GRADIVA

Volume 64 | Issue 07 | July 2025
DOI: 10.5281/zenodo.16751696

Customer Satisfaction on the Use of Self-service Technologies in Selected Fast-Food Restaurants Using the Technology Acceptance Model

Mark Lixcel Lantican

Department of Hospitality Management, Institute of Tourism and Hotel Management
Far Eastern University-Manila. Email: mlantican@feu.edu.ph

Abstract

Self-service technologies (SST) and client satisfaction were evaluated in selected Metro Manila fast-food restaurants. Following the Technology Acceptance Model, it examines how perceived utility, perceived simplicity of use, intention of use, and actual use affect customer satisfaction in food service companies with self-ordering kiosks. This study used mixed approaches. The basic statistical method was Partial Least Squares Structural Equation Modeling (PLS-SEM) using a researcher-made and customized research instrument from 306 respondents. A qualitative FGD with five different-generation participants was used in the study. Findings shown that self-service kiosks offer fast, convenient ordering and empower customers, but payment issues can disrupt the experience and require better system design. While kiosks improve staff efficiency, users still prefer human interaction in certain dining contexts. Inclusive design is essential to accommodate generational and accessibility differences for broader usability. The findings can help grow industries and implement technologies in food places to improve SST. An adaptive service design that lets clients choose how to order is also encouraged. Food businesses can adapt to customer tastes and external forces.

Keywords: *Customer Satisfaction, Self-Ordering Kiosks, Technology Acceptance Model.*

INTRODUCTION

As society adopts new technology, self-service restaurants adjust, affecting consumer happiness. Restaurant technology may enhance dining experiences through service robots and kiosks, which are popular for order-based customer and employee interaction (Principato et al., 2023). Self-service technology is a huge innovation that can bring customers many benefits, including faster and easier transactions, user-friendliness, and perceived control (Lima, 2023). However, other customers may find advanced technology difficult, which results in frustration.

According to Nam et al. (2023), Generation X and boomers employ self-service technology, which promotes social anxiety due to a lack of self-service technology skills.

The Technology Acceptance Model by Fred D. Davis (1989) was used to assess the ease of use and perceived usefulness of self-service technology in fast-food restaurants. As it remains relevant for technological research (Al-Emran & Granić, 2021). This theory was used in this study to create questions about the ease of use.

Considering the transition of fast-food establishments with the use of self-service technology (SST), customers gain new value and relationships as it solves several common issues and complaints. SSTs are popular and assist in providing faster and more convenient service as they greatly reduce waiting time in most restaurants because they let consumers place

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orders without seeing the cashier. Moreover, it helps people adapt to the new normal and find its benefits as it is being utilized in kiosks, QR codes, and chatbots. Also, SSTs reduced food service lines with consideration that order control is based on client preferences and pace, the eating experience could be improved and consumer satisfaction increased (Seo, 2020); Wang et al., 2022).

This study is important as it examines how self-service technology (SST) in restaurants affects customer experience, highlighting benefits like faster service and perceived control. It also addresses challenges faced by older generations who may struggle with SST, leading to frustration and reduced satisfaction. Grounded in the Technology Acceptance Model, the study provides insights that can help restaurants design more user-friendly and inclusive systems.

LITERATURE REVIEW

The easiest way for businesses to acquire clients is to follow trends, and this is the reason why food businesses are encouraged to utilize current technology. Restaurants have invested in self-service technologies because consumers are tech-savvy, and the world is changing fast (Ismail et al., 2021). SSTs are used for ordering and paying at restaurants since they're efficient. Restaurant owners like SSTs like ordering kiosks because they reduce the number of servers, which means fewer customers. These kiosks would attract guests; thus, restaurant owners expect higher profits (Letho et al., 2020). Restaurant owners must better comprehend technology usage and optimize their marketing mix to influence consumers' purchase decisions as the fast-food industry rivalry rises. Restaurants must evaluate the kiosk system's usefulness. In addition, restaurants should realize the importance of continual engagement in generating new and innovative goods to meet client preferences. The technology was unique at first, but it became one of the users' favorite apps. Arsat et al. (2023) demonstrate the usefulness of self-service kiosk technology in corporate operations and improves service as the new era rapidly expands and evolves (Algarawi & Khan, 2021). Self-service kiosk technology may optimize services, lower costs, and eliminate human workloads, making it a game changer (Ahmad Ramli et al., 2021; National Economic and Development Authority, 2024). However, some businesses faced internal hurdles when implementing self-ordering kiosks (Che Ishak et al., 2021). Some people have social anxiety when utilizing self-service technology, and emulating others can help them adjust. Sometimes fear prevents the use (Nam et al., 2023). In contrast, client acceptance and technological restrictions hinder technology adoption in this industry. Technology has been useful to the quick-service restaurant industry, but its integration is limited by various difficulties. According to Babilonia et al, (2025), younger generations, particularly Generation Z, frequently use self-service kiosks due to their convenience, speed, and user-friendly design, which align with their fast-paced lifestyles. Perceived usefulness and ease of use significantly influence customer satisfaction and actual usage, with demographic factors like age playing a key role in technology adoption. Despite high satisfaction levels, older generations show hesitation toward kiosk use, suggesting businesses should enhance accessibility and tailor features to diverse customer needs.

Perceived Enjoyment

Perceived enjoyment plays a key role in shaping people’s attitudes and intentions to use a technology. It has a stronger effect than even perceived usefulness. According to Bolodeoku et al (2022)., perceived usefulness directly influences both the attitude toward using a technology and the intention to use it. Meanwhile, perceived ease of use affects perceived usefulness and attitude, which in turn indirectly influences usage intention. Al-Adwan et al.

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(2023) studied how students view the ease of using the metaverse for learning. Because metaverse platforms use virtual reality and interactive tools, they present information in a way that closely resembles real life, making it easier to understand. These platforms are also designed to feel like the real world, allowing users to learn in ways that match their past experiences—even in a virtual setting. This leads to hypothesis 1a and 1b respectively.

H1a: Perceived Enjoyment to Perceived Usefulness

H1b: Perceived Enjoyment Perceived Ease of Use

Perceived Usefulness of Self-service Technology

Different types of service and outcomes affect client satisfaction and attribution. How clients view service breakdowns and their absence in technology-enabled hospitality illustrates this changing picture. Generational shifts and productivity concerns are driving restaurant automation has increased to optimize robotic deployment in the hospitality industry due to the controversy surrounding robots' effects on customer experience and business performance (Park and Lehto, 2022; Lanzaderas et al.,2023) and affects establishing consumer trust and loyalty (Crismundo, 2023). Pros and drawbacks of advanced technologies. Most agree that self-service technology reduces wait times, although it can be erroneous. SST is better for restaurant meals; thus, most people pick it despite its downsides. Report that clients are anticipating more robotic services and preferring locations with less human contact (El-Said and Hajri, 2022). Thus, there are identified positive and negative impacts of perceived usefulness on maintained intention as linked to customer satisfaction. It suggests that perceived usefulness must satisfy customer needs to encourage use and result in return intention (Xavier et al., 2023). This leads to hypothesis 3.

H3: Perceived usefulness affects the intention of use.

Perceived Ease of Use of Self-service Technology

Hussain, et al. (2025) explored the role of technology systems in influencing intentions to adopt applications that enhance the performance and how technology contributes to improvements in the workplace systems. The intention to use technology through the mediating effects of perceived usefulness and perceived ease of use, with technology sophistication has shown a significant association between technology sophistication (TS), perceived usefulness (PU), perceived ease of use (PEU), and intention to use (IU). Additionally, PU and PEU positively mediate the relationship between TS and IU respectively.

Computerized ordering systems bring satisfaction both to food industry customers and businesses while improving ordering efficiency (Lumabad, 2021; Lee et al., 2023). SSTs are designed to reduce wait times and make transactions easier, including being easy to operate and not confusing clients. As technology advances, everyone prefers to adapt to changes in purchasing and communicating, which is why self-service technologies increase business success and consumer satisfaction. Navigation is simple and intuitive as it frees up time for personnel to prepare orders and clean up, and speeds up service (Lima, 2023; Noble, 2023). Even if change is rapid in today's generation, not everyone is familiar with such machines; therefore, restaurants should watch and guide those who need conventional service to boost customer happiness. This leads to hypothesis 2 and 4.

H2: Perceived ease of use affects Perceived Usefulness.

H4: Perceived ease of use affects intention of use.

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Intention of Use of Self-Ordering Kiosks

Social impact, monetary value, hedonic motivation, utilitarian expectations, and performance expectancy affect self-service kiosk behavior (Na et al., 2021). Restaurant patrons tend to utilize interactive SSTs based on customer needs rather than technology. Technology simplifies the operations, and as a result, people enjoyed kiosks and self-ordering kiosks since the customer experience matched expectations (Song et al., 2022; Rastegar et al.,2023; Kim, 2020). This shift is motivating to explore the complex relationships between service convenience, consumer value, satisfaction, and trust. This proves that restaurant kiosk convenience and decision-making affect consumer value. Consequently, consumer value impacts trust and satisfaction. SSTs in food service organizations are becoming increasingly popular since the removal of in-person interactions, save labor costs, speed up ordering, and increase customer loyalty and satisfaction as restaurants engage for convenience rather than labor cost reduction (Ismail et al., 2021; Liu and Lee, 2021; Kim, 2020; Babela et al., 2023; Noradzhar et al., 2020). However, SST also impacts restaurant part-time or full-time workers as it may lower their wages (Yoon, 2023). Restaurants must plan for these challenges to satisfy both personnel and customers. Most customers prefer SST, or kiosks, over face-to-face ordering (Taylor, 2023; Castillo, 2021; Kim et al., 2023). It is observed that younger generations prefer kiosks to traditional ordering, but older generations may struggle. Giousmpasoglou et al. (2023) found that customers reuse fast-food kiosks in addition to food quality. It shows that self-ordering kiosks improve customer happiness, but still depend on reliability, visual attractiveness, responsiveness, and empathy according to Joung et al. (2023). The performance and effort expectation, social impact, enabling factors, and price value affect restaurant customers' post-purchase behavior. This leads to hypothesis 5.

H5: Intention of use affects actual use.

Actual Use of Self-Ordering Kiosks

Conceptual Framework

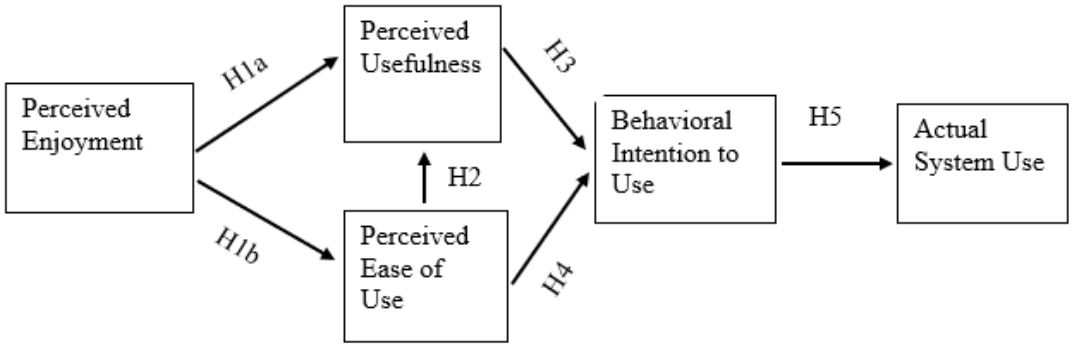

Figure 1: Conceptual Framework generated from the Technology Acceptance Model

As seen in Figure 1, the conceptual framework of the study was adapted from the TAM and used age and frequency of use as its external variables. In the adapted theory, customers' satisfaction or dissatisfaction is determined after using the technologies in selected food establishments. This is a way to determine whether the usage of kiosks would reach the expectations and satisfaction of each customer.

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METHODOLOGY- QUANTITATIVE STUDY

Materials

This study used a survey questionnaire with a researcher-made questionnaire based on literature analysis and a modified TAM research questionnaire (Jamil et al., 2019). The questionnaire exclusively asks self-service kiosk users about their opinions. Three food service experts—two quick-service restaurant managers and one former owner—validated the data collection tool. The questionnaire has three parts: demographic profile of respondents (age and frequency of kiosk use), consumer impression of kiosk use using the TAM, and customer satisfaction. Quantitative methods collect and analyse numerical data, according to Bhandari (2023).

Trends and averages, forecasting, causality, and population generalization. This quantitative study examined customer satisfaction and SSTs. Trend analysis across large populations requires quantitative methodologies (Muijs, 2021). Quantitative research measures perceived ease of use and client demographics using surveys and questionnaires. Statistics can confirm substantial correlations between variables with accurate analysis. This study also used PLS-SEM as its main statistical tool. PLS-SEM is ideal for this investigation since it can predict and test causal interactions between many variables even when statistics are abnormal or sample size is average. This method evaluates the predictive potential of latent variables (e.g., speed, ease of use, and satisfaction) and models complex relationships between variables (Hair et al., 2021).

Participants

The respondents of the study customers who recently made use of the self-ordering kiosks at the selected food service establishments in Metro Manila. The objective of the study is to provide significant perspectives for food service establishments to improve their self-ordering kiosk systems and render user satisfaction.

The respondents of the study focused on five generations which are Generation Z whose age ranges from 12 to 27, Millennials whose age range from 28 to 43, Generation X whose age ranges from 44 to 59, Boomers II whose age ranges from 60 to 69 and Boomers I whose age ranges from 70 to 78 encountering SST. Respondents included individuals of different generations who have interacted with various self-service kiosks in different food establishments in Metro Manila.

Table 1: Profile of the Respondents and their Usage

	Frequency	Percentage
Age		
Generation Z	214	69.93%
Millennials	68	22.22%
Generation X	13	4.25%
Baby Boomer	11	3.59%
Sex		
Male	151	49%
Female	155	51%
Usage		
At least once per day	21	7%
Several times a week	118	39%
Once a week	66	22%
Once a month or less	101	33%

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As seen in Table 1, there are a total of 306 respondents, consisting of 151 males and 155 females. All respondents are current residents of Metro Manila, aged 18 years and above, and have used self-ordering kiosks within the past 6 months. When it comes to age, the results show that Generation Z has a frequency of use of 214 with a percentage of 69.93%, Millennials has a frequency of use of 68 with the percentage of 22.22%, Generation X has a frequency of use of 4.25%, and Baby Boomer has a frequency of use of 11 with the percentage of 3.59. Based on the result, most of the respondents are Generation Z.

The usage “several times a week” has the highest frequency with 118 respondents and a percentage of 39. Meanwhile, the usage "at least once per day” has the lowest frequency, with 21 respondents and a percentage of 7. Most respondents have a high frequency of use of the self-ordering kiosk.

Results of the quantitative study

Presented in table 2 are the results of a path analysis, indicating significant positive relationships among the constructs. Specifically, Behavioral Intention to Use significantly predicted Actual System Use ($p<0.001$), demonstrate a very strong direct effect. Perceived Ease of Use significantly predicted Behavioral Intention to Use ($p<0.001$) and Perceived Usefulness ($p<0.001$). Furthermore, Perceived Enjoyment significantly influenced Perceived Ease of Use ($p<0.001$) and Perceived Usefulness ($p<0.001$). Lima (2023) found that self-ordering kiosks are simple, reducing confusion and effort and improving usage intention. Lumabad (2021) says most people are tech-savvy and use self-ordering kiosks. Finally, Perceived Usefulness also significantly predicted Behavioral Intention to Use ($p=0.004$). Self-service kiosks improve customer service and meet needs. This is in support as well with Soriano et al (2024) that convenience will drive people to self-ordering kiosks. Users utilize self-ordering kiosks more as they become more useful.

Table 2: Path Analysis

Hypothesis	Path	β	SE	t	p
H1a	Perceived Enjoyment → Perceived Usefulness	0.234	0.061	3.848	0.000*
H1b	Perceived Enjoyment → Perceived Ease of Use	0.846	0.026	32.552	0.000*
H2	Perceived Ease of Use → Perceived Usefulness	0.721	0.056	12.839	0.000*
H3	Perceived Usefulness → Behavioral Intention to Use	0.281	0.096	2.917	0.004*
H4	Perceived Ease of Use → Behavioral Intention to Use	0.656	0.096	6.822	0.000*
H5	Behavioral Intention to Use → Actual System Use	0.907	0.016	58.223	0.000*

Note: p>0.01 due to bootstrapping*

Table 3 A: Total Direct Effects

Total Direct Effects	β	SE	t	p
Perceived Ease of Use → Actual System Use	0.779	0.038	20.316	0.000*
Perceived Ease of Use → Behavioral Intention to Use	0.203	0.067	3.028	0.002*
Perceived Enjoyment → Actual System Use	0.719	0.038	18.853	0.000*
Perceived Enjoyment → Behavioral Intention to Use	0.793	0.033	23.841	0.000*
Perceived Enjoyment → Perceived Usefulness	0.610	0.053	11.555	0.000*
Perceived Usefulness → Actual System Use	0.255	0.088	2.896	0.004*

Note: p>0.01 due to bootstrapping*

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Table 3 B: Total Direct Effects

Total Direct Effects	β	SE	t	p
Perceived Ease of Use → Actual System Use	0.779	0.038	20.316	0.000*
Perceived Ease of Use → Behavioral Intention to Use	0.203	0.067	3.028	0.002*
Perceived Enjoyment → Actual System Use	0.719	0.038	18.853	0.000*
Perceived Enjoyment → Behavioral Intention to Use	0.793	0.033	23.841	0.000*
Perceived Enjoyment → Perceived Usefulness	0.610	0.053	11.555	0.000*
Perceived Usefulness → Actual System Use	0.255	0.088	2.896	0.004*

Note: p>0.01 due to bootstrapping*

Both Tables 3.A and 3.B displays the total direct effects of various constructs, indicating several statistically significant relationships. All indicated p-values are statistically significant at a level of $p < 0.01$ based on the bootstrapping method. Meanwhile, table 4 details the various indirect path effects within the model, indicating multiple statistically significant mediated relationships between the constructs. More complex indirect paths emerged, such as Perceived Enjoyment impacting Behavioral Intention to Use via Perceived Ease of Use and Perceived Usefulness, and Actual System Use via Perceived Ease of Use, Perceived Usefulness, and Behavioral Intention to Use. Finally, Perceived Usefulness indirectly predicted Actual System Use through Behavioral Intention to Use. While most indirect effects were highly significant, the paths from Perceived Enjoyment through Perceived Usefulness to Behavioral Intention to Use and then to Actual System Use, or just to Behavioral Intention to Use, showed marginal significance ($p=0.049$ and $p=0.048$ respectively), which are still less than 0.05 but above the 0.01 threshold denoted by the asterisk in the table due to bootstrapping.

Table 4: Indirect Path

Indirect Path	β	SE	t	p
Perceived Ease of Use → Behavioral Intention to Use → Actual System Use	0.595	0.089	6.701	0.000*
Perceived Enjoyment → Perceived Ease of Use → Behavioral Intention to Use → Actual System Use	0.504	0.080	6.318	0.000*
Perceived Enjoyment → Perceived Ease of Use → Behavioral Intention to Use	0.555	0.086	6.490	0.000*
Perceived Enjoyment → Perceived Ease of Use → Perceived Usefulness → Behavioral Intention to Use	0.171	0.057	3.027	0.002*
Perceived Usefulness → Behavioral Intention to Use → Actual System Use	0.255	0.088	2.896	0.004*
Perceived Enjoyment → Perceived Ease of Use → Perceived Usefulness → Behavioral Intention to Use → Actual System Use	0.155	0.052	2.995	0.003*
Perceived Enjoyment → Perceived Ease of Use → Perceived Usefulness	0.610	0.053	11.555	0.000*
Perceived Ease of Use → Perceived Usefulness → Behavioral Intention to Use → Actual System Use	0.184	0.061	3.004	0.003*
Perceived Ease of Use → Perceived Usefulness → Behavioral Intention to Use	0.203	0.067	3.028	0.002*
Perceived Enjoyment → Perceived Usefulness → Behavioral Intention to Use → Actual System Use	0.060	0.030	1.966	0.049
Perceived Enjoyment → Perceived Usefulness → Behavioral Intention to Use	0.066	0.033	1.979	0.048

Note: p>0.01 due to bootstrapping*

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Table 5: Total Effect

Total Effect	β	SE	t	p
Behavioral Intention to Use → Actual System Use	0.907	0.016	58.223	0.000*
Perceived Ease of Use → Actual System Use	0.779	0.038	20.316	0.000*
Perceived Ease of Use → Behavioral Intention to Use	0.859	0.037	23.518	0.000*
Perceived Ease of Use → Perceived Usefulness	0.721	0.056	12.839	0.000*
Perceived Enjoyment → Actual System Use	0.719	0.038	18.853	0.000*
Perceived Enjoyment → Behavioral Intention to Use	0.793	0.033	23.841	0.000*
Perceived Enjoyment → Perceived Ease of Use	0.846	0.026	32.552	0.000*
Perceived Enjoyment → Perceived Usefulness	0.845	0.026	32.680	0.000*
Perceived Usefulness → Actual System Use	0.255	0.088	2.896	0.004*
Perceived Usefulness → Behavioral Intention to Use	0.281	0.096	2.917	0.004*

Note: p>0.01 due to bootstrapping*

Table 5 summarizes the total effects of various predictors on outcome variables, indicating robust and statistically significant relationships throughout the model. All indicated p-values are statistically significant at a level of $p < 0.01$, as determined by the bootstrapping method.

Table 6: Standardized Root Mean Square Residual (SRMR) values

Model	SRMR	Mean	95% CI
Saturated Model	0.035	0.024	[0.029, 0.031]
Estimated Model	0.049	0.026	[0.031, 0.033]

Table 6 presents the Standardized Root Mean Square Residual (SRMR) values for a Saturated Model and an Estimated Model, indicating favorable model fit. The Saturated Model, providing a perfect fit to the observed data, shows an SRMR of 0.035, while the Estimated Model exhibits an SRMR of 0.049. Both values are well below the conventional good-fit threshold of 0.08, and even below the more stringent 0.05, suggesting that the Estimated Model adequately represents the relationships within the data. On the other hand, Table 7 displays the R2 values, along with their means, standard errors (SE), t-statistics, and p-values, for several constructs, all indicating strong predictive power and statistical significance. For 'Actual Syst' (likely Actual System Use), the R2 is 0.823 ($p<0.001$), suggesting that 82.3% of its variance is explained by the model's predictors. 'Behavioral' (likely Behavioral Intention) has an R2 of 0.848 ($p<0.001$), indicating 84.8% of its variance is explained. The third construct, labeled 'Perceived', shows an R2 of 0.716 ($p<0.001$), meaning 71.6% of its variance is accounted for. Finally, the fourth 'Perceived' construct (likely a different Perceived variable given the distinct R2) has the highest R2 at 0.861 ($p<0.001$), explaining 86.1% of its variance. All R2 values are statistically significant at $p<0.001$, affirming the model's substantial explanatory power for these endogenous constructs.

Table 7: R2 values, means, standard errors (SE), t-statistics, and p-values

Construct	R^2	Mean	SE	t	p
Actual System Use	0.823	0.832	0.028	29.061	0.000*
Behavioral Intention to Use	0.848	0.848	0.033	25.857	0.000*
Perceived Ease of Use	0.716	0.715	0.044	16.415	0.000*
Perceived Usefulness	0.861	0.861	0.025	34.963	0.000*

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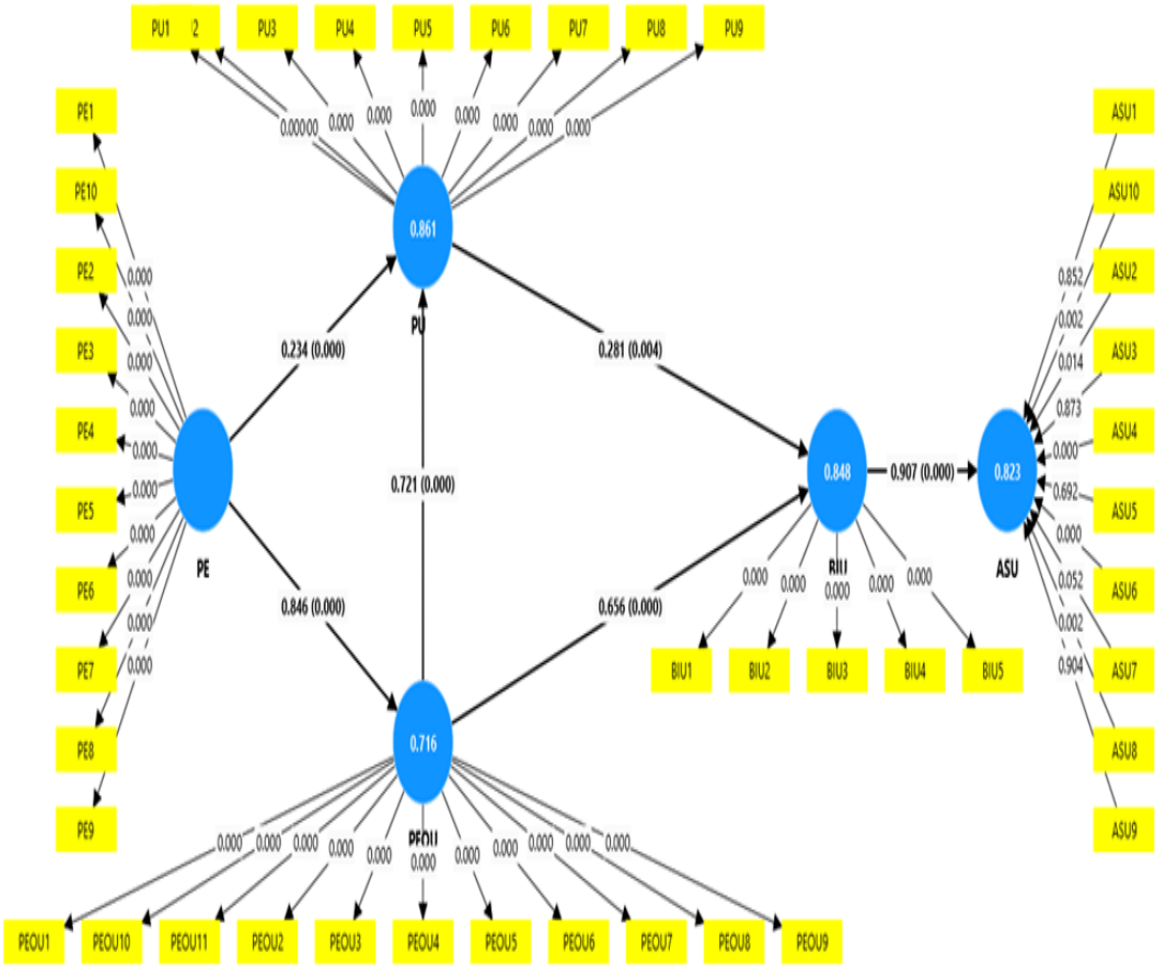

Figure 2: Proposed Model

Seen in figure 2 is the proposed model which presents the R^2 values for several constructs, demonstrating the model's strong predictive power and statistical significance.

The R^2 values indicate that the model explains a substantial portion of the variance in each construct, with 'Actual Syst' (likely Actual System Use) explaining 82.3%, 'Behavioral' (likely Behavioral Intention) explaining 84.8%, and the first 'Perceived' construct explaining 71.6%. The second 'Perceived' construct, with the highest R^2 of 86.1%, reflects the model's ability to account for significant variance in each construct. All R^2 values are statistically significant, confirming the model's robustness in explaining these outcomes.

METHODOLOGY- QUALITATIVE STUDY

Focus group discussion with 6 members has been conducted and allowed participants to reassess their ideas. Focus groups' joint brainstorming can generate new ideas, helping researchers comprehend members' opinions better than individual interviews. Thus, the researcher organized focus groups to improve factor correlations.

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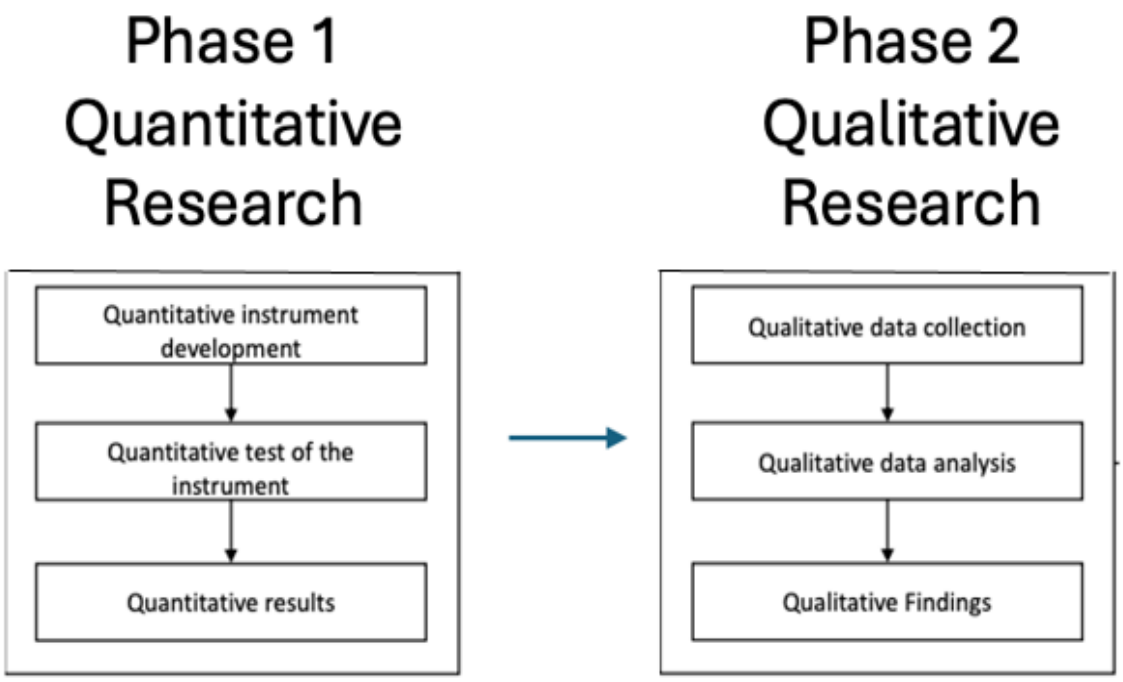

Figure 3: Research process and design

The qualitative data imply that authenticity, interference, and intra-group processes shape satisfaction level as with the framework's hypotheses are tested in the quantitative study.

Methods and participants

There were semi-structured questions. Participants who have relevant field experience and food kiosk use were eligible to apply. So, different-aged persons were questioned to indicate how different groups feel. This diverse group enabled the study to learn more about the subject and collect more attitude and behaviour data (Hair et al., 2024). Subjects were found by snowball sampling. Student contacts were used to discover other participants to talk to, and they were asked to propose friends or acquaintances who would be potential interview candidates. All interviews were recorded digitally and typed word-for-word to ensure accuracy (Abbas et al., 2020). They took 45–60 minutes on average. Individual, semi-structured, open in-depth interviews were used. Also, after introducing himself, the reporter got along with everyone interviewed. Interview questions included:

- *How have self-ordering kiosks affected your satisfaction with the ordering process in terms of accuracy, speed, and menu navigation?*
- *How do you perceive the ease of use and effectiveness of self-service kiosks for both customer experience and food establishment operations?*
- *What factors influence your intention to continue using self-service kiosks compared to traditional ordering methods?*
- *How does using self-service kiosks compare to interacting with service employees in terms of control, independence, and overall satisfaction?*
- *How do convenience, ease of use, and secure payment options via self-service kiosks influence your satisfaction during the ordering process?*

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Data Analysis of a Qualitative Study

The interview and focus group transcripts were thoroughly examined using thematic analysis to identify key factors influencing work identity construction. To reduce investigator bias, the three main researchers each undertook a separate, independent analysis of the data, and then agreed on the themes, in line with the investigator triangulation process (Decrop, 1999).

RESULTS OF THE QUALITATIVE STUDY

Discussion of qualitative study

Convenience and Autonomy

Kiosks were perceived as efficient tools for navigating what a food establishment offers, especially when images and prices were displayed. The ease of navigation contributed significantly to customer satisfaction, as supported by the study of Samengon et al. (2023), which found that restaurants may better serve customers by understanding the customer journey and using the research's findings to guide their service while providing self-service technologies (SSTs).

System Reliability and Payment Issues

The identified payment failures not only caused frustration but also undermined the perceived efficiency of the self-service system, ultimately affecting the overall customer experience. Some participants suggested fallback options (e.g., face-to-face payment) as necessary workarounds. Retailers should design intuitive, user-friendly systems to increase customer retention and satisfaction. Thus, there is a need for improvement on the self-checkout systems in retail, promoting greater customer loyalty and operational efficiency (Murad et. Al, 2024).

Impact on Staff and Operations

It has been highlighted that there is a positive perception of kiosk integration in improving service flow and optimizing human resources in fast food settings. Better customer service results from this mechanism's increased service flexibility and shorter waiting period for service (Park et al., 2021).

Table 7: Thematical Analysis

Theme	Subtheme	Definition	Examples from Transcripts
Convenience and Autonomy	Self-Service Empowerment	Participants consistently emphasized the ease and speed of using kiosks. The self-service system provided them with a sense of autonomy and control over the ordering process.	*"It's faster, more convenient, and I don't feel pressured to rush my order like I do at the counter."* *"I enjoy the freedom to explore the menu and make decisions without someone waiting behind me."*
System Reliability and Payment Issues	Payment System Failures	Despite overall satisfaction, several participants reported issues related to payment processing failures, particularly when using QR codes, GCash, or credit/debit cards.	*"The ordering part is smooth, but when I try to pay, the system sometimes doesn't respond."* *"Sometimes I just go to the counter because the QR code*

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			doesn't scan or there's no signal."
Impact on Staff and Operations	Operational Efficiency	Most participants recognized the operational benefits of self-ordering kiosks. They perceived that kiosks reduced the burden on front-line staff, allowing them to focus on other essential tasks such as food preparation and cleanliness.	*"With the kiosk taking orders, staff can focus on fulfilling orders or managing the dining area."*
Preference for Human Interaction in Specific Contexts	Human-Centric Experiences	While kiosks were generally favored in fast food scenarios, participants expressed a continued preference for human interaction in certain cases, particularly in dine-in or full-service restaurants.	*"If I have special requests or need to ask questions, I'd rather talk to a person." "For casual dining, I expect more personalized service."*
Generational Influence and Technological Adaptability	Digital Natives vs. Digital Immigrants	Participants—mainly digital natives—were generally receptive to using technology in their dining experiences. However, they also recognized that generational differences may impact kiosk usability and acceptance.	*"We're used to technology, so kiosks are fine for us, but older people might find them confusing."*
	Inclusive Design for Accessibility	They also acknowledged the need for inclusivity, pointing out potential accessibility issues for users with disabilities or those unfamiliar with digital tools.	*"What about people with hearing disabilities or older adults who don't use QR codes?"*

Generational Influence and Technological Adaptability

There is an emphasis on the importance of user-centered design and highlights that while kiosks are appealing to younger consumers, their adoption must consider a wider demographic. This is further supported by the study of Chung, H., & Park, W. (2021), who found that older participants exhibited considerable differences in how effectively they performed tasks depending on the design features of the self-service kiosks. This variation suggests that physical design elements have a substantial impact on usability for this demographic. Notably, allowing participants to sit while using the kiosks significantly improved their performance by reducing the time required to complete tasks. Sitting also alleviated several aspects of cognitive and emotional strain, including feelings of time pressure and frustration, thereby enhancing overall comfort and efficiency during the interaction.

IMPLICATIONS

This study underscores the benefits of integrating self-service technology (SST) in food service operations. SST can boost operational efficiency, streamline order processing, and enhance customer satisfaction by allowing staff to focus more on personalized service rather than routine tasks. With rapid digital innovation across Asia, SST provides a competitive edge by reducing wait times and appealing to tech-savvy customers. Its convenience and improved service quality can lead to positive feedback and business growth. However, a generational gap in SST adoption remains. While younger customers embrace the technology, older generations often prefer traditional service, prompting some businesses to hesitate in fully adopting SST. Despite this, SST remains a valuable tool for improving service speed, payment options, and accessibility. A balanced approach that blends technology with traditional service can help meet diverse customer needs.

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RECOMMENDATIONS

This research highlights the growing importance of self-service kiosks in enhancing customer satisfaction within fast food establishments in Metro Manila. The results suggest that these technologies are well-suited to the preferences of younger consumers who prioritize speed, convenience, and autonomy in their dining experiences. Given these findings, fast food businesses are encouraged to adopt self-service kiosks more widely, especially in locations where such systems are not yet in place.

To further improve customer experience, food establishments should consider implementing an Adaptive Service Design—a flexible ordering system that allows customers to choose between kiosks, mobile apps, or traditional counter service. This approach not only accommodates varying customer preferences but also enables businesses to respond effectively to external challenges such as health protocols, staffing limitations, and evolving consumer behavior. Lastly, this study provides a useful foundation for future research. Scholars and practitioners may build on these insights to explore how self-service technologies influence customer satisfaction across different demographics and service environments. By continuously evaluating and refining the systems, food service providers can better meet customer expectations and remain competitive in a rapidly changing food industry.

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