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The mediating role of self-service technology quality on customer acceptance intention and innovativeness among fast-food restaurants

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Abstract

This study examined the mediating role of self-service technology quality in the relationship between customer acceptance intention and innovativeness in fast-food restaurants in Davao City, Philippines. A survey of 300 customers who used self-service kiosks was conducted, utilizing mean analysis, Pearson r , and the Sobel z -test. Results indicated that self-service technology quality, customer acceptance intention, and innovativeness were all rated very high. Significant relationships were found among self-service technology quality, customer acceptance intention, and innovativeness, with the Sobel z -test confirming a partial mediating effect of self-service technology quality on customer acceptance intention, and innovativeness. This study implies that the Fast-food businesses should prioritize enhancing self-service technology quality, as it plays a crucial role in driving customer acceptance and fostering innovation. Investments in user-friendly interfaces, AI-driven recommendations, and seamless payment systems can further improve customer experience, streamline operations, and boost overall efficiency.

Keywords: Tourism and hospitality management self-service technology, customer acceptance intention, innovativeness, fast-food restaurants, mediation analysis, Sobel z -test

Introduction

The rapid advancement of information and communication technology (ICT) has significantly transformed the service industry, shifting traditional personal service interactions toward technology-based self-service. This shift is made possible through various digital interfaces that enable customers to access services independently, without direct involvement from service personnel (Na, Yang, & Lee, 2021) ^[19]. The adoption of such technologies has been particularly evident in industries like healthcare, retail, and, most notably, the fast-food sector. As service standards evolve, technology plays a crucial role in redefining the relationship between service providers and consumers, leading to increased efficiency, improved customer satisfaction, and streamlined business operations (Barrett, Davidson, Prabhu, & Vargo, 2015; Iqbal, Hassan, & Habibah, 2018; Jeon, Sung, & Kim, 2020) ^[1, 10, 11]. Despite these advancements, the integration of self-service technologies (SSTs) presents a growing concern regarding their impact on the overall service experience, particularly in industries where personalized human interaction has traditionally been central. This transformation necessitates a critical evaluation of how technology-driven service models affect consumer perceptions, service quality, and long-term engagement.

Self-service technologies such as self-order kiosks, mobile applications, and automated checkout systems have become increasingly prevalent, offering customers a more autonomous and personalized service experience. These technologies allow users to place orders, customize preferences, make payments, and receive assistance with minimal human interaction. Integrating artificial intelligence (AI) and machine learning further enhances these experiences by providing tailored recommendations, optimizing operational workflows, and analyzing customer behavior to improve service delivery (Scherer, Wunderlich, & Wangenheim, 2015; Jeon *et al.*, 2020) ^[24, 11]. Moreover, implementing cloud computing and Internet of Things devices has enabled businesses to efficiently manage inventory, track equipment status, and collect real-time data, contributing to excellent responsiveness and adaptability in service provision.

Long queues and extended wait times have traditionally been frustrating for customers. However, self-order kiosks and mobile ordering apps provide a solution by allowing

customers to place their orders conveniently. These systems reduce wait times and enhance the overall dining experience by offering personalized menu options, nutritional information, promotional deals, and loyalty rewards (Kim & Kim, 2019) ^[13]. For businesses, these innovations lead to standardized service quality, cost savings on labor, and increased order accuracy.

The service industry is expected to witness even more sophisticated advancements in self-service technology. Emerging trends such as voice-activated ordering, facial recognition payment systems, and robotic food preparation are already being explored as potential game-changers in the fast-food sector (Lee *et al.*, 2023). The continuous improvement of these technologies will likely result in broader acceptance and adoption by consumers, further reshaping the service delivery landscape across various industries.

Despite the widespread adoption of self-service kiosks in fast-food restaurants globally, there is a critical lack of research examining their impact in Davao City, particularly on how self-service technology quality mediates customer acceptance intention and innovativeness. While studies highlight the benefits of self-service technology, such as efficiency and convenience, little is known about how its quality dimensions influence customer behavior and business innovation in the local context. Given the rapid digitalization of the fast-food industry and the increasing reliance on technology-driven service models, it is urgent to investigate this gap to provide data-driven insights that can guide local businesses in enhancing self-service technology implementation, improving customer satisfaction, and staying competitive in an evolving market.

This study aims to probe the mediating effect of self-service technology quality on the relationship between acceptance intention and innovativeness of fast-food restaurants in Davao City. Specifically, it aims to measure the level of customer acceptance intention of fast-food restaurants, assess their level of innovativeness, ascertain the quality of self-service technology in terms of functionality, enjoyment, security, design, assurance, convenience, and customization, and determine the significance of the relationships between acceptance intention and innovativeness, acceptance intention and self-service technology quality, and self-service technology quality and innovativeness. The study also seeks to establish the mediating effect of self-service technology quality on the relationship between acceptance intention and innovativeness of fast-food restaurants in Davao City.

The following null hypotheses were tested at a 0.05 level of significance. This was the basis for establishing the significance of the hypotheses of this study, which are. There is no significant relationship between acceptance intention and innovativeness, acceptance intention, and self-service technology quality, and self-service technology quality and innovativeness. Self-service technology quality does not significantly mediate the relationship between acceptance intention and innovativeness among fast-food restaurants in Davao City.

Review Related Literature

Beyond customer convenience, implementing technology-based self-service solutions offers significant economic benefits for businesses. With rising labor costs and increasing demand for efficiency, many fast-food chains

have embraced self-service kiosks as a cost-effective alternative to traditional cashier-operated counters. A study by Grand View Research (2020) projects that the global self-order technology market will experience a steady growth rate of 12.4% from 2022 to 2028, indicating a strong trajectory for adopting these solutions. Major international fast-food brands such as McDonald's and Kentucky Fried Chicken have already incorporated self-service kiosks into their operations, streamlining order processing and enhancing the overall customer experience (Shahril *et al.*, 2021). The widespread implementation of these technologies has demonstrated tangible benefits, including increased transaction speed and a greater sense of empowerment for customers as they take control of their ordering experience. Furthermore, research by Dabholkar and Bagozzi (2002) ^[2] indicates that consumer traits such as technology anxiety and previous experience significantly affect self-service technology adoption.

While the rise of self-service technology presents numerous advantages, it also raises considerations regarding accessibility, user adaptability, and the potential displacement of traditional service roles. Some customers, particularly those less familiar with digital interfaces, may face challenges navigating self-service systems, emphasizing the need for user-friendly designs and hybrid service models that balance automation and human assistance (Kang, 2018; Na *et al.*, 2021) ^[19]. Oh, Jeong, and Baloglu (2013) ^[20] further highlight that perceived control and efficiency are critical determinants in consumers' willingness to adopt self-service technology in hospitality settings, insights that are also applicable to the fast-food industry. Nevertheless, as technological innovations continue to evolve and businesses refine their digital service strategies, self-service technologies are set to become an integral component of modern service industries, shaping the future of customer interactions and operational efficiency.

As part of their innovation strategy, fast-food establishments eliminate the need to queue, provide more time for menu selection, and offer clear and detailed information about menus, ingredients, discounts, and promotions (Yang *et al.*, 2019) ^[19]. Customers also feel a sense of safety and privacy when using kiosks, especially when facing language barriers or personal insecurities (Yaacob *et al.*, 2021). Comparisons between self-service and cashiers show that customers report a better experience with kiosks, with external responses varying based on crowdedness (Leung *et al.*, 2021). Most importantly, using self-service technology enables businesses to provide services with fewer employees (Lin *et al.*, 2011) ^[18], resulting in business cost savings (Law *et al.*, 2020). However, as with similar technologies, there are issues with self-service ordering kiosks. Yen (2005) ^[31] emphasized that service quality in self-service technologies directly affects customer acceptance intention, reinforcing the need for well-designed and efficient systems.

Self-service kiosks are crucial in shaping consumer behavior, particularly in fostering repeat business and brand loyalty. As highlighted by Fellizar *et al.* (2024) ^[5], customers who have positive experiences using self-service kiosks in fast-food chains such as Jollibee and McDonald's are likelier to return and recommend these establishments to others. This highlights the dual benefits of self-service technology: not only does it streamline operations and

reduce wait times, but it also cultivates a sense of convenience and efficiency that resonates with modern consumers. When customers feel that a business values their time and offers a smooth ordering process, their overall perception of the brand improves, leading to increased trust and advocacy.

The effectiveness of self-service technology goes beyond just reducing service friction—it also directly influences customer engagement. Harnidah *et al.* (2024) ^[18] emphasize that how customers interact with these kiosks can shape their dining experience. When designed intuitively, self-service kiosks empower customers by giving them greater control over their orders, reducing potential errors, and allowing customization. This autonomy enhances satisfaction, reinforcing the importance of businesses understanding and meeting customer expectations in the digital age. Lin and Hsieh (2011) ^[18] introduced the SSTQUAL scale, which measures self-service technology quality, emphasizing reliability, efficiency, and ease of use as key determinants of consumer adoption.

Beyond fast-food settings, self-service technologies are revolutionizing the broader hospitality and tourism industry. Pantano and Pizzi (2020) ^[23] highlight how self-service innovations have continuously evolved to address the changing demands of consumers, ensuring smoother and more efficient service experiences. This trend underscores businesses' need to remain adaptable and proactive in adopting new technologies. In an era where convenience is a top priority, staying ahead with user-friendly, efficient self-service solutions is not just a competitive advantage but an essential strategy for long-term success.

By integrating well-designed self-service kiosks, businesses can create a more engaging and satisfying customer journey. The research suggests that when implemented thoughtfully, these technologies do not replace human interaction but rather enhance it by allowing staff to focus on personalized service, addressing more complex customer needs. As the fast-food and hospitality industries continue to innovate, the role of self-service technology will only grow, shaping how consumers interact with brands and defining the future of service experiences.

In recent years, the quality of self-service technology has emerged as a significant factor influencing customer acceptance intention and innovativeness in the fast-food industry. Research has shown that high-quality self-service technology positively impacts customer acceptance, with ease of use and perceived usefulness being critical mediators (Jeon, Sung & Kim, 2020; Schoefer, 2016; Wang, Lin & Luarn, 2006) ^[11, 29]. Furthermore, studies have highlighted the relationship between self-service technology quality and customer acceptance intention, demonstrating that well-designed interfaces and reliable performance enhance customer experience and adoption rates (Kaushik & Rahman, 2016; Ghosh, 2021; Yen, 2005) ^[12, 6, 31].

As fast-food restaurants continue to innovate, understanding the intricate connections between self-service technology quality, customer acceptance intention, and innovativeness is crucial for maintaining competitiveness and meeting evolving customer expectations (Hussain *et al.*, 2023; Jeon, Sung & Kim, 2020; Kempczinski, 2021) ^[11]. Recent studies by Lee and Lyu (2016) ^[17] indicate that personal innovativeness plays a moderating role in customer acceptance, highlighting the importance of addressing varying levels of technological readiness among consumers.

The utilization rate of self-service ordering kiosks has been relatively low, and there are challenges in interface design and usability (Lee *et al.*, 2023). Due to a lack of technological knowledge, some customers hesitate to use self-service kiosks and prefer to engage with human service personnel (Rastegar, 2018). They might also be concerned about giving personal information or data, such as their debit card password, to complete the purchase using the self-service ordering kiosks (Kaushik *et al.*, 2015). Moreover, unclear operation processes, ineffective prompts, and interface design can lead to longer ordering times (El-Said & Al Tall, 2020; Arsat *et al.*, 2023) ^[3]. These issues signify that self-ordering kiosks may not yet have reached their full potential, indicating room for improvement in their design and functionality.

This study was grounded in the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The TAM posits that perceived usefulness and perceived ease of use are primary determinants of technology acceptance (Davis, 1989). UTAUT extends this by incorporating factors such as social influence and facilitating conditions, which affect user acceptance and usage behavior (Venkatesh *et al.*, 2003) ^[28]. These theoretical frameworks provided a foundation for understanding how self-service technology quality influences customer acceptance intention and innovativeness in fast-food restaurants. Figure 1 shows the conceptual framework of the mediating role of self-service technology quality on customer acceptance intention and innovativeness among fast-food restaurants in Davao City.

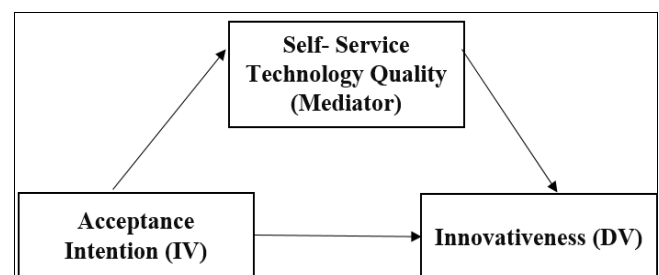


Fig 1: Conceptual Framework of the Study

Method

The researcher used quantitative research design to associate the mediating role of self-service technology quality on customer acceptance intention and innovativeness of fast-food restaurants in Davao City. In the field of descriptive research, information on current circumstances were gathered for description and interpretation (Olivar, Ubaldo, Espinosa & Gutierrez, 2023). Correlational analysis, a non-experimental design, investigates the relationship between two or more variables in a natural setting without the use of manipulation or control (Olivar, Ocio & Sitier, 2022) ^[22]. Moreover, a mediation model was used in this study. Mediation model was one that seeks to identify and explicate the mechanism or process that underlies an observed relationship between an independent variable (acceptance intention) and a dependent variable (innovativeness) via the inclusion of a third explanatory variable, known as a mediator variable (self-service technology quality).

The respondents of this study were 300 customers aged 18 years and above who had used self-service kiosks when ordering at fast-food restaurants in Davao City. Participation

was voluntary, and respondents were formally informed of their involvement and rights through a consent letter, ensuring they were free to withdraw at any time without penalty or loss of benefits. Inclusion criteria required respondents to be legal adults and customers of the selected fast-food restaurants, while those who were not customers or not of legal age were excluded.

Data collection instruments included adapted questionnaires from previous studies. The innovativeness questionnaire was adapted from Wiastuti and Rashid (2023), the customer acceptance questionnaire from Jeon, Sung & Kim (2020)^[11], and the self-service technology quality questionnaire from Park, Lehto X., and Lehto M. (2021). These instruments were modified to suit the context of the study and subjected to validation by a panel of experts. Responses were evaluated using a Likert scale, with ranges of means corresponding to descriptive levels from "Very Low" to "Very High," interpreting the extent to which each variable was observed.

Statistical tools utilized included: Mean: To determine the level of self-service technology quality, acceptance intention, and innovativeness among the fast-food restaurants in Davao City. Pearson Product-Moment Correlation (Pearson r): To ascertain the significance of the relationships between acceptance intention and innovativeness; acceptance intention and self-service technology quality; and self-service technology quality and innovativeness. Regression Analysis as input to the MedGraph program: To determine the significance of the mediation effect of self-service technology quality on the relationship between acceptance intention and innovativeness. Sobel Test: To test whether self-service technology quality mediated the effect of acceptance intention and innovativeness.

Results and Discussion

Customer Acceptance

Table 1 presents the level of customer acceptance in fast-food restaurants. The overall mean score 4.51 signifies a very high level of acceptance. This result is supported by strong ratings across the four indicators: performance expectancy, effort expectancy, social influence, and facilitating conditions. These findings indicate that customer acceptance is consistently perceived at an elevated level across all measured dimensions. This means that the self-service kiosk acceptance by the customers were much observed in the fast-food restaurants.

Table 1: Level of customer acceptance

Customer Acceptance	Mean	SD	Descriptive Level
Performance Expectancy	4.53	0.53	Very High
Effort Expectancy	4.48	0.51	Very High
Social Influence	4.44	0.60	Very High
Facilitating Conditions	4.58	0.53	Very High
Overall	4.51	0.42	Very High

After a thorough analysis of the data, facilitating conditions emerged as the most influential factor in customer acceptance, with the highest mean score of 4.58 and a standard deviation of 0.51. This indicates that diners who used interactive kiosks in fast food restaurants generally perceived strong support in terms of resources and infrastructure, enabling them to use the technology

effectively.

This study supports the findings of Venkatesh (2021), emphasizing that facilitating conditions such as the availability of resources, technical support, and user-friendly infrastructure play a critical role in the adoption of interactive kiosks in fast food restaurants. When customers perceive that these systems are easy to access and operate with minimal effort, their likelihood of using the technology increases.

In addition, performance expectancy also contributes to this behavior. It refers to the belief that using interactive kiosks enhances customer experience by improving speed, efficiency, and overall service productivity. As Jeon *et al.* (2020)^[11] noted, positive usage intention is often triggered when systems are not only easy to use but also perceived as beneficial. Similarly, Alalwan *et al.* (2018) affirmed that both facilitating conditions and performance expectancy have significant effects on a user's intention to adopt and continuously use emerging technologies.

In terms of effort expectancy, customers who used interactive kiosks in fast food restaurants responded positively, noting that the kiosks were easy to use, intuitive, and efficient when placing food orders. According to Alam *et al.* (2018) and Jeon *et al.* (2020)^[11], the ease of accessing and using the technology encourages customers to adopt it, increasing the likelihood of continued usage. Simply put, the easier the system is to use, the more likely customers are to accept it. This is supported by Sair and Danish (2018), who found a positive relationship between effort expectancy and intention to adopt technology, an observation echoed in the works of Alalwan *et al.* (2018), Arenas-Gaitán *et al.* (2015), and Jiang *et al.* (2016).

On the other hand, social influence received the lowest mean score of 4.44 with a standard deviation of 0.60. This suggests that while some customers were encouraged to try the interactive kiosks by family, friends, colleagues, or social media, it was not a strong determining factor in their decision. As supported by Lee *et al.* (2019)^[15], individuals may be influenced by those around them, especially when they perceive the use of new technology as valuable or socially encouraged.

The findings support previous studies suggesting that interactive kiosks in fast food restaurants can enhance service quality through technological innovation (Yaacob, Aziz, Bakhtiar, Othman, & Ahmad, 2021). As a result, customers have become more curious and eager to try new experiences, particularly those involving innovative technology. Factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions play a key role in attracting customers, encouraging acceptance and usage, and increasing their overall satisfaction with the products and services (Lowe & Dwivedi, 2019).

Innovativeness

Table 2 presents the level of innovativeness in fast-food restaurants. The overall mean score for innovativeness is 4.46, which is classified as very high. This high level of innovativeness is attributed to the respondents' evaluations of its four key indicators, each receiving a very high descriptive equivalent: Menu Innovativeness, Technology-Based Service Innovativeness, Promotional Innovativeness and Brand Innovativeness.

Table 2: Level of Innovativeness

Innovativeness	Mean	SD	Descriptive Level
Menu Innovativeness	4.53	0.52	Very High
Technology-Based Service Innovativeness	4.58	0.48	Very High
Promotional Innovativeness	4.32	0.63	Very High
Brand Innovativeness	4.39	0.59	Very High
Overall	4.46	0.46	Very High

Based on the study's findings, the innovativeness of kiosks in fast food restaurants received the highest rating under the dimension of technology-based service innovativeness. This indicates that customers perceived these kiosks as modern, efficient tools that enhanced their ordering experience. Beyond kiosks, the integration of QR code ordering, mobile applications, and online platforms has further contributed to this perception. These technologies offer flexibility, convenience, and personalized service, allowing customers to place orders, customize meals, and complete transactions through multiple digital channels. This aligns with the findings of Jeon *et al.* (2022) and Hamid *et al.* (2021) ^[7], who emphasized that technology-driven service innovations are reshaping the fast-food industry by improving operational efficiency and customer satisfaction. Similarly, Turner and Szymkowiak (2019) ^[26] highlight that the use of digital tools such as mobile apps and QR systems reduces wait times, simplifies ordering, and boosts customer engagement. The adoption of such innovations signals the industry's commitment to enhancing customer experiences and adapting to evolving consumer expectations.

The results showed that Menu, Brand, and Promotional Innovativeness were also rated positively by customers. This means that fast food restaurants are seen as creative and up-to-date in the way they present their food, promote their services, and build their brand.

For the menu, customers appreciated having more choices like new or seasonal items that make the experience more exciting (Hamid *et al.*, 2021) ^[7]. In terms of the brand, the use of consistent and modern digital branding whether through kiosks, apps, or websites helped keep the image fresh and appealing (Lee, 2016) ^[16]. When it comes to promotions, customers enjoyed app-only deals, QR code discounts, and fun, interactive offers. These tech-based promotions made ordering more engaging and encouraged them to come back (Jeon *et al.*, 2022). These findings are supported by Barrett *et al.* (2015) ^[1] and Turner and Szymkowiak (2019) ^[26], who noted that innovation in menus, branding, and marketing helps fast food businesses stay competitive and meet changing customer needs.

In conclusion, the integration of innovative dimensions through kiosk technology represents a significant leap forward in the fast food industry's ability to address the evolving needs of customers. By embracing Technology-Based Service Innovativeness, fast food restaurants can enhance customer satisfaction, streamline operations, and stay competitive in a rapidly changing market. It is recommended that fast food establishments continue to prioritize innovation in kiosk technology, focusing on enhancing menu customization, brand presentation, and promotional strategies. Additionally, integrating advanced digital platforms such as QR codes and mobile apps can further improve customer engagement, convenience, and satisfaction, ultimately fostering long-term loyalty and operational efficiency.

Self-Service Technology Quality

Table 3 presents the level of self-service technology quality in the fast-food restaurants. The findings indicate that self-service technology quality received a high overall mean score of 4.48, corresponding to a very high descriptive equivalent. This rating reflects the consistently high levels of the seven indicators: Functionality, Enjoyment, Security/Privacy, Assurance, Design, Convenience, and Customization. These results suggest that customers perceive self-service technology in these establishments as consistently high in quality across all relevant dimensions.

Table 3: Level of Self Service Technology Quality

Self Service Technology Quality	Mean	SD	Descriptive Level
Functionality	4.30	0.73	very high
Enjoyment	4.46	0.57	very high
Security / Privacy	4.38	0.62	very high
Assurance	4.59	0.43	very high
Design	4.53	0.45	very high
Convenience	4.55	0.49	very high
Customization	4.57	0.49	very high
Overall	4.48	0.38	very high

Analyzing the study's findings, the self-service technology quality in fast food restaurants showed the highest level of assurance (4.59). Customers felt confident using the kiosks, as they appeared reliable, secure, and supported by up-to-date technology. This aligns with the findings of Park, Lehto, and Lehto (2021), who emphasized that interactive kiosks enhance customer assurance by offering a consistent, trustworthy service experience and reinforcing the perception that the establishment is modern and dependable. In terms of enjoyment, diners and customers enjoyed using the self-service technology quality in fast food restaurants because they were intrigued by the system's features, functionality, and design, which provided all necessary information when placing an order. The findings of this study align with Lian's (2021) research, which showed that customers enjoyed using the interactive kiosks due to their convenience, flexibility, and constant accessibility.

In terms of customization, the self-service technology quality was designed to understand and cater to the specific needs of diners. They offered personalized features, allowing customers to tailor their orders, choose preferences, and adjust settings according to their tastes, making the experience more relevant and enjoyable.

Regarding convenience, the self-service technology quality provided an efficient way for diners to place orders. The user-friendly interface made it quick and easy to navigate, reducing wait times and streamlining the ordering process. This level of convenience was particularly appreciated by customers seeking a faster and more efficient dining experience.

When it comes to design, the self-service technology quality was visually appealing and intuitive to use. The layout was straightforward, making it easy for diners to understand how

to interact with the system. The design also incorporated clear instructions and a logical flow, which contributed to a smooth and hassle-free user experience. In the functionality of the self-service technology quality in the fast food restaurants were diners delighted because they can get the service in short time, the service was clear, requires a little effort, service dine smoothly and error free.

The results showed that security had the lowest mean score of 4.38 with a standard deviation of 0.62. While diners generally felt safe using the self-service technology quality and appreciated the clear privacy policies provided during ordering, some concerns remained. Customers valued the option to choose their payment methods, relying on the trust and security the kiosks provided. These findings align with research by Considine and Cormican (2016) and Park *et al.* (2021), which emphasized that security is one of the most important attributes of self-service technology quality. Additionally, the study highlights the significant role of communication support in enhancing the functionality, security, assurance, convenience, and customization of interactive kiosks. Even though customers are comfortable using kiosks, they still appreciate the ability to contact staff for assistance when necessary, such as through live chat. This need for human interaction is crucial, as both technology malfunctions and user challenges can cause the kiosk to fail (Shin & Perdue, 2019). As Williams and Savage (2019) suggest, fast food establishments must balance the empowerment that technology offers with the irreplaceable value of human staff, who can address issues like system malfunctions effectively. This study serves as a reminder for service providers to carefully consider the integration of self-service technology quality while still prioritizing human support when needed.

Therefore, the findings of this study support those of Barrett *et al.* (2015) ^[1], Lee (2016) ^[16], and Hamid *et al.* (2021) ^[7], who emphasized that self-service technology quality has transformed how customers interact with service systems. As noted by Jeon *et al.* (2022), self-service technologies

such as interactive kiosks are gaining attention for enhancing the dining experience through key features like functionality, enjoyment, security, assurance, design, convenience, and customization. This transformation has a significant impact on fast-food operations. According to Turner and Szymkowiak (2019) ^[26], it can help reduce labor costs, increase operational efficiency, and improve customer convenience by shortening wait times. The quality of self-service technology simplifies the ordering process, ensures service accuracy, and encourages customer acceptance and continued use. Ultimately, this allows staff to focus more on delivering quality customer service and helps streamline the overall dining experience.

Correlation analysis between variables

Table 4 presents the correlation analysis between the independent variable (customer acceptance intention), dependent variable (innovativeness), and the mediating variable (self-service technology quality).

The results indicate a positive correlation between customer acceptance intention and innovativeness, with an r -value of 0.52**, signifying a moderate correlation. Given its probability value of 0.000 and significance level of 0.05, the null hypothesis was rejected, confirming a statistically significant relationship between customer acceptance intention and innovativeness in fast-food restaurants. Similarly, customer acceptance intention and self-service technology quality demonstrated a strong positive correlation ($r=0.65, p=0.000$). This significance level led to the rejection of the null hypothesis, further supporting the idea that customer acceptance is closely linked to perceptions of self-service technology quality. Lastly, a significant correlation was observed between innovativeness and self-service technology quality ($r=0.22, p=0.000$), leading to the rejection of the null hypothesis and confirming a meaningful association between these two variables.

Table 4: Correlation analysis between variables

Pair	Variables	Correlation Coefficient	p-value	Decision on Ho
IV→DV	Customer acceptance and Innovativeness	0.52**	0.000	Reject
IV→MV	Customer acceptance and Service Technology Quality	0.65**	0.000	Reject
MV→DV	Innovativeness and Service Technology Quality	0.22**	0.000	Reject

The results of this study have significant implications for fast food restaurants looking to adopt and enhance self-service technology quality, particularly kiosks. The positive correlation between customer acceptance intention and innovativeness ($r=0.52$) suggests that customers are more likely to embrace innovative technologies in fast food settings when they perceive these technologies as novel, useful, and engaging. This finding aligns with prior research that emphasizes the role of innovation in customer decision-making and satisfaction in service contexts (Barrett *et al.*, 2015; Jeon *et al.*, 2022) ^[1]. Therefore, fast food establishments should focus on continuous innovation in service delivery, whether through menu customization, promotions, or digital branding, to increase customer acceptance.

Additionally, the strong positive correlation between customer acceptance intention and self-service technology quality ($r=0.65$) underscores the importance of high-quality technology in gaining customer trust and fostering

acceptance. This result is consistent with studies indicating that perceptions of technology quality, including its usability and reliability, directly influence customer willingness to use self-service technologies (Shin & Perdue, 2019; Lee, 2016) ^[16]. Fast food restaurants should prioritize the development and maintenance of high-quality self-service technologies that are easy to use, efficient, and reliable, as this enhances customer experience and encourages continued use.

Furthermore, the significant correlation between innovativeness and self-service technology quality ($r=0.22$) reveals that the quality of technology itself influences the perceived innovativeness of the service. This finding is supported by previous studies that suggest the integration of innovative features in technology can elevate customer perceptions of both the service and the technology itself (Hamid *et al.*, 2021) ^[7]. Fast food chains are encouraged to not only focus on implementing the latest technological trends but also ensure that these technologies offer

functional, user-friendly, and engaging experiences to maximize customer satisfaction.

In summary, these results suggest that customer acceptance of self-service technologies is heavily influenced by both innovativeness and the quality of technology. For fast food restaurants, it is essential to integrate innovative and high-quality self-service options to meet customer expectations and improve service delivery.

Furthermore, figure 2 illustrates the mediation analysis results, highlighting the relationships between customer acceptance intention, self-service technology quality, and innovativeness. The analysis confirms that customer

acceptance intention significantly influences both the mediating variable (self-service technology quality) and the dependent variable (innovativeness). Furthermore, the implementation of high-quality self-service technology positively and significantly impacts innovativeness. The results reveal that the direct effect of customer acceptance intention on innovativeness is significant, with an effect size indicating a strong relationship between the two variables. This finding is consistent with prior research emphasizing the role of customer acceptance in driving innovation within the fast-food industry (Jeon, Sung, & Kim, 2020) [11].

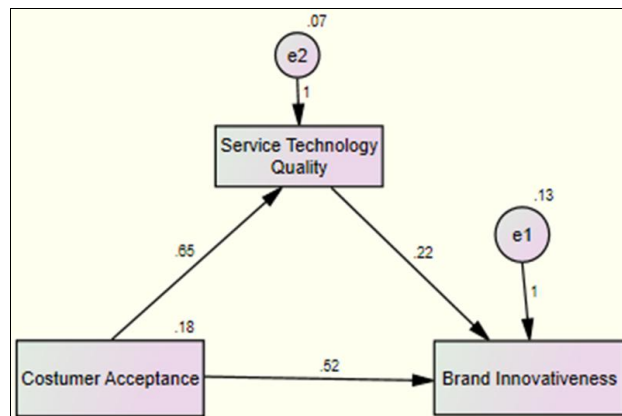


Fig 2: Medgraph showing the mediating role of quality of self-service technology of the relationship between customer acceptance intention and innovativeness among fast-food restaurants in Davao city, Philippines

Additionally, the indirect effect, in which self-service technology quality mediates the relationship between customer acceptance and innovativeness, is also significant. While the mediation effect is evident, the direct impact of customer acceptance on innovativeness remains stronger, suggesting that customer perceptions and willingness to adopt self-service technologies play a crucial role in fostering innovation in service delivery (Kaushik & Rahman, 2016).

The mediation effect of self-service technology quality is statistically supported, demonstrating significant partial mediation. This indicates that while customer acceptance directly influences innovativeness, self-service technology quality serves as a bridge that enhances this relationship. Specifically, partial mediation means that customer acceptance impacts innovativeness both directly and indirectly through self-service technology quality. The indirect path through self-service technology quality suggests that when customers accept technological solutions, they are more likely to perceive these technologies as high quality, which in turn strengthens their perception of the organization's innovativeness. However, since the direct path from customer acceptance to innovativeness remains significant even when self-service technology quality is included in the model, the mediation is partial rather than full. These findings align with Ghosh (2021) [6], who highlighted that well-designed, reliable self-service technologies not only improve customer satisfaction but also drive innovation in the fast-food sector.

Conclusion and Recommendation

The study concludes that fast-food restaurants in Davao City demonstrate a very high level of customer acceptance, which is significantly influenced by factors such as

performance expectancy, effort expectancy, social influence, and facilitating conditions. These factors contribute to the perception of these establishments as efficient and user-friendly. To sustain and further enhance customer acceptance and satisfaction, it is imperative for restaurants to focus on improving service quality, simplifying the ordering process, and leveraging social influence through active engagement on platforms like social media. Investments in infrastructure and consistent feedback collection from customers will enable establishments to adapt to dynamic consumer expectations and maintain a competitive edge. By adopting these strategies, fast-food restaurants can drive customer loyalty and establish a foundation for long-term success in an increasingly competitive market.

The findings also highlight the high level of innovativeness demonstrated by fast-food restaurants in Davao City, attributed to strong performance in areas such as menu design, technology-enabled services, promotional strategies, and brand development. These innovative efforts have effectively positioned these establishments as competitive players in the industry, contributing to increased customer loyalty and operational efficiency. To build on this success, restaurants should continuously integrate innovative practices into their menu offerings and service delivery systems, while also prioritizing the advancement of self-service technologies. Engaging with target audiences through well-designed promotional strategies and maintaining a system for regular feedback collection are crucial for adapting to shifting consumer preferences. Such efforts will ensure that these establishments remain relevant and competitive within the evolving foodservice landscape. The role of high-quality self-service technology emerges as a critical factor in shaping customer perceptions and

experiences. High ratings across indicators such as functionality, enjoyment, security, and customization suggest that these dimensions are instrumental in enhancing customer satisfaction and loyalty. To capitalize on these insights, fast-food establishments should continue to innovate their self-service offerings, emphasizing strong security and privacy measures to build trust while enhancing customization features to meet individual preferences. By doing so, these restaurants can differentiate themselves within the competitive market, ultimately improving customer experiences and fostering a positive brand reputation.

The study underscores the significant relationship between customer acceptance, self-service technology quality, and innovativeness in fast-food establishments. Positive correlations indicate that higher levels of customer acceptance drive innovation and improve perceptions of technology quality. This highlights the importance of understanding and responding to customer preferences in fostering both service quality and innovation. Restaurants should prioritize strategies that encourage customer feedback and promote engagement, fostering a culture of continuous improvement. By optimizing self-service technologies and aligning their offerings with customer needs, establishments can enhance overall customer experiences, leading to increased satisfaction and loyalty. This proactive approach will position fast-food restaurants competitively, enabling them to thrive in the industry.

Finally, the mediation analysis reveals that the quality of self-service technology plays a pivotal role in the relationship between customer acceptance and innovativeness. The results indicate a significant partial mediation, meaning that while customer acceptance directly contributes to innovativeness, the quality of self-service technology further enhances and strengthens this connection. In essence, self-service technology quality serves as a complementary pathway that amplifies the impact of customer acceptance on innovativeness, rather than replacing the direct effect. This finding emphasizes that while the quality of self-service technology is essential, fostering customer acceptance is equally critical to driving innovation. To achieve this, fast-food establishments should focus on enhancing customer engagement and satisfaction while prioritizing the ongoing development of self-service technologies. By actively seeking customer feedback and continuously improving their technology offerings, these establishments can leverage both the direct and mediated effects of customer acceptance to strengthen their innovative capabilities. Ultimately, this dual strategy prioritizing both customer acceptance and high quality self-service technologies will enhance customer experiences, ensure higher levels of technology adoption, and position the establishments as leaders in the competitive fast-food sector, securing their long-term success.

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