International Journal of Applied Business & International Management (IJABIM)
Vol. 10 No. 3, pp.464-480, December, 2025
E-ISSN: 2621-2862 P-ISSN: 2614-7432
https://www.ejournal.aibpmjournals.com/index.php/IJABIM

Consumer Attitude and Intention Toward AI-Based Smart Ordering and Delivery Systems in the Fast-Food Industry

Azura Abdullah Effendi[1], Tek Yew Lew[2], Wei Ning Ooi[1], Soak Suan P'ng[1], Mei Shan Poh[1], Puteri Balqis Binti Hamizan[1], Arun Singh Tomar[1], Daisy Mui Hung Kee[1*]

[1]Universiti Sains Malaysia,
[2]Curtin University Malaysia
[1]Malaysia, Jalan Sg Dua, 11800 Minden, Puala Pinang, Malaysia
*Corresponding Email: daisy@usm.my

ARTICLE INFORMATION

Publication information

Research article

HOW TO CITE
Effendi, A. A., Lew, T. Y., Ooi, W. N., P'ng, S. S., Poh, M. S., Balqis, P. H., …, & Kee, D. M. H. (2025). Consumer attitude and intention toward AI-based smart ordering and delivery systems in the fast-food industry. *International Journal of Applied Business & International Management*, *10*(3), 464-480.

DOI:
https://doi.org/10.32535/ijabim.v10i3.4325

Received: 13 October 2025
Accepted: 15 November 2025
Published: 20 December 2025

ABSTRACT

The increasing use of artificial intelligence (AI) in fast-food ordering and delivery systems has transformed service processes, yet consumer adoption remains uneven. This study examines the factors influencing consumer attitude and behavioral intention toward AI-based smart ordering and delivery systems in the fast-food industry, using McDonald's AI-based Smart Ordering and Delivery System in Malaysia as the empirical context. Using a quantitative approach, data were collected from 150 consumers in Malaysia and analyzed using multiple regression analysis. The results show that social influence has a significant positive effect on consumer attitude ($\beta = 0.313$, $p < 0.001$), while ease of use, enjoyment, perceived convenience, and trust do not significantly affect attitude. For behavioral intention, perceived convenience ($\beta = 0.218$, $p < 0.01$), social influence ($\beta = 0.291$, $p < 0.001$), and trust ($\beta = 0.248$, $p < 0.01$) are significant predictors, whereas consumer attitude is not ($\beta = 0.066$, $p > 0.05$). The models explain 29.8% of the variance in consumer attitude and 44.5% of the variance in behavioral intention. These findings suggest that adoption of AI-based ordering systems in fast-food contexts is driven more by social endorsement and functional considerations than by attitudinal evaluation.

Keywords: Artificial Intelligence; Behavioral Intention; Consumer Attitude; Fast-Food Industry; Smart Ordering Systems

INTRODUCTION

Over the past decade, the fast-food industry has undergone a substantial transformation driven by shifting consumer preferences, accelerated technological advancement, and increasing demand for convenience, speed, and service personalization. As one of the world's largest quick service restaurant (QSR) chains, McDonald's has consistently demonstrated strategic adaptability in responding to these dynamics through operational innovation, marketing realignment, and digital integration (Chia et al., 2020). Prior research has examined McDonald's from multiple perspectives, including corporate social responsibility and consumer attitudes (Kee et al., 2024), regional marketing effectiveness in Southeast Asia (Dilip et al., 2021), and the role of social media in shaping consumer behavior (Lok et al., 2024). Collectively, this body of literature highlights McDonald's capacity to align organizational strategies with evolving external pressures and generational consumption trends across diverse markets.

Beyond marketing and branding considerations, McDonald's has increasingly embedded sustainability and corporate citizenship into its operational framework, strengthening brand legitimacy and stakeholder trust (Kee et al., 2023). Empirical evidence further suggests that such initiatives influence purchasing intention and customer loyalty, particularly when supported by transparent organizational practices and responsiveness during periods of crisis, such as the COVID-19 pandemic. These findings reinforce the view that McDonald's competitive advantage is closely linked to its ability to integrate technological, social, and organizational elements in addressing consumer expectations at a global scale (Kee et al., 2023).

Despite the breadth of research on McDonald's strategic and digital initiatives, scholarly attention to its adoption of artificial intelligence (AI), particularly in the context of smart ordering and delivery systems, remains limited. Recent advancements in AI, including machine learning, natural language processing, and real-time analytics, have expanded opportunities for service automation, personalized interaction, and logistics optimization within the food service industry (Adeoye et al., 2025; Khan et al., 2024). AI-enabled applications such as chatbots, virtual assistants, and intelligent delivery systems are increasingly deployed to enhance service efficiency, reduce operational costs, and improve customer experience. However, empirical evidence explaining how these technologies influence consumer attitudes and behavioral intention within established fast-food brands is still scarce, especially in emerging and digitally evolving markets such as Malaysia.

Existing technology adoption research often focuses on isolated determinants, such as ease of use, enjoyment, trust, or social influence, without sufficiently considering how these factors jointly operate within specific service contexts. Moreover, the relative importance of these determinants may vary depending on technological maturity, service routinization, and user expectations. In highly digitalized and time-sensitive service environments like fast-food consumption, certain functional attributes may be perceived as baseline requirements rather than salient drivers of adoption. As a result, consumers' behavioral decisions may rely less on reflective attitudinal evaluation and more on pragmatic and socially embedded considerations. Therefore, empirical investigation is needed to clarify how technological and social factors shape consumer attitudes toward AI-based service systems and to reassess the extent to which these attitudes translate into behavioral intention.

Addressing this gap, the present study empirically examines consumer attitudes and behavioral intentions toward McDonald's AI-based Smart Ordering and Delivery System, using McDonald's as a representative context within the fast-food industry. Specifically,

the study investigates the effects of ease of use, perceived convenience, enjoyment, trust, and social influence on consumer attitude, as well as the effect of consumer attitude on behavioral intention. Rather than presuming an automatic attitudinal pathway, this study empirically reassesses the role of consumer attitude within AI-based fast-food services, acknowledging the possibility that adoption decisions may be shaped by factors beyond attitudinal evaluation.

The significance of this study lies in its contribution to the technology adoption literature by extending existing models to AI-enabled food service systems, a context that remains underexplored (Kee et al., 2021). The novelty of the research is reflected in its integrated examination of multiple adoption determinants within a single empirical framework, while critically re-evaluating the role of consumer attitude in explaining behavioral intention. Theoretically, the study refines the understanding of consumer behavior in advanced, routine service technologies. Practically, it offers actionable insights for fast-food operators in designing AI-based ordering systems that emphasize social acceptance, perceived convenience, and trust to encourage adoption and sustained usage in competitive markets.

LITERATURE REVIEW

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) explains how individuals develop attitudes and intentions toward adopting new technologies (Davis, 1989). The model proposes that users form evaluations of a technological system based on their perceptions of its characteristics, which subsequently shape their attitude toward use and influence behavioral intention (An et al., 2023; Troise et al., 2021). TAM has been widely applied to examine consumer acceptance of digital and AI-enabled services across various service industries.

Within TAM, attitude toward use represents an individual's overall evaluative response to a technology, while behavioral intention reflects the likelihood of adopting or continuing to use the system. Attitude is positioned as a key mediating construct that translates perceptions of technology attributes into usage-related decisions.

To adapt TAM to AI-based smart ordering and delivery systems, this study incorporates several external variables that reflect cognitive, experiential, social, and relational evaluations of technology use. Ease of use represents users' perception of the effort required to interact with the system. Enjoyment captures the extent to which using the system is perceived as pleasurable beyond functional outcomes. Perceived convenience reflects users' assessment of time efficiency and process simplicity. Social influence accounts for the impact of peers and social norms on individual evaluations of the technology. Trust represents users' confidence in the system's reliability, security, and performance.

Behavioral Intention

Behavioral intention is important in determining an individual's likelihood of using a new service or technology. Consumer behavior, which involves the psychological, physical, and social factors that influence the way individuals select, utilize, and dispose of products and services, plays a vital role in determining these intentions. When it comes to how McDonald's shapes its AI experiences to match what users want, factors such as efficiency, speed, and ease of use play a big role. By grasping these key influences on behavior, marketers can craft strategies that align with how consumers make decisions, ultimately boosting their satisfaction with the service (Bhasin et al., 2023).

Similar to online food outlets such as GrabFood, usefulness, convenience, and service perceptions will most probably affect customers' intentions to use McDonald's AI system (Liou et al., 2024). Research also indicates that if the user perceives technology as making them perform better on tasks and simplifying procedures, the intention to adopt rises significantly (Nagy et al., 2021). For example, if the system can effectively predict orders, reduce waiting time, and enable smooth delivery tracking, consumers will reuse the service.

Furthermore, it has been proven through research that perceived convenience, quality of service, and security significantly influence consumers' attitudes and behavioral intentions toward online food delivery services (Chowdhury, 2023). Besides, food neophobia was also discovered to serve as a mediator of the relationship between restaurant satisfaction and post-meal behavior intentions among foreign tourists who consumed local meals (Tarinc et al., 2023). The findings indicate how the nature of digital services should align with consumer demands in a way that ensures there is a positive behavioral intention.

Ease of Use

McDonald's Smart Ordering and Delivery System, an AI-powered system, is a driving factor in buying behavior among customers (Wolfe, 2025). A user-friendly system ensures a seamless and effortless experience, encouraging repeated adoption and heightened engagement. The chances of customers adopting and maintaining use improve when the platform is easy to utilize and efficient. This is consistent with a study by Yo et al. (2021), which found that customer satisfaction with Shopee in Malaysia was strongly influenced by perceived ease of use and convenience. In the example of McDonald's, an easy system enhances user satisfaction by minimizing errors, decreasing ordering time, and lowering the cognitive effort required for the processing of a transaction (Wolfe, 2025). This is also confirmed by Widiar et al. (2022), through a study that had already determined that perceived usefulness and perceived ease of use directly influence the intentions of the behavior of the individual, where the element of trust comes in. Literature also attests that where the system is transparent, customer enthusiasm for applying and using the system is encouraged. The other characteristics, including voice control, suggestions, and live order status, also ease user interaction, which ultimately initiates positive behavioral intention and loyalty.

Enjoyment

Enjoyment is a wonderful, hassle-free, joyful, good, and pleasant feeling that customers gain through McDonald's Smart Ordering and Delivery System with AI. Customers are attracted to technologies that enhance the purchasing experience and allow them to enjoy and treat themselves better. McDonald's Smart Ordering and Delivery System enhances customer enjoyment over time. Personalized aspects, such as instant feedback, create customer happiness and delight (Alter Solutions, 2023). Interactive aspects such as chatbots also attract customers, giving a better sense of reality. Personalization also increases customer satisfaction through easy ordering, making it easier and more effective (Alter Solutions, 2023).

Perceived convenience

Consumers usually perceive how seamlessly and effortlessly the AI system can assist them in the ordering and delivery process (Ravi et al., 2024). McDonald’s Smart Ordering and Delivery System, powered by AI, influences consumer behavior and enhances service experiences. Making the ordering process simpler by automating repetitive tasks and providing real-time updates helps customers save time and effort, ultimately improving their efficiency (Khoso & Hussain, 2025). Personalized menus based on historical data contribute to a smoother, more convenient ordering experience, which in

turn boosts customer satisfaction and loyalty (Yaiprasert & Hidayanto, 2024). When customers feel that the experience is tailored to their preferences, they are more likely to find the process both enjoyable and efficient. Personalized experiences lead consumers to perceive the system as more convenient, reinforcing positive behavioral intentions (Bradley, 2024).

Social influence

Social influence, expressed as peer belief and external pressure, is most significant in shaping consumer attitudes and behavior towards adopting new technology. Word of mouth by close relatives, friends, or colleagues concerning the convenience of AI systems tends to build user confidence and trust in the technologies (Alshakhsi et al., 2025). When individuals see others successfully utilizing AI, they find the system more dependable and less difficult to use. This effect is typically more powerful in resistant users, i.e., older individuals, who are more likely to apply AI-driven services like smart ordering platforms when motivated by social norms or information encouragement (Jang et al., 2024). Apart from consumer engagement and trust, AI systems should be designed in terms of responsiveness and fairness so that they maintain their pace with evolving social needs and cultivate an inclusive experience among various users (Afroogh et al., 2024).

Trust

Trust is really the factor that influences how consumers engage with McDonald's Smart Ordering and Delivery System, which is driven by AI. When it comes to placing their trust in this system, consumers tend to focus on a few key aspects, which they want to feel assured of its credibility, having confidence in its reliability, and being certain that their personal information is protected and secure. Some recent research records that trust would have a particularly prominent role as a determinant of users' attitudes and behavioral beliefs toward AI-driven technologies. For instance, Choung et al. (2022) proved that trust in AI-powered voice assistants has positive effects on users' attitudes and intentions to use AI-enabled technologies and is mediated through perceived ease of use and usefulness. Similarly, Chi and Vu (2022) depicted how anthropomorphism and empathetic feedback during human-AI interactions increase customers' trust and, consequently, increase acceptance of AI solutions. AI-based personalization in e-commerce settings increases consumer trust and satisfaction, thereby influencing purchase intentions. For McDonald's, trust establishment in their AI system will translate into increased customer satisfaction, repeat use, and loyalty to the brand.

Consumer Attitudes

Consumer attitude is a consumer's overall judgment, impression, or feeling about a product, service, or technology, and is a critical determinant of behavioral intention. For McDonald's Smart Ordering and Delivery System with AI, a positive consumer attitude can play a major role in improving the system adoption and future use probability. As explained by Yi and Choi (2023), favorable attitudes towards AI services enhance customers' intentions to utilize them, especially if they perceive the technology to be convenient and helpful. Nasir et al. (2023) also found that consumers holding a positive attitude towards the employment of AI within digital platforms will most likely repurchase and express greater brand commitment. In e-retailing, He et al. (2022) observed that positive attitudes of customers towards AI-supported services increase their purchase intention greatly, and attitudes also proved to be a good predictor of future behavior. For McDonald's, creating positive attitudes by using plain communication, ease of use, and customization options will win customers' trust, increase satisfaction, and result in repeat usage of the AI ordering system.

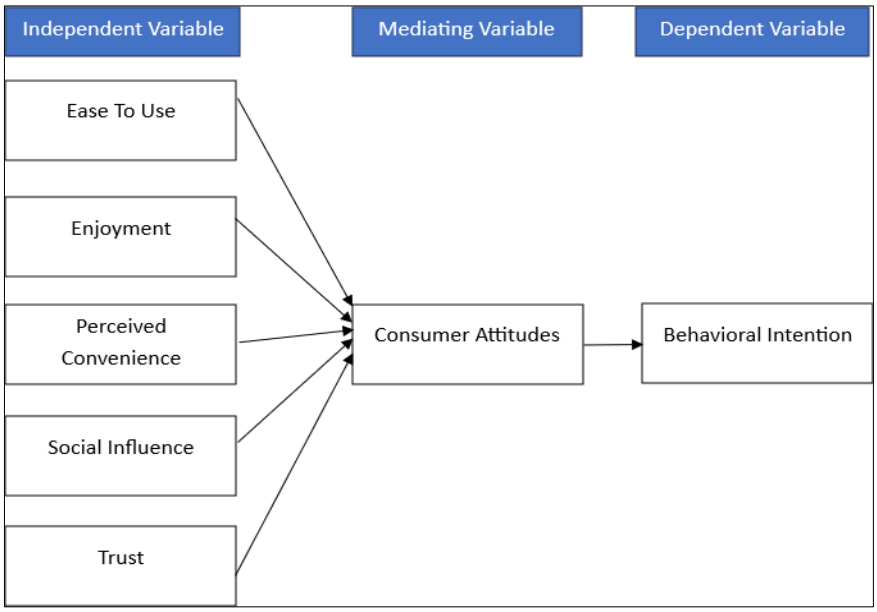
Hypotheses Development

Based on the TAM and prior empirical studies, several hypotheses are formulated to examine the relationships among the study variables. Accordingly, the following hypotheses are proposed:

H1: Ease of use has a positive effect on consumer attitude.
H2: Enjoyment has a positive effect on consumer attitude.
H3: Perceived convenience has a positive effect on consumer attitude.
H4: Social influence has a positive effect on consumer attitude.
H5: Trust has a positive effect on consumer attitude.
H6: Consumer attitude has a positive effect on behavioral intention.

Figure 1 illustrates the proposed research framework, depicting the hypothesized relationships among ease of use, enjoyment, perceived convenience, social influence, trust, consumer attitude, and behavioral intention toward AI-based smart ordering and delivery systems.

Figure 1. Theoretical Framework



RESEARCH METHOD

This study adopts a quantitative research approach to examine the factors influencing consumer attitude and behavioral intention toward McDonald's AI-based Smart Ordering and Delivery System in the fast-food industry. A cross-sectional research design was employed to capture consumers' perceptions and behavioral tendencies at a single point in time, which is appropriate for assessing technology adoption behavior in routine service contexts.

The target population of this study consists of consumers in Malaysia who have prior experience using McDonald's Smart Ordering and Delivery System, including its mobile application and AI-assisted ordering and delivery features. A purposive sampling technique was used to ensure that respondents had relevant exposure to McDonald's AI-enabled ordering platform and were therefore capable of providing informed evaluations. Data were collected through an online questionnaire distributed using Google Forms, resulting in 150 valid responses for analysis. This sample size exceeds the minimum requirement for multiple regression analysis and is considered adequate for exploratory technology adoption research in applied business studies.

All measurement items were adapted from previously validated studies to ensure content validity and contextual relevance. The questionnaire comprised two sections: the first captured respondents' demographic characteristics, including frequency of using the McDonald's mobile application, while the second measured the study variables, namely ease of use, enjoyment, perceived convenience, trust, social influence, consumer attitude, and behavioral intention toward McDonald's Smart Ordering and Delivery System. All constructs were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Data analysis was conducted using IBM SPSS Statistics version 26. Descriptive analysis was used to summarize respondents' demographic profiles and usage characteristics related to the McDonald's application. Reliability analysis using Cronbach's alpha was performed to assess the internal consistency of the measurement scales. Correlation analysis was conducted to examine the bivariate relationships among the study variables and to assess the suitability of the data for regression analysis.

To test the proposed hypotheses, multiple regression analysis was conducted in two stages. In the first regression model, ease of use, enjoyment, perceived convenience, trust, and social influence were entered as independent variables to examine their effects on consumer attitude toward McDonald's Smart Ordering and Delivery System. In the second regression model, behavioral intention was regressed on consumer attitude, perceived convenience, trust, and social influence to evaluate the determinants of consumers' intention to use the system. This analytical approach allows for the examination of the relative influence of each predictor while controlling for the effects of other variables.

Multiple regression analysis was selected due to its suitability for examining direct relationships among variables in applied behavioral research and its ability to assess explanatory power without imposing complex structural assumptions. Mediation analysis was not conducted, as the study aimed to empirically reassess the role of consumer attitude rather than to assume its mediating function a priori. Statistical significance was evaluated at the 0.05 level.

RESULTS

Table 1. Respondent Profile's Summary (N=150)

Response	Frequency	Percentage (%)
Gender		
Female	91	60.7
Male	59	39.3
Age		
18-22	113	75.3
23-27	25	16.7
Above 27	6	4
Below 18	8	4
Race		
Chinese	83	55.3
Indian	31	20.7
Malay	36	24
Education Level		
Degree or equivalent	123	82
Diploma or equivalent	8	5.3
High School	7	4.7

Mater or equivalent	9	6
PhD or equivalent	3	2
Employment Status		
Employed full time	14	9.3
Employed part time	6	4
Student	129	86
Unemployed	1	0.7
Monthly Allowance/Income		
Above RM2500	12	8
Below RM500	62	41.3
RM1501 – RM 2500	6	4
RM500 – RM1500	70	46.7
Frequency of using McDonald's app		
A few times a month	62	41.3
Daily	2	1.3
Once a month or less	53	35.3
Once a week	33	22

Table 1 shows the summarized respondents' demographics; 150 people responded to the survey. The sample was dominated by young women, with the majority being female (60.7%) and between the ages of 18 and 22 (75.3%). The largest group of responders (55.3%) was Chinese, followed by Malay (24.0%) and Indian (20.7%). The group appears to be highly educated, as the majority of respondents (82.0%) had a degree or its equivalent. Only a small percentage were working either full-time (9.3%) or part-time (4.0%), with the majority being students (86.0%). Regarding monthly allowance and income, 41.3% made less than RM500 per month, while nearly half (46.7%) reported an allowance between RM500 and RM1500. Just 8.0 percent made more than RM2,500. When analyzing McDonald's app usage, 41.3% of respondents used the app a few times a month, 35.3% used it once a month or less, and 22.0% used it once a week. Daily users were rare (1.3%).

Table 2. Descriptive Analysis, Cronbach's Coefficient Alpha, and Zero-Order Correlations for All Study Variables

	Variables	1	2	3	4	5	6	7
1	Ease To Use	0.716						
2	Enjoyment	0.380**	0.707					
3	Perceived Convenience	0.258**	0.483**	0.720				
4	Social Influence	0.338**	0.364**	0.332**	0.773			
5	Trust	0.282**	0.420**	0.423**	0.462**	0.793		
6	Consumer Attitudes	0.309**	0.374**	0.336**	0.473**	0.369**	0.781	
7	Behavioral Intention	0.313**	0.388**	0.469**	0.539**	0.527**	0.397**	0.812
Number of Items		3	3	3	3	3	2	3
Mean		4.5556	4.5978	4.5733	4.5244	4.5133	4.5867	4.6089
Standard Deviation		0.46289	0.44420	0.48099	0.55206	0.53040	0.51405	0.49115

Note: N = 150; *p < 0.05, **p < 0.01. The diagonal entries represent Cronbach's coefficient alpha

Table 2 presents the descriptive statistics, reliability analysis, and zero-order correlations among the study variables. The mean values of all variables range from 4.52 to 4.61, indicating generally positive perceptions toward AI-based smart ordering and delivery systems among respondents. The standard deviation values are relatively low, suggesting consistent responses across participants.

The reliability analysis demonstrates satisfactory internal consistency for all constructs. Cronbach's alpha values range from 0.707 to 0.812, exceeding the recommended threshold of 0.70, thereby confirming the reliability of the measurement scales used in this study.

The correlation analysis reveals that all variables are positively and significantly correlated with each other at the 0.01 significance level. Consumer attitude shows moderate positive correlations with ease of use (r = 0.309), enjoyment (r = 0.374), perceived convenience (r = 0.336), social influence (r = 0.473), and trust (r = 0.369). Behavioral intention is also positively correlated with all antecedent variables, indicating that more favorable perceptions toward AI-based systems are associated with stronger adoption intention. However, as correlation analysis does not imply causality, further regression analysis is required to examine the predictive relationships among the variables.

Table 3. Regression Analysis

Variables		Consumer Attitudes	Behavior Intention
1	Ease to Use	0.099	0.058
2	Enjoyment	0.133	0.026
3	Perceived Convenience	0.101	0.218**
4	Social Influence	0.313***	0.291***
5	Trust	0.098	0.248**
6	Consumer Attitudes		0.066
R^2		0.298	0.445
F Value		12.249	19.075
Durbin-Watson Statistic		2.006	1.632

Note: N = 150: *p < 0.05, **p < 0.01, ***p< 0.001.

Table 3 reports the results of multiple regression analyses examining the determinants of consumer attitude and behavioral intention toward AI-based smart ordering and delivery systems.

With respect to consumer attitude, the results indicate that social influence has a statistically significant positive effect (β = 0.313, p < 0.001), supporting H4. This finding suggests that peer recommendations, social norms, and perceived social endorsement play a decisive role in shaping consumers' attitudes toward adopting AI-based systems. In contrast, ease of use (β = 0.099), enjoyment (β = 0.133), perceived convenience (β = 0.101), and trust (β = 0.098) do not exhibit statistically significant effects on consumer attitude. Accordingly, H1, H2, H3, and H5 are not supported. The regression model explains 29.8% of the variance in consumer attitude (R^2 = 0.298), indicating a moderate level of explanatory power.

Regarding behavioral intention, the regression results show that consumer attitude does not have a statistically significant effect on behavioral intention (β = 0.066, p > 0.05). Therefore, H6 is not supported, indicating that a favorable attitude alone is insufficient to directly translate into intention to adopt AI-based smart ordering and delivery systems in this context. Nevertheless, the model explains 44.5% of the variance in behavioral

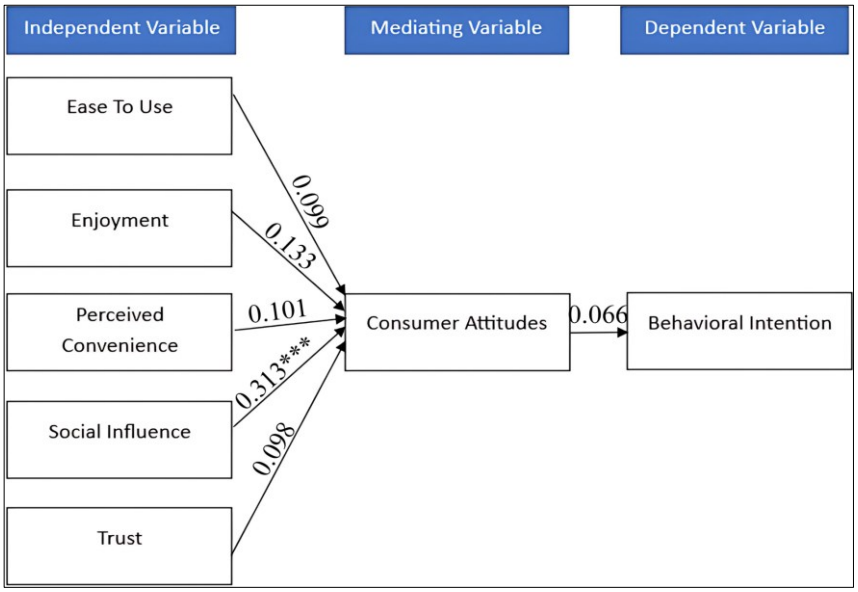
intention (R^2 = 0.445), reflecting strong overall predictive capability.

The F-statistics for both regression models are statistically significant, confirming the adequacy of the models. Additionally, the Durbin–Watson statistics of 2.006 for the consumer attitude model and 1.632 for the behavioral intention model indicate no serious autocorrelation issues, supporting the reliability of the regression estimates.

Overall, the findings demonstrate that social influence is the only antecedent that significantly shapes consumer attitude, while consumer attitude itself does not exert a direct influence on behavioral intention, suggesting that adoption of AI-based smart ordering and delivery systems is driven more by external social factors than by internal attitudinal evaluation.

Figure 2 presents an overview of the empirical results, summarizing the supported and unsupported hypotheses based on the regression analysis findings.

Figure 2. Overview Result



DISCUSSION

H1: Ease of Use and Consumer Attitude

The findings indicate that ease of use does not have a statistically significant effect on consumer attitude, leading to the rejection of H1. This result contrasts with a substantial body of prior research that positions ease of use as a central determinant of favorable attitudes toward digital and AI-enabled services (Widiar et al., 2022; Wolfe, 2025; Yo et al., 2021). In earlier technology adoption contexts, usability often reduced cognitive effort and uncertainty, thereby strengthening attitudinal acceptance. However, the present findings suggest that this mechanism may weaken in technologically mature environments.

One plausible explanation is that ease of use has evolved into a baseline expectation rather than an attitudinal driver. Among digitally experienced consumers, particularly younger cohorts, functional usability is assumed rather than evaluated. As a result, ease of use no longer differentiates AI-based systems at the attitudinal level, even though it remains necessary for system acceptance. This interpretation aligns with emerging perspectives that suggest traditional TAM constructs may lose explanatory power in settings where digital interfaces are already normalized. Consequently, ease of use may

function as a hygiene factor; its absence causes dissatisfaction, but its presence does not actively generate positive attitudes.

H2: Enjoyment and Consumer Attitude
The results show that enjoyment does not significantly influence consumer attitude, resulting in the rejection of H2. This finding diverges from studies emphasizing hedonic motivation as a key driver of engagement with AI-based and interactive technologies (Alter Solutions, 2023). In entertainment-oriented or experiential platforms, enjoyment enhances emotional attachment and positive evaluation. However, the present findings indicate that such hedonic considerations play a limited role in shaping attitudes toward AI-based smart ordering systems in fast-food services.

This discrepancy can be attributed to the task-oriented nature of fast-food consumption, where speed, efficiency, and convenience outweigh experiential pleasure. AI-based ordering systems in this context are evaluated primarily as functional tools rather than sources of enjoyment. While interactive features such as chatbots and personalized recommendations may enhance momentary satisfaction, they appear insufficient to shape overall attitudes toward adoption. This suggests that enjoyment may function as a complementary factor rather than a core attitudinal determinant in routine, efficiency-driven service environments.

H3: Perceived Convenience and Consumer Attitude
Contrary to expectations, perceived convenience does not have a statistically significant effect on consumer attitude, leading to the rejection of H3. This result contrasts with prior studies that identify convenience as a critical determinant of attitudes and intentions in online food delivery and digital service platforms (Chowdhury, 2023; Ravi et al., 2024). However, the present findings suggest that convenience may be implicitly embedded in consumers' expectations of AI-based systems.

In highly competitive fast-food markets, convenience is often assumed rather than evaluated. Consumers may view AI-based ordering as inherently designed to reduce effort and save time, thereby diminishing its salience in attitudinal formation. Importantly, this does not negate the importance of convenience; rather, it indicates a shift in its role from an attitudinal antecedent to a direct behavioral motivator. This distinction underscores the need to differentiate between factors that shape evaluative attitudes and those that directly trigger usage decisions.

H4: Social Influence and Consumer Attitude
Consistent with H4, social influence emerges as the only variable with a statistically significant positive effect on consumer attitude. This finding strongly aligns with prior research highlighting the role of social norms, peer influence, and observational learning in technology adoption (Alshakhsi et al., 2025; Jang et al., 2024). In socially embedded consumption contexts, such as fast-food services, individuals often rely on external cues to evaluate the legitimacy and desirability of new technologies.

The strong influence of social factors suggests that attitudinal acceptance of AI-based ordering systems is not solely a result of individual cognitive evaluation but is socially constructed. When consumers observe widespread usage or receive positive recommendations, uncertainty surrounding AI adoption diminishes, leading to more favorable attitudes. This effect may be particularly pronounced among users who are initially skeptical or less technologically confident. The findings reinforce the importance of social validation mechanisms in shaping attitudes toward AI-enabled services.

H5: Trust and Consumer Attitude
The findings indicate that trust does not significantly influence consumer attitude, leading to the rejection of H5. This result partially contradicts prior studies that identify trust as a fundamental antecedent of attitudes toward AI-driven technologies (Chi & Vu, 2022; Choung et al., 2022). However, this divergence can be explained by contextual factors specific to the service environment examined.

In the case of a globally recognized fast-food brand, organizational credibility and brand reputation may significantly reduce perceived risk. As a result, consumers may not actively evaluate trust when forming attitudes toward AI-based systems, as trust is already implicitly granted. In such contexts, trust becomes more salient at later stages of the decision-making process, particularly when consumers assess whether to rely on the system for actual usage. This finding suggests that trust operates differently across attitudinal and behavioral stages, depending on brand strength and perceived uncertainty.

H6: Consumer Attitude and Behavioral Intention
The results reveal that consumer attitude does not have a statistically significant effect on behavioral intention, leading to the rejection of H6. This finding challenges traditional technology adoption models that posit a strong attitude–intention relationship (Nasir et al., 2023; Yi & Choi, 2023). Instead, the findings suggest that, in AI-based fast-food services, behavioral intention is shaped more directly by external and instrumental considerations than by internal evaluative attitudes.

This outcome implies a behavior-first adoption logic, where consumers prioritize efficiency, reliability, and social endorsement when deciding whether to use AI-based ordering systems. Attitude may still reflect general favorability toward AI, but it does not directly translate into intention. Such a pattern is consistent with highly routinized consumption contexts, where decisions are made quickly and pragmatically. The weakening of the attitude–intention link underscores the importance of contextualizing technology adoption models within specific service domains.

Integrative Discussion
Taken together, the findings indicate a context-dependent adoption mechanism for AI-based smart ordering and delivery systems in the fast-food industry. Social influence plays a central role in shaping consumer attitudes, while behavioral intention is driven primarily by perceived convenience, trust, and social endorsement. The absence of a significant attitude–intention relationship suggests that traditional attitudinal pathways may be less influential in standardized, efficiency-oriented service environments. This study contributes to the literature by demonstrating how the relative importance of adoption determinants shifts as digital technologies become embedded in everyday consumption practices.

CONCLUSION

This study examined consumer behavioral intention toward AI-based smart ordering and delivery systems in the fast-food industry. The findings reveal that social influence is the only factor that significantly shapes consumer attitude, indicating that attitudes toward AI-based systems are primarily formed through peer recommendations, social norms, and perceived social acceptance. In contrast, ease of use, enjoyment, perceived convenience, and trust do not exert significant effects on consumer attitude, suggesting that these attributes are largely perceived as expected or standardized features rather

than evaluative criteria that actively shape attitudinal judgments in fast-food service settings.

With regard to behavioral intention, the results demonstrate that perceived convenience, social influence, and trust significantly influence consumers' intention to use AI-based smart ordering and delivery systems. These findings indicate that adoption decisions are driven mainly by practical considerations related to efficiency, reliability, and system dependability, as well as by social endorsement. Consumer attitude does not show a significant effect on behavioral intention, implying that favorable evaluations of AI systems do not automatically translate into usage intention in routine, efficiency-oriented service contexts. Instead, consumers appear to rely more directly on functional and socially embedded cues when deciding whether to adopt AI-based ordering services.

From a theoretical perspective, this study contributes to the technology acceptance literature by demonstrating that attitude formation and adoption intention may follow distinct explanatory pathways in AI-enabled fast-food services. While social influence plays a dominant role in shaping consumer attitudes, behavioral intention is influenced more directly by convenience, trust, and social validation. These findings challenge the assumption of a universal attitude–intention linkage and underscore the importance of contextualizing technology adoption models within standardized, time-sensitive consumption environments.

From a managerial standpoint, the findings suggest that fast-food firms should prioritize strategies that strengthen social endorsement mechanisms, such as peer visibility, positive word-of-mouth, and normative acceptance, while simultaneously enhancing perceived convenience and system reliability to encourage actual system usage. Although ease of use and enjoyment do not emerge as significant predictors of either attitude or intention, they remain essential baseline conditions that support smooth system operation and help prevent user dissatisfaction.

LIMITATION

This study is subject to several limitations that should be considered when interpreting the findings. First, the sample is dominated by relatively young consumers, which may limit the generalizability of the results to older or less digitally familiar populations who may evaluate AI-based systems differently. Second, the study is conducted within a single-country context, which may restrict the applicability of the findings to markets with different cultural, economic, or technological characteristics.

Additionally, the cross-sectional research design captures consumer perceptions at a single point in time and does not account for changes in attitudes or behavioral intentions as users gain more experience with AI-based ordering systems. Future research is therefore encouraged to employ longitudinal designs to examine how consumer responses evolve over time. Further studies may also explore cross-national comparisons, alternative service contexts, and additional outcome variables, such as customer loyalty, spending behavior, and long-term brand attachment, to extend understanding of AI adoption in fast-food and other service industries.

ACKNOWLEDGMENT

The authors express gratitude to those who have had the pleasure of cooperating during this study or research.

DECLARATION OF CONFLICTING INTERESTS

The authors have declared no potential conflicts of interest concerning the study, authorship, and/or publication of this article.

REFERENCES

Adeoye, Y., Onotole, E. F., Ogunyankinnu, T., Aipoh, G., Osunkanmi, A. A., & Egbemhenghe, J. (2025). Artificial intelligence in logistics and distribution: The function of AI in dynamic route planning for transportation, including self-driving trucks and drone delivery systems. *World Journal of Advanced Research and Reviews, 25*(2), 155–167. https://doi.org/10.30574/wjarr.2025.25.2.0214

Afroogh, S., Akbari, A., Malone, E., Kargar, M., & Alambeigi, H. (2024). Trust in AI: Progress, challenges, and future directions. *Humanities and Social Sciences Communications, 11*, Article 1568. https://doi.org/10.1057/s41599-024-04044-8

Alshakhsi, S. A., Almourad, B., Babkir, A., & Ali, R. (2025). Designing AI to foster acceptance: Do freedom to choose and social proof impact AI attitudes among British and Arab populations? *Behaviour & Information Technology*. Advance online publication. https://doi.org/10.1080/0144929X.2025.2477054

Alter Solutions. (2023). *Case study: Personalising the customer experience with AI*. Alter Solutions. https://www.alter-solutions.com/case-study-mcdonalds-artificial-intelligence

An, S., Eck, T., & Yim, H. (2023). Understanding consumers' acceptance intention to use mobile food delivery applications through an extended technology acceptance model. *Sustainability*, *15*(1), 832. https://doi.org/10.3390/su15010832

Bhasin, H. (2023, July 25). *What is consumer behavior? Definition, example, types & factors.* Marketing91. https://www.marketing91.com/consumer-behavior/

Bradley, T. (2024, October 11). *How AI is revolutionizing customer experience*. Forbes. https://www.forbes.com/sites/tonybradley/2024/10/11/how-ai-is-revolutionizing-customer-experience/

Chi, N. T. K., & Vu, N. H. (2022). Investigating customer trust in artificial intelligence: The role of anthropomorphism, empathy response, and interaction. *CAAI Transactions on Intelligence Technology, 8*(1), 260–273. https://doi.org/10.1049/cit2.12133

Chia, X. R., Kee, D. M. H., Khor, S. T., Chin, K. Y., Lok, T. X., Almutairi, H. A., …, & Kulharni, S. (2020). Contributing factors to organizational success: A case study of McDonald's. *International Journal of Tourism and Hospitality in Asia Pacific, 3*(2), 38–47. https://doi.org/10.32535/ijthap.v3i2.821

Choung, H., David, P., & Ross, A. (2022). Trust in AI and its role in the acceptance of AI technologies. *International Journal of Human-Computer Interaction, 39*(9), 1727–1739. https://doi.org/10.1080/10447318.2022.2050543

Chowdhury, R. (2023). Impact of perceived convenience, service quality, and security on consumers' behavioural intention towards online food delivery services: The role of attitude as mediator. *SN Business & Economics, 3*(1), Article 22. https://doi.org/10.1007/s43546-023-00422-7

Davis, F. D. (1989). Technology acceptance model: TAM. *Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption*, *205*(219), 5.

Dilip, D., Sinha, R., Wei, O. L., Kee, D. M. H., Leei, O. J., Shuang, P. K., …, & Boadu, E. (2021). Effective/differentiating marketing strategies of McDonald's in Malaysia and Indonesia. *Journal of the Community Development in Asia, 4*(1), 16–33. https://doi.org/10.32535/jcda.v4i1.995

He, L., Zhang, J., & Chen, Y. (2022). Exploring the impact of artificial intelligence on consumers' purchase intention in e-retailing. *Journal of Retailing and Consumer Services, 65*, 102867. https://doi.org/10.1016/j.jretconser.2021.102867

Jang, H. W., Moon, C., Jung, H. S., Cho, M., & Bonn, M. A. (2024). Normative and informational social influence affecting digital technology acceptance of senior restaurant diners: A technology learning perspective. *International Journal of Hospitality Management, 116*, 103626. https://doi.org/10.1016/j.ijhm.2023.103626

Kee, D. M. H., Ang, V. W. N., Lee, Y. Y., Laneishwar, A., Vehlan, L. S. S. V., Lee, L. X., & Lee, S. M. (2024). Golden arches going green: The impact of McDonald's sustainability achievements on public image. *Advances in Global Economics and Business Journal, 5*(1), 27–43.

Kee, D. M. H., Ho, S. L., Ho, Y. S., Lee, T. W., Ma, H., & Yin, Y. (2021). Critical success factors in the fast food industry: A case of McDonald's. *International Journal of Tourism and Hospitality in Asia Pacific, 4*(2), 124–143. https://doi.org/10.32535/ijthap.v4i2.1061

Kee, D. M. H., Liem, G. S., Yuan, N. Z., Ni, N. L. Y., Wen, N. K., Fang, N. S., & Muhsyi, U. A. (2023). The influence of customer satisfaction, brand trust and brand loyalty on purchase intention: A study of McDonald's in Malaysia. *International Journal of Tourism & Hospitality in Asia Pacific, 6*(2), 88–101. https://doi.org/10.32535/ijthap.v6i2.2343

Khan, N. R. M., Ibrahim, M. A., Mohd Ruslan, R. A., Abd Hamid, N. H., & Abdullah, M. F. (2024). The impact of restaurant online food delivery (OFD) service quality on customers' repurchase intention: A conceptual framework. *Information Management and Business Review, 16*(3S[a]), 963–971. https://doi.org/10.22610/imbr.v16i3S(I)a.4183

Khoso, A. A., & Hussain, S. (2025). Evaluating the effectiveness of AI-driven personalized recommendations in enhancing guest experiences in Jeddah's restaurants. *International Research Journal of Management and Social Sciences, 6*(2), 1–15. https://irjmss.com/index.php/irjmss/article/view/451

Liou, Z. Y., Lok, Y. H., Teoh, K. B., Lim, J. T., Lim, K. E., Lim, P. E., & Kee, D. M. H. (2024). Influencing factors on customer behavioral intentions to use a food delivery app: A study of GrabFood in Malaysia. *Advances in Global Economics and Business Journal, 5*(1), 1–14. https://doi.org/10.51748/agebj.v5i1.92

Lok, Y. H., Jian, O. Z., Chaudhary, M. K., Azhar, N. A. B. K., Azizi, N. Z. B., Azman, N. A. B., Hassan, N. H. B., & Kee, D. M. H. (2024). A case study: How social media influences consumer behavior towards McDonald's. *International Journal of Accounting & Finance in Asia Pacific, 7*(2), 102–115. https://doi.org/10.32535/ijafap.v7i2.3250

Nagy, S., & Hajdu, N. (2021). Consumer acceptance of the use of artificial intelligence in online shopping: Evidence from Hungary. *Amfiteatru Economic, 23*(56), 155–173. https://doi.org/10.24818/EA/2021/56/155

Nasir, M. A., Rana, N. P., & Dwivedi, Y. K. (2023). Impact of AI-based personalization on customer trust and loyalty in digital services. *Foresight, 25*(2), 137–150. https://doi.org/10.1108/FS-10-2021-0218

Ravi, T., Yusof, R., Koay, L. K., Teoh, Y. T., Thin, M. Y., Donold, T. A. A., Jannah, N. A. R., Mittal, P., Srivastava, R., & Kee, D. M. H. (2024). Utilizing artificial intelligence (AI) in customers' purchase intentions on online food delivery services. *International Journal of Tourism & Hospitality in Asia Pacific, 7*(2), 120–133. https://doi.org/10.32535/ijthap.v7i2.3212

Tarinc, A., Aytekin, A., Ozbek, O. T., Ergün, G. S., Keles, A., Uslu, F., Keles, H., & Yayla, O. (2023). How do food neophobia and neophilia moderate the effect of local food quality on dining satisfaction and post-dining behavioral intention? *Sustainability, 15*(12), 9510. https://doi.org/10.3390/su15129510

Troise, C., O'Driscoll, A., Tani, M., & Prisco, A. (2021). Online food delivery services and behavioural intention–a test of an integrated TAM and TPB framework. *British food journal*, *123*(2), 664-683. https://doi.org/10.1108/BFJ-05-2020-0418

Widiar, G., Yuniarinto, A., & Yulianti, I. (2022). Perceived ease of use's effects on behavioral intention mediated by perceived usefulness and trust. *Interdisciplinary Social Studies, 2*(3), 1833–1841.

Wolfe, A. (2024, September 9). *AI as a tool to boost customer satisfaction*. Hospitality Technology. https://hospitalitytech.com/ai-tool-boost-customer-satisfaction

Yaiprasert, C., & Hidayanto, A. N. (2024). AI-powered personalization in the digital age: Ensemble innovation personalizes food recommendations. *Journal of Open Innovation: Technology, Market, and Complexity, 10*, 100261. https://doi.org/10.1016/j.joitmc.2024.100261

Yi, M., & Choi, H. (2023). What drives the acceptance of AI technology?: the role of expectations and experiences. *arXiv preprint arXiv:2306.13670*. https://doi.org/10.48550/arXiv.2306.13670

Yo, P. W., Kee, D. M. H., Yu, J. W., Hu, M. K., Jong, Y. C., Ahmed, Z., Gwee, S. L., Gawade, O., & Nair, R. K. (2021). The influencing factors of customer satisfaction: A case study of Shopee in Malaysia. *Estudios de Economía Aplicada, 39*(12), 1–16. https://doi.org/10.25115/eea.v39i12.6839

ABOUT THE AUTHOR(S)

1st Author
Dr. Azura Abdullah Effendi is a Senior Lecturer at School of Management, Universiti Sains Malaysia. She teaches both undergraduate and postgraduate students in Management and Organizational Behaviour. She researches Emotional Intelligence, Leadership, Psychosocial Health, and various work values. Currently supervising several Masters and Phd candidates, she has also graduated several Masters and Doctoral students. She plays a huge role in community service as well as a consultant for USM and the industry, and an external examiner to several universities. Member of the Malaysian Institute of Management (MIM), Malaysian Institute of Human Resource Management (MIHRM), and Asian Academy of Management (AAM), she has written books on research writing and co-written books on Organizational Behaviour. The most crucial highlight is her works are published in the journal Sustainability, the American Journal of Economics and Business Administration (AJEBA), Journal of Global Business and Economic (JOGBE), Journal of Asia Entrepreneurship and Sustainability, and International Journal of Computer Applications (IJCA). An active speaker and trainer at SOM, the Institute of Postgraduate Studies, and various schools across USM's 3 campuses, surrounding private colleges, and several federal government Ministries, our trainer has received several awards over her 17 years of service. She has examined numerous research theses from within as well as outside of USM, and is proud that some of her students have become respected academicians.

2nd Author
Associate Professor Dr. Lew Tek Yew is an Associate Professor of Management at the Department of Management, Marketing and Digital Business, Faculty of Business, Curtin University Malaysia. He holds a PhD in Human Resource Development from Universiti Malaysia Sarawak (UNIMAS), an MBA with Distinction from the National University of Malaysia (UKM), and a Bachelor of Economics (First Class Honours) from the University of Malaya. His academic and professional experience spans higher education leadership and the banking industry, and he has received multiple Student Choice Awards for excellence in teaching. Dr. Lew's research focuses on human resource management and development, future of work, employee engagement, psychological capital, remote working, sustainable business, and tourism management, with extensive publications in Scopus- and Clarivate-indexed international journals.

3rd Author
Wei Ning Ooi is currently undergraduate student at Universiti Sains Malaysia.

4th Author
Soak Suan P'ng is currently undergraduate student at Universiti Sains Malaysia.

5th Author
Mei Shan Poh is currently undergraduate student at Universiti Sains Malaysia.

6th Author
Puteri Balqis Binti Hamizan is currently undergraduate student at Universiti Sains Malaysia.

7th Author
Arun Singh Tomar is currently undergraduate student at Universiti Sains Malaysia.

8th Author
Dr. Daisy Mui Hung Kee is an Associate Professor at the School of Management, Universiti Sains Malaysia (USM). She earned her Ph.D. from the University of South Australia and an MBA from USM. A prolific scholar with over 75 Web of Science and 113 Scopus-indexed publications, she also serves as the Country Director for AIBPM (Indonesia) and the STAR Scholars Network (USA).