Customer Smart Experience Quality of Fast-Food Restaurants and Brand Love

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ABSTRACT

This study investigates how consumer smart experience quality in smart retail environments in Indonesia's fast-food restaurant industry influences brand love and, in turn, customer engagement. Smart experience quality is conceptualized through four dimensions: intelligent systems, human–machine interaction, self-service, and product content, while customer engagement is operationalized through buying, referring, influencing, and feedback behaviors. The study used a quantitative research design and collected data through a structured survey. Participants were selected based on their prior experience with omnichannel services in fast-food restaurants. The researchers analyzed the data using structural equation modeling (SEM) to examine the proposed relationships. The findings show that all four dimensions of smart experience quality have significant positive effects on brand love, which in turn significantly and positively influences customer engagement. The study contributes to the literature by positioning brand love as a mediating construct, addressing a notable gap and demonstrating its role in strengthening consumers' emotional attachment to fast-food restaurant brands and enhancing customer engagement. Given the highly competitive fast-food industry, where consumers face numerous brand alternatives, the findings further suggest that smart retail technologies enhance customer experiences by enabling more efficient brand evaluation and decision-making. Consequently, the study underscores the strategic importance of delivering high-quality smart experiences to foster brand love and strengthen customer engagement.

Key Words: Customer Smart Experience Quality, Brand Love, Customer Engagement, Omnichannel Marketing

INTRODUCTION

The adoption of smart retail technologies in the fast-food restaurant industry is an increasingly important application of artificial intelligence (AI) and digital service technologies to enhance customer experiences and build stronger customer relationships (He & Zhang, 2023). Smart retail involves the integration of digital technologies, including mobile applications, websites, social media platforms, self-service kiosks, interactive displays, tablets, intelligent recommendation systems, service robots, and conversational AI, to create seamless interactions across physical and digital service environments (Lynch & Barnes, 2020). Rather than functioning as independent technological tools, these technologies increasingly operate as interconnected customer touchpoints through which consumers search for information, evaluate alternatives, customize products, complete transactions, and interact with brands across different stages of the customer journey.

Recent empirical evidence reinforces the importance of this integrated perspective. Zhang et al. (2024), based on data from 356 omnichannel consumers, found that omnichannel characteristics influence both hedonic and utilitarian customer experiences. Specifically, personalization enhances hedonic experience, whereas channel connectivity improves utilitarian experience, with both dimensions subsequently contributing to customer loyalty. These results indicate that the value of omnichannel technology is derived not merely from providing multiple channels but from the quality and continuity of customer experiences across those channels. Smart retail

technologies are particularly relevant in restaurant environments because they enable customers to actively participate in the service process. Digital ordering applications, self-service kiosks, AI-based recommendation systems, and other automated interfaces allow consumers to access product information, customize orders, reduce waiting time, and complete transactions with greater autonomy. Recent empirical research supports the importance of technology-enabled service experiences in restaurants. Meeprom and Suttikun (2024), using data from 527 restaurant customers, found that evaluations of AI-based and employee-based service influence customer engagement, which subsequently contributes to customer loyalty. These results demonstrate that AI technologies can become important components of customer relationship development when they facilitate meaningful interaction with the service provider.

Technology-enabled restaurant experiences may therefore generate value beyond operational efficiency. Smart technologies can provide functional value through speed and convenience, cognitive value through better access to information, experiential value through interactivity and novelty, and potentially relational value by strengthening customer identification and emotional attachment to the brand. Setiawan et al. (2025) support this proposition by examining 250 customers of robot-barista coffee shops in Bandung, Indonesia. Their findings demonstrate that experiential value and novelty contribute to customer satisfaction, brand love, and behavioral intentions. Such evidence is particularly relevant to the present research because it suggests that technology-enabled service encounters can move beyond functional evaluations and become antecedents of affective consumer–brand relationships.

The relational consequences of AI-enabled interactions are also supported by recent hospitality research. Guan et al. (2025), employing scenario-based experiments and survey research, found that congruence between service-robot personality and brand personality increases consumers' brand love. Importantly, customer trust mediates this relationship, while interaction quality strengthens the effect. These findings suggest that the relationship between advanced technology and brand love does not arise automatically from technological sophistication. Rather, technology becomes emotionally meaningful when consumers perceive high-quality interaction, trustworthiness, and consistency between the technological interface and the brand's identity.

The Indonesian fast-food restaurant industry provides a particularly relevant context for examining these relationships because the market is characterized by increasing competition, digital transformation, and widespread consumer exposure to multiple competing brands. Fast-food operators have increasingly adopted mobile ordering applications, delivery platforms, self-service technologies, digital loyalty programs, social-media communication, and integrated online–offline channels. These developments suggest that competitive advantage increasingly depends not only on food products and physical outlets but also on the quality of customers' digital and technology-enabled experiences.

Recent Indonesian studies further demonstrate the growing importance of technology, emotional attachment, and relational outcomes in food-service settings. Firkiana et al. (2025), examining restaurant innovativeness in Indonesia, investigated menu innovativeness, technology-based service innovativeness, experiential innovativeness, and promotional innovativeness as antecedents of brand love and brand loyalty. Their findings indicate that customers respond differently to various forms of restaurant innovation, suggesting that technologically enabled and experiential innovations may play distinct roles in developing emotional relationships with restaurant brands.

Despite these developments, previous research on Indonesia's fast-food sector remains fragmented. Existing studies have largely focused on specific aspects such as self-service technology, customer loyalty, spatial distribution of fast-food outlets, digital marketing, and cloud-kitchen strategies. Likewise, international research on digital retail has investigated omnichannel integration, mobile applications, virtual shopping environments, online food retailing, loyalty programs, food-delivery applications, smart shopping experiences, and AI adoption. However, empirical attention has been relatively limited in explaining how the quality of smart technology-enabled experiences develops into emotional attachment to restaurant brands and how that attachment subsequently generates multiple forms of customer engagement.

This gap is increasingly important because recent studies indicate that advanced technologies do not automatically generate positive brand relationships. For example, research on restaurant service robots

demonstrates that technological characteristics such as reliability and safety improve customers' evaluations of brand value and subsequently contribute to satisfaction and loyalty (Han, 2025). Likewise, Guan et al. (2025) show that interaction quality and trust determine whether service robots contribute to brand love. These findings indicate that technology must be interpreted through psychological and relational mechanisms before it can influence deeper consumer–brand outcomes.

To address this gap, the present study introduces brand love as a central relational mechanism linking customer smart experience quality with customer engagement. Brand love is an intense, enduring emotional relationship between consumers and brands, characterized by attachment, affection, identification, positive evaluation, and a desire to maintain the relationship. Although previous studies have examined brand love within conventional retail and hospitality settings, emerging empirical evidence indicates that brand love is also relevant in technologically mediated service environments.

Recent studies provide particularly important support for this argument. Setiawan et al. (2025) show that experiential value in robot-barista coffee shops can contribute to brand love and behavioral intention, while Guan et al. (2025) show that service-robot characteristics can foster brand love when technological interactions align with brand personality and are supported by customer trust. Furthermore, Ali et al. (2025), drawing on the Stimulus–Organism–Response (S-O-R) framework in the restaurant industry, demonstrate that Generative AI adoption can influence brand authenticity, brand image, self-brand congruity, electronic word-of-mouth, and behavioral intentions. These findings suggest that AI-enabled service encounters can influence not only functional evaluations but also the psychological and relational meanings customers associate with restaurant brands.

The Stimulus–Organism–Response (S-O-R) framework is particularly relevant for explaining these relationships. Smart retail technologies can be conceptualized as environmental stimuli that customers encounter during service interactions. These stimuli may produce internal cognitive and affective responses such as perceived usefulness, convenience, enjoyment, trust, satisfaction, positive emotions, and perceived value, which subsequently influence relational and behavioral outcomes. Recent empirical evidence from robot-service restaurants strongly supports this mechanism. Kim et al. (2026), based on data from 422 restaurant customers, found that positive emotions generated during robotic service experiences significantly improve customer satisfaction and brand loyalty. Joy, positive surprise, pleasantness, and love emerged as particularly important emotional responses. These results reinforce the argument that the effectiveness of smart service technologies depends substantially on their capacity to generate positive affective experiences rather than merely demonstrate technological capability.

Accordingly, the present study conceptualizes customer smart experience quality as an antecedent of brand love. Following Fan et al. (2020), smart experience quality comprises four dimensions: human–machine interaction, intelligent system quality, self-service quality, and product content quality. These dimensions capture different ways in which customers evaluate technology-enabled restaurant experiences. Human–machine interaction reflects the quality of consumers' direct interactions with smart interfaces; intelligent system quality concerns technological capability and responsiveness; self-service quality represents autonomy, convenience, and efficiency; and product content quality reflects the relevance and usefulness of product-related information delivered through smart systems.

Recent empirical research suggests that these dimensions may contribute differently to consumer–brand relationships. For example, interaction quality has been shown to strengthen the relationship between technological service characteristics and brand love (Guan et al., 2025), while AI and restaurant-service evaluations can increase customer engagement (Meeprom & Suttikun, 2024). At the same time, robot-based restaurant research indicates that customers' emotional reactions strongly influence satisfaction and loyalty (Kim et al., 2026). These studies collectively suggest that smart experience quality should not be viewed solely as a functional assessment of technology; rather, it represents a set of stimuli that can trigger cognitive and affective responses that ultimately strengthen consumer–brand relationships.

The present study further extends the literature by examining customer engagement as a consequence of brand love. Customer engagement represents customers' voluntary behavioral contributions to the firm beyond

traditional purchasing behavior. In the present study, these behaviors include customer engagement buying, customer engagement referring, customer engagement influencing, and customer engagement feedback. Recent empirical evidence supports the importance of technology-enabled experience in stimulating such relational behaviors. Meeprom and Suttikun (2024) show that customer engagement links AI- and employee-based restaurant service evaluations to customer loyalty. Similarly, Indonesian omnichannel research indicates that integration quality can strengthen customer engagement, which subsequently contributes to loyalty (Rosita, 2024). Thus, customer engagement provides a useful framework for capturing the broader relational value generated when customers develop meaningful relationships with technology-enabled restaurant brands.

Overall, the emerging empirical literature suggests a progression from technology adoption toward relationship formation. Earlier smart-retail studies largely emphasized adoption, usefulness, convenience, and efficiency, whereas more recent research increasingly demonstrates that AI, service robots, omnichannel technologies, and smart-service interfaces can influence emotions, brand evaluations, brand love, engagement, advocacy, and loyalty. Nevertheless, relatively few studies have integrated these perspectives into a single framework connecting multidimensional smart experience quality, brand love, and multiple forms of customer engagement, particularly in Indonesia's fast-food restaurant industry. This study addresses this gap by examining how smart retail experiences shift from functional technology encounters to emotionally meaningful consumer–brand relationships and, subsequently, to value-generating customer engagement behaviors.

LITERATURE REVIEW

Service Encounter

A service encounter is a fundamental concept in smart retail, referring to interactions between consumers and service providers throughout the service delivery process (Bitner & Wang, 2014). These interactions encompass pre-service, core-service, and post-service encounters, with the core service representing the "moment of truth" that significantly shapes consumers' perceptions of service quality. Service encounters may occur through face-to-face interactions, online platforms, or technology-enabled systems, reflecting retail's evolution from conventional service delivery to digitally integrated experiences. Through multiple touchpoints, service providers can engage consumers across physical and virtual environments, creating seamless and consistent customer experiences.

The digital transformation of the retail sector has further expanded the scope of service encounters by integrating advanced technologies into the customer journey. Smart retail leverages technologies such as mobile applications, self-service kiosks, smartboards, social media, and artificial intelligence to enhance consumer interactions and improve service delivery (Park & Kim, 2018). This integration of physical and virtual environments enables retailers to provide omnichannel experiences that allow consumers to move seamlessly between online and offline channels (Harris et al., 2018). For example, in fast-food restaurants, customers can browse menus, place orders through self-service kiosks or digital displays, access product information via mobile applications, and complete transactions using digital payment systems. Such technology-enabled interactions not only improve operational efficiency and convenience but also enrich the overall customer experience.

From a branding perspective, service encounters represent a strategic mechanism through which organizations build relationships with consumers. Payne et al. (2017) argue that these interactions occur through various customer touchpoints, including personal touchpoints (e.g., face-to-face interactions and live digital assistance) and non-personal touchpoints (e.g., websites, mobile applications, emails, and self-service technologies). Positive experiences across these touchpoints evoke favorable emotional responses that strengthen consumers' attachment to the brand and contribute to brand love. Since consumer–brand relationships evolve, organizations must consistently deliver high-quality service encounters to maintain and reinforce these emotional connections (Langner et al., 2016). Supporting this perspective, Fernandes and Moreira (2019) proposed the Brand Connection Matrix, which highlights the importance of consistent consumer experiences in strengthening brand relationships. Therefore, within the smart retail context, well-designed service encounters play a critical role in fostering brand love by creating meaningful, memorable, and emotionally engaging customer experiences.

Stimulus Organism Response Theory

The Stimulus–Organism–Response (S–O–R) Theory developed by Mehrabian and Russell explains service encounters. The S–O–R framework posits that environmental stimuli (Stimulus) influence individuals' internal cognitive and emotional states (Organism), which subsequently shape their behavioral responses (Response) (Vieira, 2013). In this study, smart experience quality serves as the environmental stimulus, brand love represents the organism as an affective response, and customer engagement constitutes the behavioral response. Thus, the S–O–R theory provides a theoretical basis for explaining how smart experience quality enhances brand love, which subsequently promotes customer engagement.

Effect of Customer Experience Smart Quality on Brand Love

Customer smart experience quality refers to consumers' overall evaluation of their experience within a smart retail environment (Shin, 2015). Drawing on Fan et al. (2020), customer smart experience quality comprises four dimensions: intelligence system, human–machine interaction, self-service, and product content. The intelligence system reflects the technological infrastructure and operational capabilities that enhance retail efficiency and facilitate seamless shopping experiences (Robbins & Stylianou, 2003). Human–machine interaction captures consumers' cognitive and emotional experiences when using smart technologies such as digital interfaces, self-checkout systems, and intelligent shopping assistants, which enhance convenience and ease of use (Negash et al., 2003). Product content refers to the relevance, accuracy, quality, and completeness of product and service information retailers provide, enabling consumers to make informed purchase decisions (Shin et al., 2017). Self-service refers to consumers' ability to complete shopping activities independently using technological platforms, thereby enhancing perceived control, convenience, and shopping efficiency (Naqvi et al., 2021).

Brand love represents a deep emotional attachment that consumers develop toward a brand through satisfying and meaningful consumption experiences. Carroll and Ahuvia (2006) define brand love as consumers' passionate emotional bond with a brand, characterized by positive evaluations, affection, and enduring attachment. Similarly, Batra et al. (2012) conceptualize brand love as comprising passion, self-brand integration, positive emotional connection, long-term commitment, and willingness to invest in maintaining the consumer–brand relationship. Although brand love has frequently been associated with hedonic products, subsequent studies suggest that it can also emerge from superior consumption experiences across various product and service contexts.

Previous studies consistently demonstrate that positive brand experiences significantly contribute to the development of brand love. For instance, Ramirez and Merunka (2019) found that favorable brand experiences strengthen consumers' emotional attachment to brands, while Khan et al. (2021) reported that positive brand experiences enhance consumer delight, which subsequently fosters brand love. Likewise, Huang (2017) confirmed that memorable brand experiences positively influence consumers' emotional attachment and affection toward a brand. These findings suggest that consumers who perceive enjoyable, efficient, and satisfying experiences are more likely to develop stronger emotional bonds with the brand.

Within the smart retail context, customer smart experience quality can be regarded as an extension of brand experience, where technology-enabled interactions shape consumers' emotional responses toward the retailer. Smart retail systems integrate intelligent technologies, interactive interfaces, self-service functions, and high-quality product information to create efficient, convenient, and personalized shopping experiences. These technology-enabled experiences reduce consumers' effort, improve decision-making, and increase shopping enjoyment, thereby strengthening positive brand evaluations (Shin, 2017). Furthermore, effective smart retail systems provide reliable information, seamless navigation, and responsive services that enhance consumers' perceptions of service quality and overall satisfaction.

The Stimulus–Organism–Response (S–O–R) framework further supports the relationship between customer smart experience quality and brand love. According to the S–O–R model, environmental stimuli influence consumers' internal emotional states, which subsequently determine behavioral outcomes (Koo & Kim, 2013). In this study, customer smart experience quality functions as the environmental stimulus, while brand love represents the organism reflecting consumers' emotional responses. The four dimensions of smart experience

quality—intelligent systems, human–machine interaction, self-service, and product content—collectively create positive shopping experiences that encourage consumers to develop stronger emotional attachment toward retail brands (Naqvi et al., 2021). Consistent with Koo and Kim (2013), favorable retail environmental cues can stimulate consumers' emotional attachment and ultimately strengthen brand love.

Accordingly, we propose that higher customer smart experience quality enhances consumers' emotional attachment to smart retail brands. The following hypotheses are therefore developed:

H1: Customer smart experience quality positively influences brand love.

H1a: Intelligence system positively influences brand love.

H1b: Human–machine interaction positively influences brand love.

H1c: Self-service positively influences brand love.

H1d: Product content positively influences brand love.

Effect of Brand Love on Customer Engagement

Customer engagement represents a multidimensional psychological state that arises from consumers' interactive and value co-creation experiences with a brand (Brodie et al., 2011). It reflects consumers' cognitive, emotional, and behavioral investment in maintaining a relationship with a brand beyond transactional exchanges (Fernandez & Moreira, 2019; Hollebeek, 2011). Rather than being limited to purchase behavior, customer engagement encompasses voluntary activities that strengthen the consumer–brand relationship and create value for both consumers and firms (Pansari & Kumar, 2017). In technology-enabled service environments such as smart retail, customer engagement becomes increasingly important because digital interactions provide consumers with continuous opportunities to communicate, collaborate, and co-create value with brands throughout the customer journey.

Pansari and Kumar (2017) conceptualized customer engagement as a higher-order construct comprising four behavioral dimensions: customer engagement-buying (CEB), customer engagement-referring (CER), customer engagement-influencing (CEI), and customer engagement-feedback (CEF). Customer engagement-buying reflects consumers' willingness to continue purchasing from the brand, whereas customer engagement-referring represents their intention to recommend the brand to others. Customer engagement-influencing captures consumers' ability to shape other customers' attitudes and purchase decisions through positive advocacy. In contrast, customer engagement-feedback reflects their willingness to provide suggestions and constructive evaluations that help firms improve products and services. Together, these engagement behaviors generate direct and indirect value by improving customer retention, lowering acquisition costs, strengthening brand reputation, and supporting organizational learning (Pansari & Kumar, 2017).

Brand love is widely recognized as one of the strongest relational outcomes that can stimulate customer engagement behaviors (Junaid et al., 2019; Kaufmann et al., 2016). Brand love represents a deep emotional attachment characterized by affection, passion, and commitment towards a brand, motivating consumers to maintain long-term relationships that extend beyond repeated purchases. According to relationship marketing and consumer–brand relationship theory, emotionally attached consumers are more willing to invest their time, effort, and personal resources in supporting brands they value because these brands become integrated into their self-concept and identity (Brodie et al., 2011; Hollebeek, 2011). Consequently, brand love transforms consumers from passive buyers into active participants who voluntarily contribute to brand success through various engagement behaviors.

In smart retail environments, where intelligent technologies and digital platforms facilitate interactions, brand love is expected to strengthen customer engagement further. Consumers with strong emotional attachment are more likely to use smart retail applications repeatedly, continue purchasing through digital channels, and remain loyal despite competing alternatives (Fan et al., 2020; Hajli et al., 2017; Zhang et al., 2021). Emotional attachment also encourages consumers to advocate for the brand by sharing favorable experiences,

recommending the brand to family and friends, and influencing the purchasing decisions of other consumers through positive word-of-mouth communication (Pontinha & Vale, 2020; Rodrigues & Rodrigues, 2021; Roy et al., 2016; Wallace et al., 2014). Moreover, consumers who love a brand are more willing to provide constructive feedback because they perceive themselves as partners in the brand's continuous improvement rather than merely customers (Pansari & Kumar, 2017). Such voluntary participation enhances firms' ability to improve service quality, innovate customer experiences, and strengthen long-term customer relationships.

Empirical evidence consistently supports the positive association between brand love and customer engagement. Junaid et al. (2019) argued that customer engagement represents a behavioral consequence of consumers' emotional attachment to a brand. Subsequently, Junaid et al. (2020) showed that brand love significantly increases customers' willingness to recommend, influence, and provide feedback to brands, while Kaufmann et al. (2016) similarly reported that emotionally attached consumers exhibit higher engagement across multiple behavioral outcomes. These findings suggest that emotional attachment is a critical mechanism through which favorable consumer experiences translate into value-creating behaviors that benefit both consumers and firms.

Drawing on relationship marketing theory and the customer engagement framework proposed by Pansari and Kumar (2017), this study argues that consumers who develop stronger brand love through superior smart experience quality are more likely to show higher levels of customer engagement across buying, referring, influencing, and feedback behaviors. Accordingly, the following hypotheses are proposed:

H2: Brand love positively influences customer engagement.

H2a: Brand love positively influences customer engagement-buying (CEB).

H2b: Brand love positively influences customer engagement-referring (CER).

H2c: Brand love positively influences customer engagement-influencing (CEI).

H2d: Brand love positively influences customer engagement-feedback (CEF).

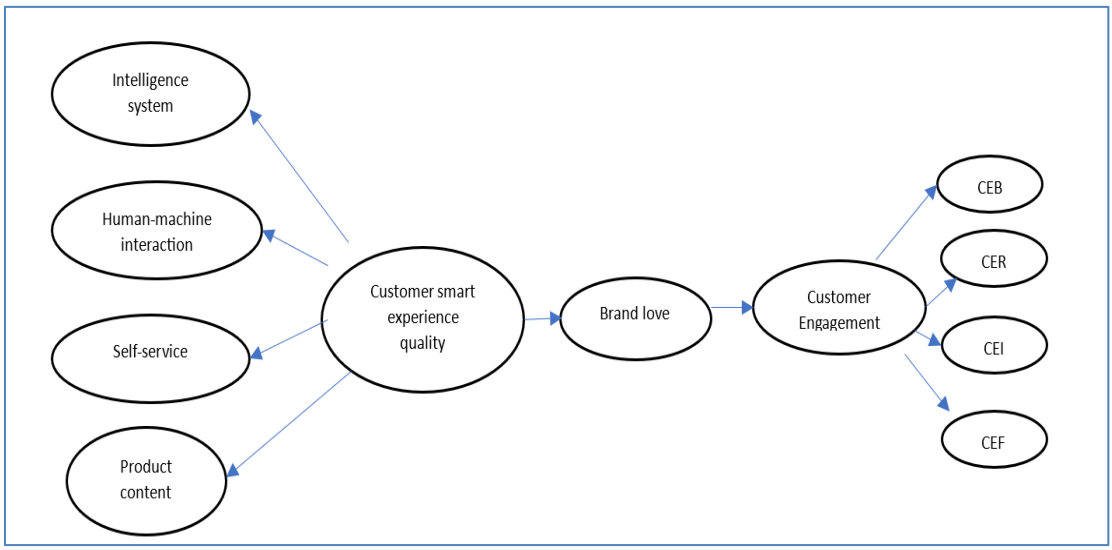

Figure 1: The Conceptual Framework

RESEARCH METHODOLOGY

Sampling

This study adopted a quantitative research design using a descriptive approach to examine the determinants of purchase loyalty toward fast-food brands within the smart retail context. The study used purposive sampling to recruit respondents with prior experience using smart applications to purchase food products. The study focused on three major fast-food retailers: McDonald's, KFC, and Taco Bell as representatives of smart retail. Data were

collected through an online survey distributed to consumers with prior experience using smart retail applications in fast-food restaurants in the Jabodetabek area and surrounding regions. Of the 455 questionnaires distributed, 261 valid responses remained after data screening for incomplete responses. They failed attention checks (valid-response rate: approximately 57%), and we used this final sample (N = 261) for all PLS-SEM estimations reported below. The sample comprised 59.4% male and 40.6% female respondents. Geographically, 93% of respondents lived outside the Greater Jakarta metropolitan area (Jabodetabek), while the remaining 7% lived in Jabodetabek. In terms of brand familiarity, 51% of respondents identified KFC as the smart retail brand they were most familiar with, followed by McDonald's (48%) and Taco Bell (1%).

The Measurement and Analyses

Customer smart experience quality was measured using the scale developed by Negash et al. (2003) and refined by Shin (2015). The construct comprises four dimensions: self-service (four items), intelligence system (five items), human–machine interaction (four items), and product content (three items). Customer engagement was operationalized using the multidimensional scale proposed by Pansari and Kumar (2017), consisting of four dimensions: buying, referring, influencing, and feedback, with four items representing each dimension. We measured brand love using the scale developed by Carroll and Ahuvia (2006). Table 1 presents the outer loadings, Cronbach's alpha, composite reliability (rho_A and rho_C), and average variance extracted (AVE) for each construct. Following Hair et al. (2019), indicator loadings should ideally exceed 0.70; loadings between 0.40 and 0.70 may be retained if construct-level AVE and composite reliability remain adequate. Two indicators - SS2 (loading = 0.665) and BL8 (loading = 0.578) - fell below the 0.70 threshold but were retained, as their removal did not meaningfully improve the corresponding construct's AVE or composite reliability. All Cronbach's alpha and composite reliability (rho_C) values exceeded the recommended 0.70 threshold, and all AVE values exceeded the recommended 0.50 threshold, confirming adequate reliability and convergent validity for all nine constructs. We retained loadings below the ideal 0.70 threshold (AVE and composite reliability remain adequate). All loadings are significant ($p < 0.001$).

Table 1. Outer Loadings, Reliability, and Convergent Validity

Construct	**Item**	**Loading**	**Cronbach's α**	**rho_A**	**rho_C (CR)**	**AVE**
Intelligence System (IS)	IS1	0.788	0.837	0.853	0.884	0.604
	IS2	0.814				
	IS3	0.836				
	IS4	0.716				
	IS5	0.724				
Human-Machine Interaction (HM)	HM1	0.793	0.810	0.815	0.875	0.637
	HM2	0.813				
	HM3	0.781				
	HM4	0.804				
Self-Service (SS)	SS1	0.816	0.767	0.844	0.843	0.575
	SS2	0.665 †				
	SS3	0.793				

	SS4	0.750				
Product Content (PC)	PC1	0.871	0.812	0.825	0.888	0.725
	PC2	0.847				
	PC3	0.836				
Brand Love (BL)	BL1	0.766	0.901	0.904	0.921	0.596
	BL2	0.783				
	BL3	0.783				
	BL4	0.828				
	BL5	0.817				
	BL6	0.811				
	BL7	0.780				
	BL8	0.578				
Customer Engagement-Buying (CEB)	CEB1	0.741	0.760	0.769	0.846	0.580
	CEB2	0.798				
	CEB3	0.716				
	CEB4	0.787				
Customer Engagement-Referring (CER)	CER1	0.801	0.861	0.865	0.905	0.705
	CER2	0.841				
	CER3	0.865				
	CER4	0.850				
Customer Engagement-Influencing (CEI)	CEI1	0.806	0.841	0.848	0.893	0.676
	CEI2	0.840				
	CEI3	0.815				
	CEI4	0.826				
Customer Engagement-Feedback (CEF)	CEF1	0.823	0.906	0.906	0.934	0.781
	CEF2	0.904				

	CEF3	0.893				
	CEF4	0.911				

Source: Author's own work, processed with SmartPLS 4

The HTMT results in Table 2 show that all construct pairs fall below the conservative 0.90 threshold (Henseler et al., 2015), with two notable exceptions: human-machine interaction and product content (HTMT = 0.929), and human-machine interaction and intelligence system (HTMT = 0.888). Both exceed or closely approach the conservative threshold, indicating some conceptual overlap among these three technology-related dimensions of customer smart experience quality in this study's fast-food restaurant context. This overlap is discussed further in relation to the dimension-level hypothesis testing results.

Table 2. Discriminant Validity - Heterotrait-Monotrait Ratio (HTMT)

	Brand Love	**CEB**	**CEF**	**CEI**	**CER**	**HM**	**IS**	**PC**
CEB	0.813							
CEF	0.636	0.573						
CEI	0.651	0.715	0.667					
CER	0.691	0.714	0.525	0.699				
HM	0.579	0.717	0.452	0.457	0.543			
IS	0.501	0.662	0.383	0.377	0.483	0.888		
PC	0.497	0.617	0.396	0.402	0.427	0.929 *	0.790	
SS	0.373	0.322	0.360	0.383	0.398	0.492	0.450	0.443

* HTMT ≥ 0.90 (conservative threshold); HM → PC = 0.929 exceeds the threshold, and HM → IS = 0.888 closely approaches it.

Source: Author's own work, processed with SmartPLS 4

Indicator-level (outer) VIF values ranged from 1.30 to 3.95 across all 37 indicators, and construct-level (inner) VIF values for the four predictors of brand love are reported in Table 3. All values are well below the conservative threshold of 3.3 recommended for formative or predictor constructs (Hair et al., 2019), except for human-machine interaction, which is marginally below this threshold and far below the liberal threshold of 5.0, indicating that collinearity does not pose a statistical threat to the structural model estimates.

Table 3. Inner Model Collinearity Statistics (VIF) - Predictors of Brand Love

Predictor of Brand Love	**Inner VIF**
Human-Machine Interaction (HM)	3.053
Intelligence System (IS)	2.308
Product Content (PC)	2.479
Self-Service (SS)	1.256

Source: Author's own work, processed with SmartPLS 4

RESULT AND DISCUSSION

Structural Model

This study examined and validated the proposed conceptual hypotheses through statistical analysis. Structural Equation Modeling (SEM) was employed as the primary analytical technique, using Analysis of Moment Structures (AMOS) for model estimation. After establishing the measurement model's adequacy, the structural model was evaluated using the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and overall model fit. Table 4 reports the R^2, adjusted R^2, and Q^2 (obtained via the blindfolding procedure with an omission distance of 7) for the five endogenous constructs. Following Chin (1998) and Hair et al. (2019), R^2 values of approximately 0.75, 0.50, and 0.25 represent substantial, moderate, and weak explanatory power, respectively. The model explains 28.4% of the variance in brand love ($R^2 = 0.284$) and between 32.5% and 46.6% of the variance in the four consumer engagement dimensions. All Q^2 values are well above zero, confirming that the model has adequate predictive relevance for all five endogenous constructs ($Q^2 > 0$ indicates predictive relevance; values above 0.15 are typically considered medium, per (Hair et al., 2019).

Table 4. R^2, Adjusted R^2, and Q^2 of Endogenous Constructs

Endogenous Construct	R^2	R^2 Adjusted	Q^2 (=1-SSE/SSO)
Brand Love	0.284	0.273	0.163
Customer Engagement-Buying (CEB)	0.466	0.464	0.262
Customer Engagement-Referring (CER)	0.373	0.371	0.258
Customer Engagement-Influencing (CEI)	0.325	0.322	0.210
Customer Engagement-Feedback (CEF)	0.327	0.325	0.251

Source: Author's own work, processed with SmartPLS 4

Effect sizes (f^2) indicate the extent to which each exogenous construct contributes to the R^2 of the corresponding endogenous construct. Following Cohen's (1988) benchmarks (0.02 = small, 0.15 = medium, 0.35 = large), brand love has a large effect on all four consumer engagement dimensions. In contrast, among the predictors of brand love, only human-machine interaction approaches a small-to-medium effect; the effect sizes of intelligence system, self-service, and product content are negligible, corroborating the non-significant or weak path coefficients.

Table 5. Effect Size (f^2) of Structural Paths

Path	f^2	Effect Size
Brand Love → CEB	0.872	Large
Brand Love → CER	0.595	Large
Brand Love → CEI	0.481	Large
Brand Love → CEF	0.487	Large
Human-Machine Interaction → Brand Love	0.041	Small
Self-Service → Brand Love	0.019	Negligible

Intelligence System → Brand Love	0.011	Negligible
Product Content → Brand Love	0.002	Negligible

Source: Author's own work, processed with SmartPLS 4

Model fit was evaluated using the standardized root mean square residual (SRMR) and the normed fit index (NFI), the two most commonly reported approximate fit indices for PLS path models (Henseler et al., 2014). The estimated model produced an SRMR of 0.092 and an NFI of 0.712; the corresponding saturated model values were 0.067 and 0.734, respectively. While the estimated-model SRMR is slightly above the conventional 0.08 cut-off often applied in covariance-based SEM, values up to approximately 0.10 are commonly considered acceptable for PLS path models with a relatively large number of reflective indicators (Hair et al., 2019).

Table 6. Model Fit Indices

Fit Index	**Saturated Model**	**Estimated Model**
SRMR	0.067	0.092
NFI	0.734	0.712

Source: Author's own work, processed with SmartPLS 4

Test of Hypotheses

Hypothesis testing was conducted in two stages, consistent with the study's two-level conceptualization of customer smart experience quality (CSEQ) and consumer engagement (CE). At the aggregate level, we tested H1 and H2 using a two-stage approach for higher-order constructs (Becker et al., 2012; Sarstedt et al., 2019), in which latent variable scores from the first-stage (disaggregated) model served as single indicators for the second-order constructs CSEQ and CE. At the dimensional level, we tested H1a-d and H2a-d using the first-stage structural model, in which each dimension was modeled as a separate first-order construct. We assessed path coefficient significance using a bootstrapping procedure with 5,000 subsamples in both stages. At the aggregate level, customer smart experience quality is formed by the latent variable scores of its four dimensions (loadings: HM = 0.908, PC = 0.868, IS = 0.862, SS = 0.629; Cronbach's α = 0.836), and consumer engagement is formed by the latent variable scores of its four dimensions (loadings: CEI = 0.838, CEB = 0.828, CER = 0.818, CEF = 0.765; Cronbach's α = 0.829). Discriminant validity at this level is supported by HTMT values below 0.90 for all three second-order construct pairs (CSEQ ↔ Brand Love = 0.576; CE ↔ Brand Love = 0.822; CSEQ ↔ CE = 0.697). As shown in Table 7, both aggregate-level hypotheses are supported: customer smart experience quality has a significant positive effect on brand love, explaining 27.9% of its variance ($R^2 = 0.279$), and brand love has a significant positive effect on consumer engagement, explaining 56.6% of its variance ($R^2 = 0.566$).

Table 7. Aggregate-Level Hypothesis Testing (Two-Stage HOC Model, Bootstrapping n = 5,000)

Hypothesis	**Path**	**β**	**t-value**	**p-value**	**R^2 (outcome)**	**Decision**
H1	CSEQ → Brand Love	0.528	8.039	< 0.001	0.279	Supported
H2	Brand Love → Consumer Engagement	0.753	21.173	< 0.001	0.566	Supported

Source: Author's own work, processed with SmartPLS 4

Table 8 presents the disaggregated path coefficients. Of the four sub-hypotheses under H1, only human-machine interaction (H1b) and self-service (H1c) show a statistically significant positive effect on brand love; the intelligence system (H1a) and product content (H1d) are not significant. All four sub-hypotheses under H2 are

fully supported, with brand love exerting a significant positive effect on all four consumer engagement dimensions; the strongest is customer engagement-buying (β = 0.682).

Table 8. Dimension-Level Hypothesis Testing (First-Stage Model, Bootstrapping n = 5,000)

Hypothesis	Path	β	t-value	p-value	Decision
H1a	Intelligence System → Brand Love	0.136	1.373	0.170	Not Supported
H1b	Human-Machine Interaction → Brand Love	0.298	3.062	0.002	Supported
H1c	Self-Service → Brand Love	0.132	2.139	0.032	Supported
H1d	Product Content → Brand Love	0.066	0.706	0.480	Not Supported
H2a	Brand Love → CE-Buying	0.682	16.177	< 0.001	Supported
H2b	Brand Love → CE-Referring	0.611	11.092	< 0.001	Supported
H2c	Brand Love → CE-Influencing	0.570	11.079	< 0.001	Supported
H2d	Brand Love → CE-Feedback	0.572	10.860	< 0.001	Supported

Source: Author's own work, processed with SmartPLS 4

The pattern of non-significant paths for intelligence system and product content is consistent with the discriminant validity results reported in Section 4.2.2: the high HTMT ratios between human-machine interaction and both intelligence system (0.888) and product content (0.929) suggest that, empirically, these three technology-related dimensions are not sharply distinguished by respondents in this fast-food restaurant context, such that the variance attributable to intelligence system and product content may be substantially absorbed by human-machine interaction in the structural model.

We examined the mediating role of brand love through the total indirect effects of each CSEQ dimension on each consumer engagement dimension, and through the specific indirect effect of the aggregate CSEQ construct on consumer engagement. As shown in Table 9, the indirect effects of human-machine interaction and self-service on all four engagement dimensions are statistically significant, mirroring their significant direct effects on brand love; the indirect effects of intelligence system and product content are not significant, again mirroring their non-significant direct effects on brand love.

Table 9. Total Indirect Effects of CSEQ Dimensions on Consumer Engagement via Brand Love

Indirect Path (via Brand Love)	β	t-value	p-value	Decision
Human-Machine Interaction → CE-Buying	0.203	2.917	0.004	Significant
Human-Machine Interaction → CE-Referring	0.182	2.831	0.005	Significant
Human-Machine Interaction → CE-Influencing	0.170	2.777	0.006	Significant
Human-Machine Interaction → CE-Feedback	0.170	2.794	0.005	Significant
Self-Service → CE-Buying	0.090	2.155	0.031	Significant
Self-Service → CE-Referring	0.081	2.103	0.036	Significant

Self-Service → CE-Influencing	0.075	2.094	0.036	Significant
Self-Service → CE-Feedback	0.076	2.135	0.033	Significant
Intelligence System → CE-Buying	0.093	1.341	0.180	Not Significant
Intelligence System → CE-Referring	0.083	1.316	0.188	Not Significant
Intelligence System → CE-Influencing	0.078	1.365	0.172	Not Significant
Intelligence System → CE-Feedback	0.078	1.350	0.177	Not Significant
Product Content → CE-Buying	0.045	0.697	0.486	Not Significant
Product Content → CE-Referring	0.040	0.704	0.482	Not Significant
Product Content → CE-Influencing	0.037	0.702	0.483	Not Significant
Product Content → CE-Feedback	0.038	0.703	0.482	Not Significant

Source: Author's own work, processed with SmartPLS 4

At the aggregate level, the specific indirect effect of the CSEQ construct on consumer engagement via brand love is significant ($\beta = 0.398$, $t = 6.592$, $p < 0.001$). Because the structural model did not specify a direct path from CSEQ to consumer engagement, this result indicates full mediation by brand love: the entire effect of customer smart experience quality on consumer engagement is transmitted through the emotional mechanism of brand love, which directly supports this study's central originality claim.

Table 10. Specific Indirect Effect - Aggregate Two-Stage Model

Path	**β**	**t-value**	**p-value**	**Mediation Type**
CSEQ → Brand Love → Consumer Engagement	0.398	6.592	< 0.001	Full mediation

Table 11 provides a consolidated overview of all hypotheses tested in this study, at both the aggregate and dimensional levels.

Hypothesis	**Path**	**β (Path Coefficient)**	**t-value**	**p-value**	**Decision**
H1	Customer Smart Experience Quality → Brand Love	0,528	8,039	< 0.001	Supported
H1a	Intelligence System → Brand Love	0,136	1,373	0,170	**Not Supported**
H1b	Human-Machine Interaction → Brand Love	0,298	3,062	0,002	Supported
H1c	Self-Service → Brand Love	0,132	2,139	0,032	Supported
H1d	Product Content → Brand Love	0,066	0,706	0,480	**Not Supported**
H2	Brand Love → Consumer Engagement	0,753	21,173	< 0.001	Supported

H2a	Brand Love → Customer Engagement-Buying	0,682	16,177	< 0.001	Supported
H2b	Brand Love → Customer Engagement-Referring	0,611	11,092	< 0.001	Supported
H2c	Brand Love → Customer Engagement-Influencing	0,570	11,079	< 0.001	Supported
H2d	Brand Love → Customer Engagement-Feedback	0,572	10,860	< 0.001	Supported

Source: Author's own work, processed with SmartPLS 4

The results show that customer smart experience quality, evaluated as a unified second-order construct, is a significant driver of brand love, and that this aggregate-level effect is disproportionately carried by the interactive, hands-on dimensions of the smart retail experience - human-machine interaction and self-service - rather than by the more passive or informational dimensions of intelligence system and product content. Brand love, in turn, strongly and consistently drives all four dimensions of consumer engagement and fully mediates the relationship between customer smart experience quality and consumer engagement, confirming brand love's central theoretical role in this study's conceptual model.

DISCUSSION

The findings of this study provide important theoretical and managerial implications for fast-food restaurant managers and, more broadly, for the food-service industry. The results indicate that delivering a high-quality smart experience through effective technology integration can strengthen consumers' relationships with fast-food restaurant brands. This finding aligns with earlier research emphasizing the role of technology-enabled experiences in shaping consumer perceptions and behavioral responses (Sarkar et al., 2019), and it also corresponds with more recent evidence showing that digital and technology-related aspects of service encounters can contribute to brand evaluations and relationship development.

For example, research on online food-delivery services demonstrates that technology-related characteristics such as application design contribute substantially to brand image and indirectly foster brand love. Importantly, however, this relationship is not necessarily direct; brand image can fully mediate the relationship between technology-related attributes and brand love, suggesting that technological capability must first be translated into favorable brand meanings before emotional attachment develops. Similarly, recent research on service robots demonstrates that technology quality can improve customer experience and organizational brand reputation, although consumer attitudes and brand-related evaluations play important intermediary roles. These studies reinforce the argument that consumers do not necessarily develop emotional bonds with technology itself; rather, technology contributes to brand love when it improves the overall meaning and quality of the brand experience.

In the present study, three dimensions of smart experience quality—human–machine interaction, self-service, and product content—significantly and positively affected brand love, whereas intelligent systems did not have a significant direct influence on brand love. This distinction matters theoretically because it suggests that not all components of technological sophistication serve the same psychological function in forming consumer–brand relationships. Several theoretical explanations may account for this result. Intelligent systems may generate functional value without emotional value. First, consumers may perceive intelligent systems primarily as functional infrastructure rather than as an emotionally meaningful part of the restaurant experience. Technologies involving automated recommendations, algorithmic processing, AI-enabled ordering, predictive systems, or automated operational decisions may improve accuracy, speed, and efficiency. However, customers may regard these capabilities as basic service utilities or expected technological features rather than sources of emotional attachment. This distinction matters for brand love because brand love is an intense affective relationship involving attachment, affection, identification, passion, and emotional connection. Technological

intelligence alone does not necessarily generate these emotions. Research on AI-enabled hospitality services supports this interpretation. A recent study comparing AI and human service providers found that AI service can reduce customers' perceptions of service warmth because consumers attribute lower levels of mind, experience, and agency to AI than to human service employees. Reduced perceived warmth subsequently lowers intentions to continue using AI-based services. This finding is highly relevant to the present study because brand love is fundamentally affective. A system may therefore be perceived as highly intelligent but insufficiently warm, empathetic, or socially meaningful to produce love toward the associated brand. Recent research demonstrates this distinction precisely. Guan et al. (2025) found that service robots contribute to brand love when the robot's personality aligns with the brand's personality. Furthermore, customer trust mediates this relationship, while interaction quality strengthens it. Thus, the technological agent does not automatically create love through its intelligence. Instead, brand love emerges when technology reinforces brand identity and creates sufficient trust and interaction quality.

Human–machine interaction represents a particularly experiential component of smart service. Consumers directly interact with kiosks, mobile applications, ordering interfaces, digital displays, or AI-supported systems during the service encounter. When these interactions are intuitive, responsive, enjoyable, and easy to understand, customers receive immediate experiential benefits. Recent hospitality research similarly emphasizes that interaction quality is central to whether advanced technology contributes positively to consumer–brand relationships. Guan et al. (2025), for example, demonstrate that interaction quality strengthens the relationship between service-robot characteristics, customer trust, and brand love. Their findings indicate that technology becomes emotionally valuable when consumers experience high-quality interaction rather than simply recognizing technological sophistication.

Self-service technologies may also trigger positive emotional responses because they give consumers greater autonomy, control, speed, and convenience. Consumers can choose when and how to interact with the restaurant, customize orders, verify product information, and complete transactions with less waiting time. Research on restaurant self-service technologies shows that well-designed, technology-enabled interactions can create more positive customer experiences and favorable behavioral outcomes, especially when the technology includes engaging elements rather than functioning solely as a transaction mechanism. Thus, self-service may influence brand love because it produces tangible benefits that consumers experience personally and repeatedly during their relationship with the restaurant. Similarly, product content provides cognitively and emotionally relevant information about menu items, ingredients, promotions, personalization alternatives, nutritional characteristics, and product recommendations. Such information reduces uncertainty while simultaneously supporting exploration and enjoyment. Consequently, smart product content may strengthen perceptions of relevance and personalization, thereby helping customers perceive the brand as attentive to their needs.

A particularly important finding is the non-significant relationship between product content and brand love. Although product-related information is an important component of smart restaurant systems, the results indicate that providing product content alone may not be sufficient to create the strong emotional attachment represented by brand love. Product content is primarily informational and cognitive rather than relational or affective. Information concerning menus, ingredients, prices, promotions, product descriptions, nutritional values, or product availability may help customers evaluate alternatives and make purchase decisions efficiently. However, brand love represents a much deeper emotional construct involving affection, attachment, passion, and identification with a brand. Consequently, useful product information may improve perceived usefulness or facilitate decision-making without necessarily creating an emotional bond with the restaurant. This interpretation is consistent with Anbumathi et al. (2023), who found that technology-related attributes in online food-delivery services do not necessarily lead directly to brand love. Instead, technology-related factors such as application design and service-quality attributes can operate through **brand image**, suggesting that functional and informational technological characteristics may first generate cognitive evaluations before developing into stronger emotional relationships.

From the perspective of Stimulus–Organism–Response (S-O-R) theory, human–machine interaction, self-service, and product content constitute environmental or technological stimuli (S) encountered during the fast-food service experience. These stimuli generate internal cognitive and affective evaluations—the organism (O)—including enjoyment, convenience, trust, perceived value, satisfaction, and positive emotions. These

internal states subsequently contribute to a relational response (R), represented in this study by brand love and subsequent customer engagement.

Recent research on robot-service restaurants reinforces this affective mechanism. Kim et al. (2026) demonstrate that positive emotions generated through robot-service restaurant encounters significantly increase customer satisfaction and brand loyalty. In particular, emotional states including joy, pleasantness, positive surprise, and love were important predictors of positive restaurant outcomes. Their findings imply that technology becomes relationally valuable when it creates positive affect rather than simply demonstrating technological capability.

This interpretation extends Rodrigues and Brandão (2020), who demonstrated the importance of experience in developing brand love in fast-food contexts. The present findings refine this argument by showing that the effects of technology-enabled experience are multidimensional. Technology is not inherently capable of producing brand love. Rather, technological attributes that are experienced directly, generate meaningful benefits, or stimulate positive affect appear better positioned to contribute to emotional attachment. The findings further demonstrate that brand love significantly influences customer engagement in the fast-food restaurant context. This result supports the customer engagement framework of Pansari and Kumar (2017), which conceptualizes engagement as extending beyond transactions to encompass multiple forms of value creation between customers and firms. Recent evidence further supports this relationship. Barbosa et al. (2024), examining restaurant brands and thousands of social-media comments, found that consumers exhibiting strong brand love actively defended restaurant brands when confronted with negative reviews. These behaviors show how emotional attachment can turn consumers into voluntary advocates who protect and promote restaurant brands. Similarly, contemporary research demonstrates close relationships among brand love, customer engagement, brand identification, loyalty, and behavioral advocacy across digital and hospitality settings. Recent evidence also indicates that emotionally meaningful brand relationships can generate customer engagement behaviors that extend beyond immediate transactions. In the present study, customer engagement consists of four dimensions: customer engagement buying (CEB), customer engagement referring (CER), customer engagement influencing (CEI), and customer engagement feedback (CEF). The results indicate that stronger emotional attachment to fast-food restaurant brands can stimulate all four forms of engagement.

CONCLUSION AND FUTURE SUGGESTIONS

Conclusion

This study advances understanding of how smart experience quality contributes to brand love and customer engagement in the fast-food restaurant context. The findings show that technology-enabled customer experiences can strengthen consumer–brand relationships, although the different dimensions of smart experience quality do not contribute equally to forming emotional attachment. In particular, human–machine interaction and self-service emerge as important drivers of brand love because they provide customers with direct experiential benefits, including convenience, autonomy, control, responsiveness, and more engaging interactions with the restaurant. These findings reinforce the view that technology becomes relationally valuable when consumers experience meaningful benefits through their interactions with it, rather than merely recognizing the service system's technological sophistication. In contrast, intelligent systems do not directly influence brand love. This finding indicates that technological intelligence alone may be insufficient to create emotional attachment. Although intelligent systems can improve operational efficiency, accuracy, personalization, and service speed, customers may perceive these technologies primarily as functional infrastructure or expected service features. Brand love, however, requires deeper affective responses involving attachment, affection, identification, and emotional connection. Therefore, intelligent technology is more likely to contribute to brand love when it is accompanied by trust, perceived warmth, interaction quality, and a clear connection to the restaurant brand's personality and meaning. This interpretation is consistent with recent evidence suggesting that advanced technologies become emotionally valuable when they generate positive affect and reinforce meaningful consumer–brand interactions.

The findings also indicate that product content does not necessarily translate directly into brand love. Although accurate information about menus, ingredients, prices, promotions, nutritional characteristics, and product availability facilitates consumer decision-making, this content is predominantly informational and cognitive.

Brand love, by contrast, represents a deeper affective relationship. Therefore, product content may increase usefulness, reduce uncertainty, and support product evaluation without necessarily generating emotional attachment. Its influence on brand love may instead occur indirectly through mechanisms such as perceived value, brand image, satisfaction, trust, personalization, or product experience.

These results provide a more nuanced application of Stimulus–Organism–Response (S-O-R) theory in smart restaurant environments. Technology-related features function as stimuli, but their ability to generate relational outcomes depends on the internal cognitive and affective states they produce. Human–machine interaction and self-service appear particularly capable of creating experiential value that stimulates enjoyment, convenience, perceived control, trust, and positive emotions, which can subsequently facilitate brand love. Thus, the findings suggest that technological sophistication should not be assumed to generate emotional attachment automatically; rather, technology must first be transformed into psychologically meaningful customer experiences.

Another important conclusion is that brand love significantly strengthens customer engagement. Consumers who develop stronger emotional attachment to fast-food restaurant brands are more likely to contribute value beyond a single transaction. Such customers are more willing to purchase repeatedly, refer the restaurant to others, influence other consumers through positive communication and advocacy, and provide feedback that helps the company improve its products, services, and technological experiences. The findings therefore demonstrate that brand love can transform satisfied technology users into active relational partners and voluntary brand advocates.

From a managerial perspective, fast-food restaurant managers should avoid viewing smart technologies merely as tools to increase efficiency or reduce service costs. Investments in digital ordering systems, self-service technologies, applications, kiosks, artificial intelligence, and other intelligent service systems should be designed around the quality of the customer experience they create. Place greater emphasis on making technology intuitive, responsive, personalized, enjoyable, and emotionally engaging. Intelligent systems and product content should also integrate experiential elements that increase perceived relevance, trust, warmth, and personalization, rather than functioning only as operational or informational tools.

Overall, this study demonstrates that the competitive value of smart restaurant technology lies not simply in how intelligent the technology is, but in how meaningfully customers experience it. Smart experience quality can strengthen emotional relationships when technological features generate experiential and affective value, and these emotional relationships subsequently encourage multiple forms of customer engagement. The study therefore extends existing research on smart service, brand love, and customer engagement by showing that technology-enabled stimuli have heterogeneous effects and that experiential and emotional value represent critical mechanisms through which smart technologies can generate stronger and more enduring consumer–brand relationships in the fast-food industry.

Future Suggestions

Future research could draw a clearer distinction among the functional, cognitive, experiential, and affective dimensions of smart experience quality. The present study indicates that technology-related stimuli do not necessarily affect consumers equally. Human–machine interaction and self-service appear to provide more direct experiential benefits, whereas intelligent systems and product content may operate primarily through functional or informational mechanisms. Future studies could therefore test an extended S-O-R model in which different types of technological stimuli generate different organismic responses before influencing brand love and customer engagement. Third, future studies could examine the role of positive emotions as mediating variables between smart experience quality and brand love. From the perspective of Stimulus–Organism–Response theory, smart technological features represent external stimuli, while emotional responses such as enjoyment, excitement, pleasure, surprise, comfort, and perceived control may represent the organismic processes through which brand love develops. Examining these emotional mechanisms would provide a more complete explanation of how technology-enabled experiences become strong consumer–brand relationships.

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