Investigating the Challenges in Food Ordering Systems Affecting Consumers' Purchase Intentions

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ABSTRACT

The speedy growth of food ordering systems (FOS) has transformed customer behaviour towards the food industry. Various key challenges hinder the customers' purchase intention system, despite its numerous advantages. The present study aims(1) to identify the key challenges in food ordering systems that affect customers' purchase intentions and (2) to prioritize these identified challenges using the Spherical Fuzzy- Bayesian Best Worst Method (SF-BBWM).This study uses the critical success factor theory to investigate the key challenges for food ordering systems through an extensive literature review and expert inputs. The image and environmental challenges are found to be the most significant challenges that influence customer purchase intentions over food ordering systems. .The detailed implications of this study are discussed along with the directions for future research.

KEYWORDS

Food Ordering Systems (FOS), Customer Purchase Intention, Critical Success Factor Theory, Spherical Fuzzy Bayesian Best-Worst Method.

1. INTRODUCTION

In recent years, the way consumers engage with food services has been significantly reshaped by the rapid expansion of Food Ordering Systems (FOS). These digital platforms offer enhanced convenience, speed, and avails lots of food options, making them an increasingly preferred channel for food consumption. A particularly notable development is the emergence of systems that provide access to digitally pay for their meals, streamlining the ordering process and enhancing user experience (Delaney, 2024). This shift aligns with broader digital transformation trends that have characterized the service sector since the 2010s.The growth of Food ordering Systems (FOS) has become a central component of many restaurants' distribution strategies, allowing them to reach broader markets and respond to changing consumer expectations (Muller, 2018). Global market data reflects this trajectory, with revenue from FOS projected to exceed $82 billion (Statista, 2019), and an expected compound annual growth rate (CAGR) of 7.64% from 2025 to 2030, potentially reaching a market volume of approximately US$2.02 trillion by 2030 (Statista, n.d.).As these platforms become more deeply integrated into everyday consumer routines, understanding how users interact with them and the factors influencing their purchase intentions becomes increasingly important. Many FOS interfaces adopt principles common in e-commerce, suggesting that user experience, trust, and perceived value play critical roles in shaping consumer behaviour (Suhartanto et al., 2019).

The purpose of this study is to investigate the challenges associated with food ordering systems and how these challenges affect consumers' purchase intentions, providing insights that are crucial for both service providers and researchers in digital consumer behaviour. However, while the structural design may be similar, the experiential nature of food ordering introduces distinct consumer behaviours that diverge from those observed in traditional online retail environments. Although the existing literature on digital adoption provides valuable insights into consumer intentions towards hotel stays (Morosan & DeFranco, 2019), it falls short in addressing the specific challenges that inhibit consumers' willingness to engage with food ordering systems. Furthermore, research remains limited in its exploration of these systems across diverse cultural and regional contexts, thereby constraining the external validity and generalizability of current findings (Al Maalouf et al., 2025). Compounding this gap is a lack of comprehensive analysis concerning the interplay between platform design features and psychological determinants in influencing purchase intentions (Chen et al., 2020).Given the increasing reliance on OFOS for competitive advantage and sustained customer engagement, a

deeper understanding of these challenges is both timely and essential. Accordingly, this study sets out two primary objectives:

(1) To identify the key challenges in food ordering systems that affect customers' purchase intentions
(2) To prioritize these identified challenges using the Spherical Fuzzy Bayesian Best-Worst Method.

By addressing these objectives, this study proposes to contribute towards the development of the effective, user-centered FOS strategies and to inform future empirical studies in this evolving domain. Through a comprehensive review of existing literature this study advances theoretical framework of the Critical Success Factors (CSF) to identify consumer-related challenges in Food Ordering Systems (FOS).

Section 2 provides a comprehensive review of the existing literature, highlighting the principal challenges linked to food ordering systems. Section3 introduces the conceptual research framework and details the methodological approach adopted for this study. Section 4 presents the empirical findings obtained through the applied methodology, followed by a thorough analysis and interpretation of the results. Section 5 and 6 discusses the implications and summarizes the key insights by recommending future scope of investigation.

2. LITERATURE REVIEW:

2.1 Food ordering system (FOS) and its effect on customer purchase intentions (CPI)

The food purchasing has substantially transformed consumer behaviour due to proliferation of food ordering systems. Prior research has focused on the determinants responsible for customers' purchase intentions, particularly for digital environments. Brewer and Sebby (2021) found that CPI are significantly influenced by the perceived convenience of the food ordering system for their desired food, where desire and convenience act as mediators, implying a nuanced interplay between psychological motivation and platform utility. The Unified Theory of Acceptance and Use of Technology (UTAUT) was also used to reflect that factors such as social influence, performance expectancy, effort expectancy, trust, and perceived food safety risks are critical in shaping behavioural intentions toward online food ordering systems with usage frequency as a moderator (Hong et al., 2023). This indicates that past engagement with the platform also affects these relationships. The strategic importance for the food ordering system was identified as the key motivational factor to influence consumer purchasing behaviour, and understanding these drivers is essential for formulating effective managerial strategies aimed at increasing customer retention and market competitiveness (Chen et al., 2020). Al Maalouf et al. (2025) further reinforced the importance of understanding consumer motivations, noting that businesses must remain responsive to evolving digital consumption trends. Their work highlights the need to explore across the dynamics of different cultural and regional contexts to ensure the generalizability of findings. Pillai et al. (2022), by integrating the "Theory of Planned Behaviour" (TPB), "Perceived Risk Theory", and the "Elaboration Likelihood Model" (ELM), offered a multidimensional framework to analyze the influence of perceived benefits, perceived risks, and online persuasive cues on consumer attitudes and purchase intentions.

Similarly, Gunden et al. (2020) identified performance expectancy and self-image congruity as dominant predictors of purchase intention, while factors such as habit and impulse buying exhibited

either weak or negative associations. Their findings reveal the complexity of consumer decision-making in digital contexts, where both rational and affective elements converge.

2.2Challengestothe food ordering system:

Challenges such as a lack of trust, fear of online transactions, insufficient app interfaces, payment issues, privacy concerns, and delivery conflicts have been reported in various studies (Li et al., 2022; Sharma & Nayak, 2021). However, these challenges vary in intensity and influence depending on demographics, technology access, and platform quality.

Table 1: Details of OFOS Challenges

Challenges	Description	References
Image challenge (B1)	An image challenge arises when consumers form negative perceptions of innovations due to noticeable changes in their nature or presentation. Factors such as delivery staff behavior, food and packaging quality, affordability, and customer service significantly influence consumer intention, with service quality positively linked to word-of-mouth and loyalty.	Verma et al., (2023); Yusra and Agus, (2018)
Environmental challenge (B2)	Frequent criticism of food delivery apps stems from their reliance on single-use plastic packaging, contributing to environmental and microplastic pollution. This concern led to examining the impact of environmental challenges on consumer attitudes toward these platforms.	Verma et al., (2023); Chu et al., (2021); Liu et al., (2021)
Lack of technology readiness (B3)	Lack of technology readiness can lead to user frustration and indirectly shape customer attitudes by influencing perceptions of innovation.	De Bellis & Johar, (2020); Roy et al., (2018)
Demographic challenge (B4)	Demographic factors like age and socio-economic status significantly influence the adoption of online food ordering systems, often outweighing individual	De Bellis & Johar, (2020); Lee& Coughlin, (2015)

	innovativeness.	
Autonomous technology adoption (B5)	Autonomous technology adoption in online food ordering systems enhances efficiency but may face resistance due to users' unfamiliarity and trust concerns.	De Bellis & Johar, (2020)
Ethical Challenges (B6)	Ethical challenges arise when consumers question the transparency and moral practices of OFD services, influencing trust and purchase decisions.	Taheri et al., (2025); Roh &Park, (2019)
Consumer trust and loyalty Challenges (B7)	Trust and loyalty act as critical challenges in online food delivery services, as a lack of trust undermines perceived value and satisfaction, while weak loyalty reduces positive word-of-mouth and long-term customer engagement.	Taher et al., (2025); Alnoor et al., (2022)

2.3 Critical Success Factor (CSF) Theory and experts' selection

To strengthen the strategic grounding of this study uses the Critical Success Factors (CSF) theory developed by Bullen and Rockart (1981). CSFs represent the essential areas where satisfactory performance is crucial for achieving desired business objectives. In the context of Food Ordering Systems (FOS), we argue that identifying and addressing CSFs is imperative for enhancing customer retention and competitive positioning of businesses. The theory works in two phases, where the first phase deals with the identification of the CSF with experts' opinions and in the second phase, these identified CSF are subsequently ranked by experts to prioritize the key factors.

By aligning system design and operational strategies with these CSFs, food service platforms can better respond to customer needs and overcome challenges to adoption. Integrating CSFs provides a managerial lens to complement the psychological and design-oriented analyses, ensuring a holistic understanding of what drives successful digital food ordering experiences.

Table 2: Details of Experts

No. of experts	Geography	Industry/Academia	Current Designation	Average Experience Years
03	Canda	Industry		10
03	Australia	Industry		20.5
04	Netherland	Industry		11.5
03	India	Academia	Professor	11.5
04	Australia	Academia	Professor	13.5
04	Germany	Industry		12.5

3. METHODOLOGY

3.1 Spherical Fuzzy -Bayesian BestWorst Method (SF-BBWM)

TheSF-BBWM is used to determine the relative importance of challenges within Food Ordering Systems. Unlike the Analytic Hierarchy Process (AHP), which requires numerous pairwise comparisons—specifically n(n–1)/2 for n criteria—BBWM streamlines the process by using only "2n–3" reference comparisons, enhancing its efficiency, consistency, and suitability for hybrid research designs (Govindan, 2023). Moreover, while traditional BWM must be repeated for each decision-maker to yield individual weights, BBWM simplifies this by generating an aggregated weight in a single computation (Mohammadi & Rezaei, 2020). By introducing the spherical fuzzy extension of BBWM, this research addresses decision-making ambiguity and uncertainty inherent in human judgments. The method is structured into clearly defined computational steps (Gandhi et al., 2024).

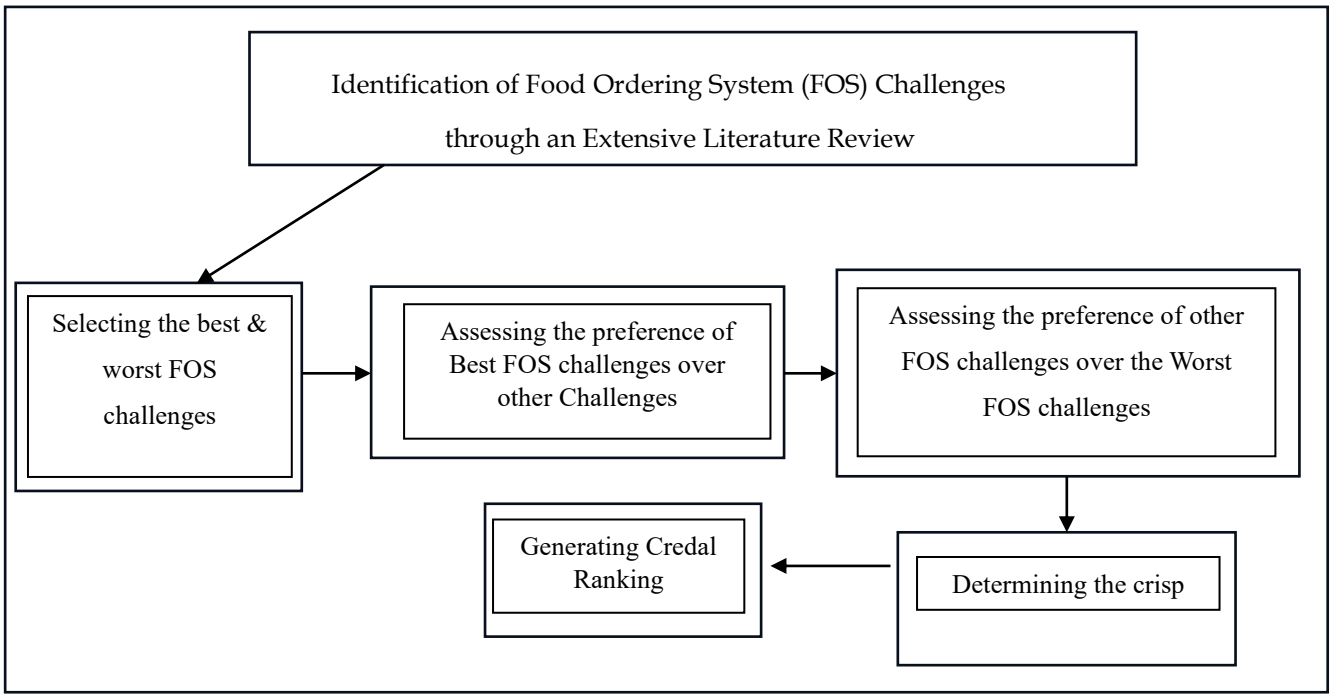

Figure1: Proposed Research Framework

Source: Gandhi et al., (2024)

3.2 Data Collection

The purposive sampling method has been used for data collection. 21 experts from the food industry and academia were selected for this study, having experience of more than 10 years (*see* Table 2.). The experts are first asked to identify the most and least important criteria from a given set. They then rate all other criteria relative to the best and worst choices using a scale. These pairwise comparisons are used to derive consistent weightings for each criterion. The Spherical Fuzzy Bayesian approach enhances the Best-Worst Method by handling uncertainty and ambiguity in expert judgments during data collection. It allows decision-makers to express preferences more flexibly using spherical fuzzy sets. This integration improves the reliability and robustness of the derived criteria weights under uncertain conditions.

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4. DATA ANALYSIS AND DISCUSSION

This study employed SF-BBWM, as outlined in *Section 3.1*, to derive the weights of the seven primary challenges affecting customer purchase intention towards food ordering systems (FOS). The analysis began with the construction of pairwise comparison matrices for the main challenges, completed by domain experts using linguistic scales. These linguistic judgments were then transformed into spherical fuzzy numbers and processed using the SF-BBWM technique to obtain precise weight values for each challenge category.The global weights of the challenges, which reflect their relative importance in influencing consumer buying decisions towards OFOS, are presented in Table 3.

Table 3: Weights and Final Ranking of OFOS Challenges

Challenges	Global weights	Global Ranking
B1	0.21	1
B2	0.201	2
B3	0.0893	7
B4	0.1306	4
B5	0.128	5
B6	0.1673	3
B7	0.0738	6

The Image Challenge (B1) emerged as the most critical factor (w = 0.2100), indicating that negative perceptions regarding the credibility, cleanliness, or brand image of food delivery platforms significantly hinder customer purchase intentions. Following closely, the Environmental Challenge (B2) (w = 0.2010) ranked second, suggesting growing consumer sensitivity to packaging waste, carbon emissions, and the sustainability practices of food delivery companies. The Ethical Challenge (B6) (w = 0.1673) ranked third, reflecting concerns over labor rights, data privacy, and fairness in algorithmic pricing. These findings underscore the ethical dimension's rising importance in influencing digital consumption choices. Meanwhile, Demographic Challenge (B4) and Autonomous Technology Adoption (B5) received moderate weights (w = 0.1306 and w = 0.1280, respectively), pointing to gaps in accessibility and generational differences in technology acceptance. Interestingly, Lack of Technology Readiness (B3) (w = 0.0893) and Consumer trust and loyalty Challenges (B7) (w = 0.0738) were ranked lowest, suggesting that while infrastructure and individual hesitation are relevant, they are comparatively less obstructive than image and ethical concerns in the current FOS environment.

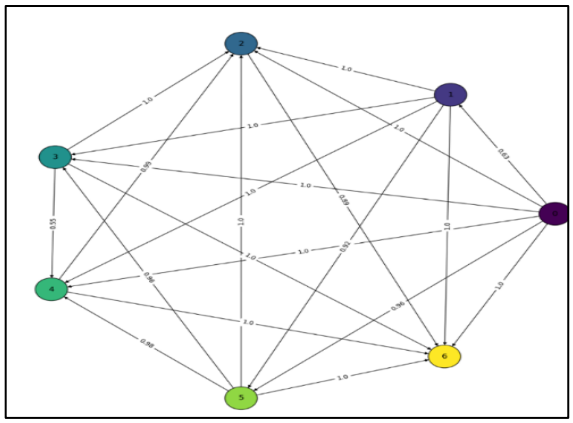

Figure 2: Credal Ranking

To visually capture the prioritization of these challenges, a weighted directed graph (*refer to* Figure 2) was developed. The graph illustrates the superiority of B1 over all other challenges with a confidence level of 1, and over B6 and B3 with a confidence level of 0.7, reinforcing the dominant role of brand and perception in shaping consumer decisions. These findings reflect a shift in consumer consciousness, where intangibles such as ethical practices and corporate image increasingly shape digital purchasing behavioural trend particularly relevant in post-pandemic markets. Therefore, platform operators must strategically invest in brand trust, environmental responsibility, and ethical transparency to overcome these dominant challenges and enhance user satisfaction and adoption rates.

5. IMPLICATIONS

The study contributes in the following ways:

Firstly, the study advances the theory of the critical success factor by applying it to identify the main challenges faced by food ordering systems. The study also analyzes these challenges using the SF-BBWM method and highlights the image and environmental challenges as the most significant for the food ordering system. It finds that these two challenges largely influence customers' decisions to adopt online platforms, especially for food ordering.

Secondly, from a managerial perspective, the results provide a prioritized list of actionable challenges that can help decision-makers better allocate resources, especially for startups or small businesses with limited budgets. Managers might focus on image and environmental challenges, which significantly influence customers' decisions to order food online. Food delivery platforms can also use this information to align their investments and innovations with actual user pain points, thereby improving service effectiveness and market competitiveness.

6. CONCLUSION AND FUTURE DIRECTIONS

Food ordering systems are integral to modern consumer lifestyles, yet several challenges hinder their optimal adoption and customer satisfaction. This study applied Critical Success Factor Theory to identify key challenges and used the SF-BBWM to prioritize them. The integration of these methodologies provides both theoretical advancements and practical insights for managers. However, given the dynamic nature of technology and consumer preferences, ongoing research using structured, longitudinal approaches is necessary to ensure the continued relevance and effectiveness of these findings.

While the study offers strong theoretical and practical contributions, several limitations must be acknowledged. This study employs the SF-BBWM, which effectively prioritizes challenges based on expert judgment. However, it does not capture the *interrelationships* or dependencies among these challenges. A more structured methodological approach like Interpretive Structural Modelling (ISM) could be employed in future research to develop a hierarchical framework, showing how certain challenges influence or depend on others.

This study provides a snapshot view based on current expert opinions and literature. A longitudinal study could track how these challenges evolve over time and offer a more dynamic understanding of the OFOS environment, especially as customer behaviour and technologies change.

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