Various motivational factors have been shown to influence the intention to scan a QR code, such as promotions, curiosity, and familiarity with products (Žurbi & Gregor-Svetec, 2023; Ertekin & Pelton, 2014; Okazaki et al., 2019; Oonk, 2013). While these factors have been studied in various research contexts, there is a limited study on their combined effect on the scanning intention of consumers toward food packaging QR codes.

H1: Motivation influences the intention of consumers to scan QR codes on product packaging.

ISSN Print: 2984-8288
ISSN Online: 2984-8385

In food products, including a clear invitation near the QR code on the packaging to clarify its potential benefits can help encourage the engagement of consumers (Žurbi & Gregor-Svetec, 2023). The study by Ryu (2013) suggests that including informative and entertaining messages alongside a QR Code effectively convinces consumers to scan the code. It aligns with the study's findings related to the visual characteristics of QR codes with sustainability information. The study found that consumers prefer to scan QR codes accompanied by a message instead of those without such complementary text. In addition, for color, the study showed that consumers are more interested in scanning QR codes with colors and icons related to the content conveyed. Lastly, prominent placement is also considered to influence scanning (Bashir, 2022). However, there is a limited study on the specific influence of consumer preference in the context of food packaging QR codes.

H2: Consumers' attraction toward the visual design of the QR code on packaging affects their intention to scan it.

In a study using QR codes on magazine ads, consumers scan QR codes for promotional offers, relevant product information, customer reviews, and entertaining experiences (Ertekin & Pelton, 2014). In online retail, consumers seek reviews when assessing products to assist in purchasing decisions (Fernandes et al., 2022). In addition, short videos have grown significantly worldwide, serving as an essential tool for users to disseminate information about goods and services and as a means for marketers to draw in new clients (Zhai et al., 2022). Moreover, QR codes play a role in sustainability. The findings of a study related to scanning QR codes containing sustainability information demonstrate that customers' intentions to scan QR codes are significantly predicted by perceived usefulness and simplicity of use (Bashir, 2022).

Considering the expectations and needs of consumers is important in using QR code technology effectively (Acuti et al., 2020). User preferences and customer satisfaction correlate (Liu et al., 2024). It is important to understand the requirements of consumers to satisfy their expectations (Felix, 2015).

H3: Consumer preferences influence customer satisfaction with the content accessed through the QR code.

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Ease, speed, and information convenience are identified as valuable aspects of QR codes (Ertekin & Pelton, 2014). Some consumers identified time consumption as a significant difficulty or barrier in QR code usage (Nath & Varghese, 2020). In the context of digital QR code menu ordering in restaurants, it was found that there is a positive relationship between customer satisfaction and perceived ease of use (Shahril, 2024).

H4: Convenience impacts customer satisfaction toward using QR codes on product packaging.

Customer satisfaction refers to the sense of fulfillment of consumers related to their use of a product or service (Guido, 2015). It is a response whose focus may include expectations and consumer experience (Giese & Cote, 2000). A strong positive relationship exists between loyalty and customer satisfaction (Curtis et al., 2011). If customers are satisfied, they will talk about their experience positively (Sharma et al., 2020).

H5: Customer satisfaction influences the intention of consumers to scan QR codes on product packaging.

Methodology

A thorough statistical method for examining and measuring the interrelationships among multiple variables is Structural Equation Modeling (SEM). The analysis offered a simultaneous assessment of direct and indirect impacts within a conceptual framework through standardized regression weights and correlation estimates. Since it accounts for measurement errors, SEM is appropriate for studies involving latent constructs. SEM analyzed the strength of relationships between variables such as consumer motivation, content, visual appeal, convenience, and their impact on scanning intention and customer satisfaction. In addition, it allowed analysis of how well the model fits with the data through model fit indices.

One of the guidelines in determining the sample size for structural equation models is A-priori sample analysis (Memon et al., 2020), which recommended a minimum sample size of 161 to analyze the study's six constructs and 21 indicators . Convenience sampling was applied to gather data near *pasalubong* centers. The participants considered for data collection were aged 18 and above. Moreover, the target participants were those who are aware of and familiar with QR codes and smartphone users since the study is related to QR codes, which require a smartphone for access. To ensure relevance, participants who had never scanned a QR code

ISSN Print: 2984-8288
ISSN Online: 2984-8385

were excluded to ensure that the data came from individuals with prior experience using QR codes.

The survey questionnaires were prepared to understand the factors influencing the effective use of QR codes on product packaging based on consumers' preferences. The two parts of the survey questionnaire included demographic data collection and preferences of consumers on the use of QR codes. The measurement items in the survey questionnaire were gauged using a 5-point Likert scale that ranged from 1-Strongly Disagree to 5-Strongly Agree.

Participants' demographic data were analyzed using descriptive analysis, including frequency count and percentage analysis. The survey questionnaire results were analyzed using Structural Equation Modeling through Amos to test the relationships between constructs in the proposed model. Composite reliability (CR) and average variance extracted (AVE) were determined to validate the indicators used to measure the constructs. The minimum values of 0.70 for Composite Reliability (CR) and 0.50 for Average Variance Extracted (AVE) were based on the values used in the study by Hossain et al. (2018). The overall fit of the structural equation model (SEM) was evaluated using several key fit indices, including Chi-square (χ^2), degrees of freedom (dof), χ^2/dof ratio, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA).

Results and Discussion

Table 1 summarizes the demographic characteristics of the study participants. A total of 187 participants answered the survey questionnaire.

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Table 1
Demographic Profile of Participants

Gender	Frequency	Percent
Male	77	41
Female	110	59
Age		
18-25	107	57
26-35	47	25
36-45	19	10
46 and above	14	8
Type of Smartphone		
iPhone	137	73
Android	50	27
Smartphone Use		
Heavy User	85	46
Moderate User	83	44
Light User	15	8
Rare User	4	2
Total Participants	187	100%

Skewness and kurtosis values were examined for all 21 indicators. Skewness ranged from -1.377 to 0.053, while kurtosis ranged from -1.064 to 2.124. The values are within the acceptable threshold based on the limits of absolute values >2 and > 7 for skewness and kurtosis, respectively (West et al., 1995). Generally, the results support standard assumptions. Given these results, the factor loading of each indicator on its respective construct was analyzed and presented below.

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Table 2
Factor Loading Analysis of Variables

Variables	Factor Loading (FL)
Motivation	
M1 (discount and promo)	0.621
M2 (additional information)	0.754
M3 (curiosity)	0.661
M4 (unfamiliarity with the product)	0.736
Visual Attraction	
VA1 (complementary text)	0.748
VA2 (color and icon)	0.700
VA3 (placement)	0.734
Scanning Intention	
S1 (usefulness)	0.779
S2 (peer suggestion)	0.663
S3 (internet connectivity)	0.707
Content Preference	
CP1 (product information)	0.772
CP2 (discount)	0.738
CP3 (product review)	0.743
CP4 (sustainability information)	0.731
CP5 (short video)	0.602
Convenience	
C1 (time)	0.864
C2 (ease of use)	0.910
C3 (simplicity)	0.871
Consumer Satisfaction	
CS1 (consumer expectations)	0.806
CS2 (consumer experience)	0.830
CS3 (consumer recommendation)	0.818

Table 2 presents the factor loading for each indicator, reflecting the strength of its contribution to the construct it represents. All indicators exceeded the acceptable threshold of 0.50, demonstrating their reliability and validity.

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Table 3
Reliability and Validity of the Constructs

Latent Variables	Composite Reliability	Average Variance Extracted
Motivation	0.801	0.504
Visual Attraction	0.772	0.530
Scanning Intention	0.760	0.515
Content Preference	0.858	0.548
Convenience	0.913	0.778
Customer Satisfaction	0.820	0.604

Table 3 summarizes the results of the reliability and validity of the constructs. The CR values exceeded the recommended threshold of 0.70, and AVE values met the minimum threshold of 0.50. The CR values signify strong internal consistency among the indicators. The AVE results confirmed the constructs' convergent validity.

Table 4
Structural Model Fit Measures

Model Fit Measures	Values
	354.88
λ^2	6
dof	174
λ^2/dof	2.040
CFI	0.920
TLI	0.903
RMSEA	0.075

The results in Table 4 demonstrate that the structural equation model achieves an acceptable fit to the data. The χ^2/dof ratio is within the acceptable threshold of ≤3.0, suggesting the data's fitness with the model. The CFI and TLI exceeded the acceptable value of 0.90, confirming the strong incremental fit of the model. The Root Mean Square Error of Approximation (RMSEA) was within the acceptable range of ≤0.08. The value indicates that the model approximates the observed data with reasonable accuracy.

Lunday Research Journal
ISSN Print: 2984-8288
ISSN Online: 2984-8385

Table 5
Path Relationship of Constructs and Hypothesis Testing

Hypothesis	Path Relationship	Standard Regression Weight	p values	Remarks
H1	Motivation → Scanning Intention	0.164	0.355	Not Significant
H2	Visual Attraction → Scanning Intention	0.256	0.149	Not Significant
H3	Content Preference → Customer Satisfaction	0.343	0.00	Significant
H4	Convenience → Customer Satisfaction	0.577	0.00	Significant
H5	Customer Satisfaction → Scanning Intention	0.514	0.00	Significant

Figure 2
Path Diagram of the Constructs

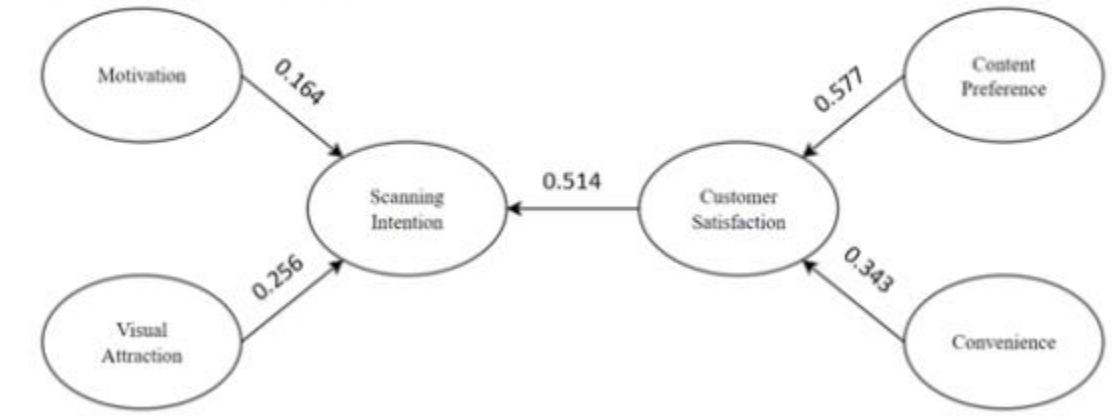


Table 5 summarizes the results of hypothesis testing using structural modeling analysis. The relationships between the latent variables were evaluated by examining the Standardized Regression Weights and p-values, which determined the strength and significance of the paths in the model.

The relationship between Motivation and Scanning Intention was found to be not significant (p = 0.355, weight = 0.164). The findings of this study suggest that motivational factors such as promotions, discounts, curiosity, and less familiarity with a product may not be sufficient to drive scanning intention, especially in the context of QR codes on the packaging of local food products.

Similarly, Visual Attraction had an insignificant effect on Scanning Intention (p = 0.149, weight = 0.256), indicating that visual elements such as complementary text, color, and placement of the

ISSN Print: 2984-8288
ISSN Online: 2984-8385

QR code were not primary drivers of scanning intention. It contradicts the studies suggesting that embedding messages with the QR Code effectively encourages consumers to scan (Ryu, 2013) and other factors, including color, design icon, and placement (Bashir, 2022). Thus, both hypotheses 1 and 2 were rejected.

This lack of significance may be related to the demographic characteristics of the participants, which include predominantly female, frequent smartphone users, and young consumers. Previous studies (Kudiwa, 2024) have found that women often prioritize perceived usefulness over hedonic motivators when adopting new technologies. This claim aligns with the Technology Acceptance Model (TAM), which discusses that behavioral intention to adopt technology is strongly influenced by perceived ease of use and usefulness. Among young consumers, it was found in a previous study that the perceived value of information from QR codes is a significant predictor of behavioral intention (Jung et al., 2012). Frequent smartphone users may base their decision to scan on the practical benefits of the content and convenience of scanning.

Moreover, visual design alone may not be enough to drive the intention to scan. It is affected by other factors, such as a lack of perceived benefit or clear communication of the advantages of scanning (Pareeratanasomporn, 2018). The finding implies that consumers prefer the clarity of functionality over the visual appeal of QR codes. Unawareness of the benefits and purpose of the code is identified as a limiting factor when scanning despite familiarity with the QR Code (Nath & Varghese, 2020). While visual design remains important for drawing initial attention, it must be complemented by meaningful content that features the value of engaging with the QR code.

Content preference demonstrated a significant positive relationship with customer satisfaction ($p = 0.00$, weight = 0.343), accepting hypothesis 3. Consumer preferences for specific content types, such as product information, strongly contributed to their satisfaction with the QR code usage. The findings are consistent with studies highlighting the perceived usefulness of QR codes as an important factor in technology adoption (Jung et al., 2012; Tu et al., 2022; Shin & Chang, 2013; Rahimi et al., 2024; Yamin & Abdalatif, 2024). In addition, the findings emphasized the importance of tailoring QR code content to meet consumer preferences, as such alignment significantly influences satisfaction and encourages interaction with QR codes, which was also supported by previous studies (Acuti et al., 2020).

ISSN Print: 2984-8288
ISSN Online: 2984-8385

In the food industry, transparency and traceability influence the relationship between what consumers prefer and how satisfied they feel. Previous studies imply that consumers prefer food products that provide detailed information about ingredients, origin, and quality control. Ata et al. (2023) found that the elements of content marketing, such as interaction and the quality of information, positively influence customer satisfaction. It suggests that when brands provide clear, detailed, and engaging content, consumers are more likely to feel satisfied. Similarly, Rohman et al. (2023) highlighted the importance of perceived value in food quality, showing that expectations about the source of a product play a significant role in influencing satisfaction. Understanding the relationship between content preference and customer satisfaction can help formulate more effective marketing strategies in the food industry. When food products prioritize relevant and accurate information, they are more likely to improve customer experiences and loyalty (Ramadania et al., 2023).

Convenience emerged as a crucial factor, significantly influencing Customer Satisfaction ($p = 0.00$, weight = 0.577). The result suggests that ease of use and time efficiency are key determinants of a positive customer experience. Thus, hypothesis 4 is accepted. The findings align with previous studies emphasizing the importance of ease and speed in using technology (Ertekin & Pelton, 2014). It is also consistent with previous studies highlighting the influence of perceived ease of use on the intention to use technology (Ngo & Nguyen, 2021; Rahimi et al., 2024; Yamin & Abdalatif, 2024). Consumers in this study valued the time and simplicity factors of using QR codes.

The findings regarding the influence of convenience on customer satisfaction align with the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which offers a framework for understanding how effort expectancy affects user intention and satisfaction. Effort expectancy is related to how users perceive technology in terms of ease of usage. When a service is easy to use, its satisfaction will likely increase (Venkatesh et al., 2003). The findings suggest that food businesses are encouraged to implement strategies that prioritize user-friendly and accessible content when considering QR codes on packaging. As supported by a previous study, removing barriers to usage, such as reducing the time needed for scanning, can enhance the consumer experience (Nath & Varghese, 2020).

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Finally, customer satisfaction significantly influenced scanning intention (p = 0.00, weight = 0.514). This finding implies that consumers satisfied with their QR code experience are more likely to engage in scanning behavior in the future. Therefore, hypothesis 5 is accepted. This result supports the claim that satisfied consumers are more likely to engage in repeat behaviors (Guido, 2015). When consumers find the QR code interaction satisfying, they are more likely to repeat the action in the future, reflecting the role of satisfaction in promoting continued use (Sharma et al., 2020).

The findings provide important insights into consumer behavior and the adoption of QR code technology on food product packaging. Established models such as the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) supported the results of this study. The role of perceived usefulness from TAM supports findings on the significant influence of content preference on customer satisfaction. Similarly, the findings align with the performance expectancy of UTAUT, which emphasizes the importance of perceived usefulness in the ability of technology to support their needs. Further, the findings showing the positive influence of convenience on satisfaction affirm the role of effort expectancy in UTAUT models, such that easy access and quick loading results in satisfaction.

In industry trends, many consumers actively seek product or brand information through mobile devices (Tu et al., 2022). With the rise of mobile technologies, QR codes are used for various purposes. Among young consumers, the common purpose of using QR codes includes additional information (Demir et al., 2015). Based on the findings, in optimizing the QR code on product packaging, it is important to complement external motivators and visual elements with relevant product information and convenient experiences to satisfy consumers and meanwhile induce scanning in the future.

Conclusion and Recommendation

This study contributes to understanding consumer behavior regarding packaging QR codes. Model testing revealed that content preferences and convenience significantly impact customer satisfaction, influencing the intention to scan QR codes. However, motivation and visual attraction showed limited influence, which suggests these factors may not directly impact scanning intention.

ISSN Print: 2984-8288
ISSN Online: 2984-8385

The findings imply that consumers favored QR codes offering valuable product information. The implication aligns with the findings of the extended TAM, which added perceived information as a factor that positively affects consumers' behavioral intention to scan QR codes for food traceability (Kim & Woo, 2016). Marketers and managers should improve the user experience by offering relevant and engaging content that is easy to access and use through QR code scanning (Tu et al., 2022; Rahimi et al., 2024; Yamin & Abdalatif, 2024). QR codes that provide clear benefits (Nath & Varghese, 2020), such as product information, are more likely to increase customer satisfaction and engagement. Furthermore, businesses should prioritize ease, speed, and convenience (Ertekin & Pelton, 2014) when considering the implementation of QR codes on their packaging.

Businesses can maximize engagement and improve customer satisfaction by aligning QR code content and user experience with consumer preferences and market trends. The findings highlight that meeting consumer expectations is essential for satisfaction, particularly in terms of the relevance of the content. Regarding content preference, product information emerged as the most preferred type of content among the participants. In a market setting, QR codes are applied to deliver product information related to product quality and safety, which includes product origin (Žurbi & Gregor-Svetec, 2023), nutritional and allergen information (Radu et al., 2018), product certifications (Yang et al., 2022), and traceability information (Machado et al., 2019). Thus, it is recommended that managers who intend to adopt the QR code technology for product packaging prioritize relevant additional information that highlights product quality and safety. This recommendation aligns with the study, which indicates that clear and comprehensive information about a food product, such as origin, ingredients, safety, and sustainability, should be provided through a QR code food traceability system to help consumers make informed purchasing decisions (Kim & Woo, 2016).

Local business owners may consider QR code implementation in their packaging, so they should educate the consumers about the benefits of using the technology, as clear communication is important in driving scanning intention (Pareeratanasomporn, 2018). This insight is supported by a previous study that found that customer education can enhance consumers' adoption of service technology if the educational intervention aligns with customers' abilities (Walter et al., 2023). Similarly, a study that involved educating customers with a newly introduced service application found that this intervention generated positive word of mouth from customers about the brand (Sun et al., 2021). In addition, getting consumer feedback regarding their

ISSN Print: 2984-8288
ISSN Online: 2984-8385

experience may also be considered to ensure alignment with their expectations as they affect consumer satisfaction (Pei et al., 2020). In line with the Expectation Confirmation Theory, consumers develop a level of satisfaction if their expectations are met or exceeded (Shukla & Dwivedi, 2024).

As the current study mainly explored the factors influencing QR code usage, it is recommended that further studies implement other methods, such as the comparative study of the different types of content that consumers find relevant to understand what resonates most with consumers. The present study only focused on using QR codes in the context of food product packaging. A similar study may be conducted in other industries, such as hospitality and retail, as such settings are also studied in previous literature related to QR codes. Future studies may consider improving the methodology by examining the constructs more thoroughly. Establishing discriminant validity would strengthen the model primarily if it is used for generalization in a different research context.

While the data in the present study, in general, met the assumptions on normality, future research may consider alternative SEM techniques such as Partial Least Squares SEM, which is less sensitive to non-normal data distributions and has a limited sample size.

Moreover, one of the study's limitations was the sampling technique, which was convenience sampling. Other techniques, such as stratified sampling, may be implemented to reduce selection bias and ensure representation from various demographic characteristics. Educational attainment and income may also be identified in the demographic characteristics section, as these influence consumers' perceptions of the relevance of product information (Machado et al. 2019).

References

Acuti, D., Vocino, A., Mazzoli, V., & Donvito, R. (2020). The effects of QR delivered content on perceived product value. *Journal of Strategic Marketing.* https://doi.org/10.1080/0965254x.2020.1813794

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Ales, F. (2019). QR codes on packaging: A technology acceptance model approach comparing informative and entertaining content. *Universidade Católica Portuguesa.*

Ata, S., Baydaş, A., & Coşkuner, M. (2023). Effects of content marketing on customer satisfaction and brand loyalty. Journal of Social Sciences, 6(2), 37-45. https://doi.org/10.52326/jss.utm.2023.6(2).03

Bashir, H. (2022). Leveraging technology to communicate sustainability-related product information: Evidence from the field. *Journal of Cleaner Production, 362*. https://doi.org/10.1016/j.jclepro.2022.132508

Curtis, T., Abratt, R., Rhoades, D. L., & Dion, P. (2011). Customer loyalty, repurchase and satisfaction: A meta-analytical review. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior,* 24(). Retrieved from https://commons.erau.edu/db-management/18

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. Mis Quarterly, 13(3), 319. https://doi.org/10.2307/249008

Demir, S., Kaynak, R., & Demir, K. A. (2015). Usage level and future intent of use of quick response (QR) codes for mobile marketing among college students in Turkey. *Procedia - Social and Behavioral Sciences, 181*, 405–413. https://doi.org/10.1016/j.sbspro.2015.04.903

Ertekin, S., & Pelton, L. E. (2014). An empirical study of consumer motivations to use QR codes on magazine ads. *American International Journal of Contemporary Research*, 4(5), 47-54.

Ertekin, S., & Pelton, L. E. (2014). Raising the bar for consumer engagement: Qualitative investigation of attitudes for quick response codes in magazine advertisements. *Journal of Marketing Development and Competitiveness,* 8(3), 84-94.
Felix, E. (2015). Marketing challenges of satisfying consumers changing expectations and preferences in a competitive market. *International Journal of Marketing Studies*, *7*(5). https://doi.org/10.5539/ijms.v7n5p41

Fernandes, S., Panda, R., Venkatesh, V. G., Swar, B. N., & Shi, Y. (2022). Measuring the impact of online reviews on consumer purchase decisions: A scale development study. *Journal of Retailing and Consumer Services, 68*, 103066. https://doi.org/10.1016/J.JRETCONSER.2022.103066

Giese, J.L. & Cote, J.A. (2000). Defining consumer satisfaction. *Academy of Marketing Science Review.* 4, 1-24.

Guido, G. (2015). Customer satisfaction. *Wiley Encyclopedia of Management*, 1-8 https://doi.org/10.1002/9781118785317.weom090287

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Hossain, M. S., Zhou, X., & Rahman, M. F. (2018). Examining the impact of QR codes on purchase intention and customer satisfaction on the basis of perceived flow. *International Journal of Engineering Business Management, 10*. https://doi.org/10.1177/1847979018812323

Jung, J-H., Somerstein, R. & Kwon, E. (2012). Should I scan or should I go?: Young consumers' motivations for scanning QR code advertising. *International Journal of Mobile Marketing,* 7, 25-37.

Kim, Y. G., & Woo, E. (2016). Consumer acceptance of a quick response (QR) code for the food traceability system: Application of an extended technology acceptance model (TAM). *Food Research International,* 85, 266–272. https://doi.org/10.1016/j.foodres.2016.05.002

Kudiwa, A.E. (2024). Technology adoption by rural women: A Unified Theory of Acceptance and Use of Technology (UTAUT2) analysis. *Texila International Journal of Academic Research,* 11(2). https://doi.org/10.21522/tijar.2014.11.02.art016

Liu, H., Alli, H., & Yusoff, I. S. M. (2024). The impact of user preference and perceived value on customer satisfaction and marketability at traditional handicraft product. *Cogent Business & Management*, *11*(1). https://doi.org/10.1080/23311975.2024.2327476

Luitel, D. P. (2023). Factors affecting QR code usage in Nepal. *Global Journal of Management and Business Research: A Administration and Management, 23*(1).

Machado, J., Nantes, J., & Leonelli, F. (2019). Do I know what I eat? The use of QR code in food packaging to provide traceability information. *International Journal of Advanced Engineering Research and Science, 6*(1), 45-58. https://doi.org/10.22161/ijaers.6.1.8

Memon, M. A., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample size for survey research: Review and recommendations. *Journal of Applied Structural Equation Modeling, 4*(2).

Momani, A. M. (2020). The unified theory of acceptance and use of technology: A new approach in technology acceptance. *International Journal of Sociotechnology and Knowledge Development, 12*(3), 79–98. https://doi.org/10.4018/IJSKD.2020070105

Nath, A. B. & Varghese, T. (2020). Factors influencing the effective usage of QR code: A study among readers of Trivandrum city. *International Journal of Research and Analytical Reviews, 7*(1), 822–870.

Ngo, T.K.T & Nguyen, T.H. (2021). The intention to use QR code payment in an emerging market – The role of "attitude" as mediator. *Psychology and Education Journal, 58*(1), 3440-3454. https://doi.org/10.17762/pae.v58i1.1284

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Okazaki, S., Navarro, A., Mukherji, P., & Plangger, K. (2019). The curious versus the overwhelmed: Factors influencing QR codes scan intention. *Journal of Business Research, 99*, 498–506. https://doi.org/10.1016/J.JBUSRES.2017.09.034

Oonk, L. (2013). QR codes, quick response or quick rejection? A study about the contribution of the phenomenon QR codes on food products, on the intention to seek information and the purchase intention. [Master's thesis, University of Twente]. University of Twente Student Theses. https://essay.utwente.nl/64223/Pareeratanasomporn, N. (2018). Consumer preferences in food interactive packaging. https://scholarworks.rit.edu/theses

Pei, X. L., Guo, J. N., Wu, T. J., Zhou, W. X., & Yeh, S. P. (2020). Does the effect of customer experience on customer satisfaction create a sustainable competitive advantage? A comparative study of different shopping situations. *Sustainability*, *12*(18). https://doi.org/10.3390/SU12187436

Radu, A. E., Alexe, P., Pădure, D. Ș., Macri, A., & Belc, N. (2018). Perception of Romanian consumer on QR code as an extension of nutrition labelling. *Annals of the "Dunarea De Jos" University of Galati Fascicle II Mathematics Physics Theoretical Mechanics*, *41*(1), 229–236. https://doi.org/10.35219/ann-ugal-math-phys-mec.2018.2.16

Rahimi, Y., Restuti, S., & Wasnury, R. (2024). Analisis penggunaan qris (quick response indonesian standard) dengan pendekatan technology acceptance model (TAM). *JMPPK*, 3(1), 177-187. https://doi.org/10.21776/jmppk.2024.03.1.18

Ramadania, R., Hartono, H., Juniwati, J., Hendra, H., & Reswari, R. (2023). Are content marketing and switching barriers decisive in building consumer satisfaction, trust and loyalty on ride-hailing services in indonesia. The Asian Journal of Technology Management (Ajtm), 16(2), 82-94. https://doi.org/10.12695/ajtm.2023.16.2.1

Rohman, A., Asmara, R., & Andriani, D. (2023). The effect of multidimensional consumer perceived value on customer satisfaction and purchase intention of organic food. Habitat, 34(2), 213-224. https://doi.org/10.21776/ub.habitat.2023.034.2.19

Rotsios, K., Konstantoglou, A., Folinas, D., Fotiadis, T., Hatzithomas, L., & Boutsouki, C. (2022). Evaluating the use of QR codes on food products. *Sustainability*, *14*(8), 4437. https://doi.org/10.3390/su14084437

Ryu, J. S. (2013). Mobile marketing communications in the retail environment: A comparison of QR code users and non-users. *Mobile Marketing Association IJMM Winter, 8*(2).

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Shahril, Z., Den, N. S. A. R., Bahari, N. A. S. S., & Asnawi, N. I. M. (2024). Customer satisfaction in using digital QR code menu ordering in restaurant. *Journal of Tourism, Hospitality & Culinary Arts, 16*(1).

Sharma, A., Gupta, J., Gera, L., Sati, M., & Sharma, S. (2020). Relationship between customer satisfaction and loyalty. *SSRN Electronic Journal*. https://doi.org/10.2139/SSRN.3913161

Shin, D.-H., & Chang, W. S. (2013). QR code as interactive marketing communication media: focused on technology acceptance model. *The Journal of the Korea Contents Association, 13*(3), 76-86. https://doi.org/10.5392/jkca.2013.13.03.076

Shukla, A., Mishra, A., & Dwivedi, Y.K. (2024) Expectation Confirmation Theory: A review. In S. Papagiannidis (Ed), *TheoryHub Book*. Available at https://open.ncl.ac.uk / ISBN: 9781739604400

Sun, X., Foscht, T., & Eisingerich, A. B. (2021). Does educating customers create positive word of mouth? *Journal of Retailing and Consumer Services*, *62*, 102638. https://doi.org/10.1016/j.jretconser.2021.102638

Tsao, W.-C. & Tu, Y.-H. (2017). Presentation of QR code on product packages: Information content from the perspective of cognitive fit theory. *International Review of Management and Business Research, 6*(3), 1137-1150.

Tu, M., Wu, L., Wan, H., Ding, Z., Guo, Z., & Chen, J. (2022). The adoption of QR code mobile payment technology during COVID-19: A social learning perspective. *Frontiers in Psychology,* 12. https://doi.org/10.3389/fpsyg.2021.798199

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *Information Systems Research*, 27(3), 425–478.

Walter B.v., Jäger, B., Heumann C., & Kremmel, D. (2023). Customer education in the digital age: Intended and unintended effects. *Proceedings of the European Marketing Academy, 52nd, (113435).*

West, S.G., Finch, J.F. and Curran, P.J. (1995) Structural Equation Models with Non Normal Variables: Problems and remedies. In: Hoyle, R.H., Ed., Structura Equation Modeling: Concepts, Issues, and Applications, *Sage, Thousand Oaks, 56-75.*

Yamin, M. A. Y., & Abdalatif, O. A. A. (2024). Examining consumer behavior towards adoption of quick response code mobile payment systems: Transforming mobile payment in the fintech industry. *Humanities and Social Sciences Communications*, *11*(1). https://doi.org/10.1057/s41599-024-03189-w

ISSN Print: 2984-8288
ISSN Online: 2984-8385

Yang, S., Phan, H. T. T., Hsieh, C., & Li, T. (2022). What intentions and interesting information can attract consumers to scan QR code while buying eggs? *Foods*, *11*(9), 1259. https://doi.org/10.3390/foods11091259

Zhai, L., Yin, P., Li, C., Wang, J., & Yang, M. (2022). Investigating the effects of video-based e-word-of-mouth on consumers' purchase intention: The moderating role of involvement. *Sustainability, 14*(15), 9522. https://doi.org/10.3390/su14159522

Žurbi, T., & Gregor-Svetec, D. (2023). Use of QR code in dairy sector in Slovenia. *SAGE Open, 13*(2). https://doi.org/10.1177/21582440231177028