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Feeding trust: Exploring key drivers, moderators, and consequences related to food app usage

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Feeding trust: Exploring key drivers, moderators, and consequences related to food app usage

Structured Abstract

Purpose: An extended involvement-commitment and the trust commitment model are used to examine post-consumption decisions related to food delivery app use.

Methodology: A self-administered online survey was used to collect data from food delivery app users in the U.S.

Findings: Findings validate a favorable role of perceived app security and menu description on trust in app recommendations. Trust was found to be positively related to involvement, commitment, and willingness to provide feedback. The positive moderating role of perceived convenience and rewards and incentives were also confirmed in relation to consumers' trust in app recommendations, and involvement and commitment.

Originality: A key contribution of this study includes the development of a comprehensive model to understand post-consumption decisions related to the usage of food delivery apps. This study is also the first to unveil the antecedent and moderating factors related to food delivery app users' willingness to provide feedback, share personal data, and to pay more.

Keywords: Behavioral insight, commitment, CRM, e-commerce, hospitality, trust

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1. Introduction

It is forecasted that the market size of online food delivery services in the US, facilitated by mobile apps, may surpass U$30bn by 2026 (Expert Market Research, n.d.). To capitalize on these favourable market trends, providers of online food delivery services must cultivate and sustain trusting relationships with their customers. Such relationships potentially empower customers to engage cooperatively with service providers, unlocking significant potential (see Das and Ramalingam, 2023; Fang and Li, 2020; Su et al., 2023).

Research on food delivery app usage has gained momentum in recent years (Agarwal and Sahu, 2022; Al Amin et al., 2021; Anbumathi et al., 2023; Lee et al., 2022; Negi et al., 2023; Shah et al., 2021; Tsai et al., 2023; Yao and Li, 2024). Many of these studies (see Abed, 2023; Shankar et al., 2022; Wen et al., 2022) primarily focus on understanding individuals' intentions to (re)use the app/service, which is essential for understanding early user responses.

However, the existing literature and the broader service research domain lack a comprehensive understanding of how practitioners can effectively build and sustain trust, particularly concerning food delivery apps. More so, the potential implications of trust, beyond established factors like purchase and use intentions, are underexplored (cf. Raza et al., 2023). Scholars in the service research domain (e.g., Bapat and Khandelwal, 2023; Chesney et al., 2017; Garry and Harwood, 2019) emphasize the need for deeper insights into the key drivers, moderating influences, and consequences of trust for both consumers and service providers. Our research addresses this critical issue by answering three important questions that are potentially valuable to the advancement of service theory and practice in the online food delivery service sector.

Instead of merely focusing on general trust in technology (Su et al., 2023), our first research question investigates specifically the determinants of consumer trust in food app

recommendations. Establishing this trust is posited to significantly enhance the rapport between customers and service providers (Fang and Li, 2020). Drawing from broader service and e-commerce literature (Fang and Li, 2020; Harris et al., 2016; Kim and Peterson, 2017; Mou et al., 2020), this study uniquely identifies two previously unexamined factors that could impact trust in app recommendations: contextual elements like menu descriptions and technology-related factors like perceived app security. These factors are argued to be critical for users perceiving recommendations as genuine.

Beyond well-researched outcomes like continued use (Raza et al., 2023) and loyalty (Su et al., 2023), our second question investigates additional effects of trust in food app recommendations. By expanding on trust-commitment theory (Morgan and Hunt, 1994; Mukherjee and Nath, 2007; Ponder et al., 2016) and the involvement-commitment model (Beatty et al., 1988; Elgammal et al., 2024; Mou et al., 2020), we examine how trust influences not only customer commitment and involvement but also their willingness to pay more, provide feedback, and share personal data. These insights are crucial for service providers who rely on recommendation systems to engage customers, foster long-term relationships, and facilitate upselling. Despite its importance, empirical evidence for these relationships is lacking in the service literature, which this study aims to address.

Moreover, as a departure from prior literature (Raza et al., 2023; Su et al., 2023), the third inquiry investigates the conditions under which trust in app recommendations enhances customer commitment and involvement. Two potential moderators—perceived convenience and rewards/incentives—are identified as crucial in strengthening the relationships between trust, commitment, and involvement. Our hypothesis is that both convenience, and rewards and incentives fortify these connections. Empirical findings suggest that greater convenience from app usage fosters trust in app recommendations, thereby increasing customer commitment and involvement (Roy et al., 2018; Khan and Wahab, 2023). Service

convenience has been shown to enhance consumer trust in providers (Ameen et al., 2021; Collier and Sherrell, 2010) and positively affect post-usage attitudes toward food delivery services (Yeo et al., 2017). Although previous studies have not examined the moderating role of convenience on the impact of trust in app recommendations on commitment and involvement, exploring these relationships is crucial for advancing knowledge in self-service technology.

Relatedly, insights gleaned from existing literature (Ferrin and Dirks, 2003; Kang et al., 2015; Kumar and Gupta, 2021; Negi et al., 2023; Sadiq et al., 2021; Tsai et al., 2023) suggest that reasonable incentives and rewards based on app recommendations can foster trust, enhancing customer commitment and involvement. Economic rewards have been recognized as key factors in trust formation (Ferrin and Dirks, 2003; Wang et al., 2020) and moderating motivations and perceptions (Chang et al., 2019; Kang et al., 2015; Kumar and Gupta, 2021). However, the moderating role of incentives and rewards in the relationship between trust in app recommendations, customer commitment, and involvement remains unexplored in online food delivery services. Investigating this effect advances our understanding in this field.

Altogether, the questions addressed in this article are critical to advancing service theory and practice in several ways. First, this study is the first to empirically demonstrate the positive impact of menu descriptions and perceived app security on trust in app recommendations, particularly within the context of food apps. By doing so, it deepens our understanding of the importance of contextual and technology-related factors in building and sustaining trust in app recommendations. These insights are valuable for practitioners seeking effective strategies to establish and maintain trust in (food) app recommendations.

Second, this study contributes to service theory and practice by elucidating the implications of trust in app recommendations for service providers. Our research

complements and expands the existing services marketing literature (Bapat and Khandelwal, 2023; Chesney et al., 2017; Garry and Harwood, 2019) by identifying the consequences of trust. Notably, our study distinguishes itself by not only focusing on the food app context but also revealing that trust is crucial for customer involvement, commitment, and willingness to provide feedback to service providers.

Third, our study contributes to service theory and practice by identifying boundary conditions that influence the relationships between trust and both involvement and commitment. Specifically, this is the first study within the service research domain to demonstrate the positive moderating roles of perceived convenience and rewards and incentives on the relationships between trust in app recommendations and involvement and commitment. These nuanced findings offer service practitioners a deeper understanding of the factors shaping trust in customer-firm relationships, enabling them to develop more effective strategies to enhance customer engagement.

These contributions highlight the importance of understanding trust in food app recommendations, providing valuable insights for both service theory and practice. Theoretically, this study is among the first to empirically extend and test the integrative theories of trust-commitment and involvement-commitment within the context of online food delivery services, and more broadly, the service research domain.

The remainder of this manuscript is organized as follows: theoretical underpinning, hypotheses development, methodology, results, discussion, theoretical contributions, managerial implications, conclusions, and limitations and future research.

2. Theoretical Underpinning

This study draws upon an expanded commitment-trust theory and the involvement-commitment model as theoretical foundations. The trust-commitment theory underscores the significance of trust and commitment in influencing favorable customer behavior and

yielding positive outcomes for the firm (Morgan and Hunt, 1994; Mukherjee and Nath, 2007; Ponder et al., 2016). As highlighted by Morgan and Hunt (1994), commitment and trust serve as key mediators in relationship marketing, motivating marketers to prioritize nurturing long-term partnerships and safeguarding these investments in relationships. The researchers' proposed model testing trust and commitment as mediating variables between five antecedents and five dependent variables was, indeed, found to be parsimonious and explained a substantial amount of variance. Even though the context of the authors' study was the automobile tyre retail industry, they suggested that future studies expand upon their study's proposed relationships and extend to other contexts. Therefore, in this study, the trust-commitment theory has been extended by incorporating additional variables that are pertinent but have been under-theorized within the context of app-based food delivery services. Specifically, perceived app security and menu description are argued here to be key antecedents to trust in app recommendation. Moreover, insights gleaned from the broader literature (e.g., Ameen et al., 2021a; Collier and Sherrell, 2010; Kumar and Gupta, 2021; Chang et al., 2019) highlight the necessity of theorizing the potential moderating influence of perceived convenience and rewards and incentives on the link between trust in app recommendations and customer commitment to food delivery apps. Furthermore, the extended trust-commitment theory allows us to clarify the importance of trust and customer commitment in reducing uncertainty related to food delivery app usage and driving specific customer outcomes like providing feedback, sharing personal data, and willingness to pay more. Prior to this study, and to the best of the authors' knowledge, none of these outcomes had been examined in research on online food delivery services.

Similarly, the involvement commitment model, proposed by Beatty et al. (1988), highlights how customer involvement influences commitment to a product or service. More broadly, involvement reflects the degree of personal significance an individual assigns to a

specific offering. Beatty et al. (1988) tested an involvement-commitment model and

empirically assessed it using data relevant to soft drink consumption. Their model was rooted

in Rothschild and Houston's (1980) involvement model and Bloch and Richins' (1983)

product-importance model. Their results highlighted that greater involvement correlates with

increased commitment, as individuals allocate more cognitive and emotional resources to the

relationship. Given that their research focused solely on soft drinks, which can be considered

a low-involvement product, the authors recommended reevaluating the model's applicability

across diverse product categories. In this study, not only is the involvement-commitment

model applied to the realm of online food delivery services but also the premise that trust

serves as a precursor to customer involvement is examined. Additionally, whether customer

involvement positively impacts commitment is investigated and its associations with

desirable outcomes such as willingness to provide feedback, share personal data, and

willingness to pay more are explored.

Most of all, through the integration of the trust-commitment theory and the

involvement-commitment model, this study presents a comprehensive theoretical framework

(refer to Figure 1) elucidating the key antecedents, moderators, and consequences of trust in

app recommendations. This approach represents a unique contribution to both the literature

on food delivery apps and the broader discourse on self-service technologies.

3. Hypotheses Development

3.1 Perceived App Security, Menu Description and Trust in App Recommendation

Customers are becoming less willing to provide private information online (Yenisey

et al., 2005). In an experimental study, Chesney *et al.* (2017) found trustingness and

trustworthiness to be higher in both virtual and physical trade environments in comparison to

electronic environment. Meanwhile, perceived app security can be described as the subjective

likelihood, from the customer's perspective, that their personal or financial information won't

be revealed, saved, and/or stolen during their shopping process and storage by third parties (Flavian and Cuinaliu, 2006).

Trust reflects a readiness to rely on something or someone (Chung and Kwon, 2009; Wong and Wong, 2024) and is therefore fundamental to economic exchanges such as online transactions (Bapat and Khandelwal, 2023; Fang and Li, 2020; Osakwe *et al.*, 2022). Within the UAE, smart home customers' trust was found to be highly influenced by their perceived security (Shuhaiber *et al.*, 2023). Similarly, within the mobile application payment context, perceived security of Chinese consumers was revealed to be the foundation of their trust (Quan *et al.*, 2023). Although the relationship between perceived security and trust (which are narrowed down here as trust in app recommendation [see also Fang and Li, 2020]) remains relatively unexplored in the food delivery apps context, the preceding discussion provides the grounds for the formulation of the hypothesis below:

H1: Perceived app security has a positive and significant relationship with trust in app recommendations.

Consumers' emotional response to a product's presentation and its appealing visual representation can trigger trust in an e-commerce site (Chen and Dibb, 2010). Consumer hope, also considered a cognition-focused emotional mechanism (Rego *et al.,* 2014), was found to influence trust in a study utilizing data collected from digital payment app users (Bapat and Khandelwal, 2023). A high-quality product description that includes clear product information can satisfy or even surpass the expectations of the customers and decrease levels of uncertainty associated with the product (Kahn *et al.*, 2002; Mou *et al.*, 2020), consequently increasing consumer trust in the product (also cf. Yue *et al.*, 2017). Thus, the following hypothesis is proposed within the current study's context:

H2: Menu description has a positive and significant relationship with trust in app recommendations.

3.2. Trust in App Recommendations and Involvement

Within technology adoption research, involvement refers to "to an individual's perceived importance of a [technology artefact] stimulus or situation" (Mou *et al.*, 2020, p.570). The multidimensional involvement construct in this study includes cognitive, enduring, and situational involvement. Cognitive involvement captures the importance the individual attaches to the functional and/or utilitarian performance of the product (Mou *et al.*, 2020), which, in the context of this study is the food delivery app. Enduring involvement is defined as a steady and continuous degree of interest in the product under consideration over a specific period and accordingly, customers perceive it as important to them (Im and Ha, 2011; Mou *et al.*, 2020). Lastly, situational involvement reflects the degree of involvement evoked by a specific situation and therefore unlike enduring involvement, it is transitory in nature (Havitz and Mannell, 2005; Hsia *et al.*, 2010; Mou *et al.*, 2020). In this study, customer involvement is analyzed as a second-order construct that is underpinned by its three dimensions.
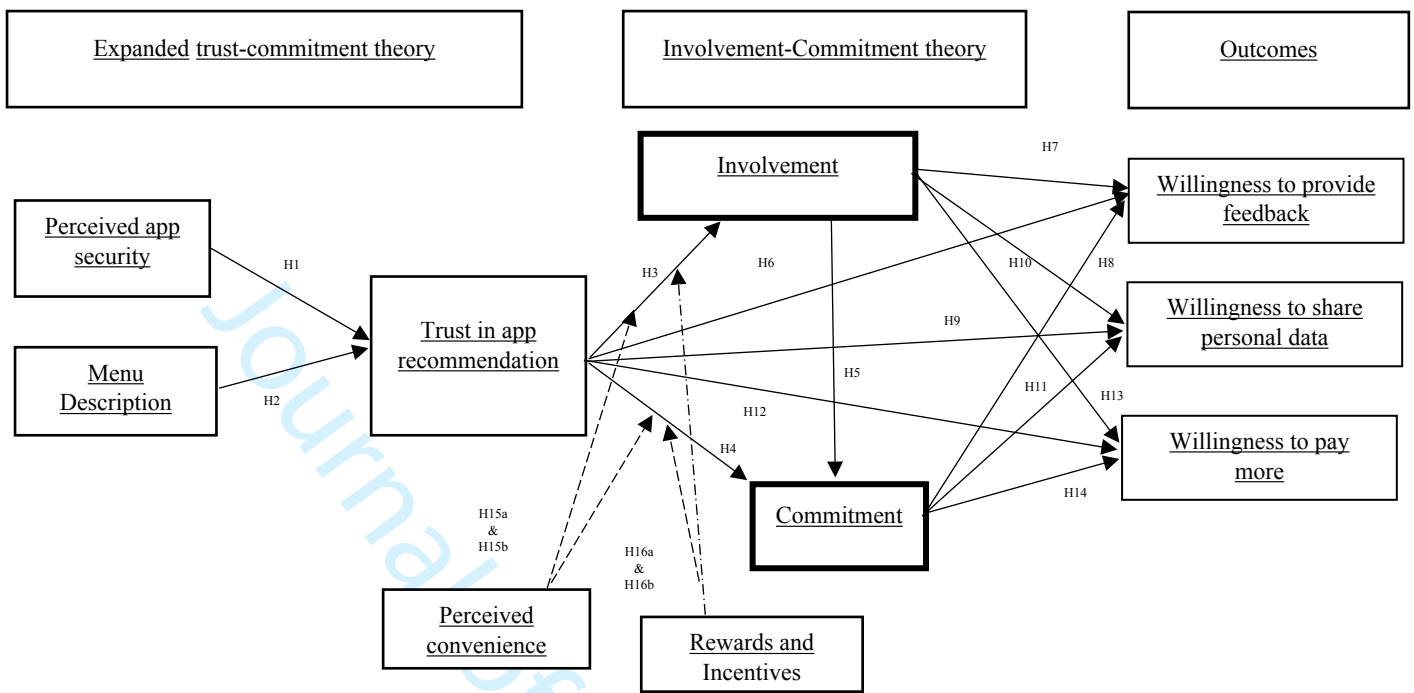
Figure 1: Proposed Research Model

Note:

1. Box with dark boundaries are second-order constructs e.g. involvement and commitment.
2. Dotted lines indicate moderating relationships.

Because online-based food delivery services are still relatively new to consumers

worldwide, there might be some fresh insights into how trust in app recommendations would

influence customer involvement toward food delivery apps. Moreover, the inquiry on the

possible relationship between involvement and trust in app recommendations has been

informed by previous research suggestions that trust in virtual assistants, for example, it

enhances consumer involvement in the product (Alimamy and Kuhail, 2023). Thus, the

following hypothesis is proposed in the online food delivery context:

H3. Trust in app recommendations has a positive and significant relationship with

involvement.

3.3 Trust in App Recommendations and Commitment

Commitment is a promise of consistent relationship, attachment, interactions, or

behavior between two parties (Ameen et al., 2021b; Gruen *et al.*, 2000; Gundlach *et al.*,

1995). Within the current study, commitment is examined through two components;

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"continuance commitment" which refers to the degree to which a customer feels obligated to an organization (Bansal *et al.*, 2004; Fullerton, 2011), and "affective commitment" which is a psychological state that describes the degree to which a consumer identifies with and feels a strong attachment to an organization (Allen and Meyer, 1990; Fullerton, 2011; Gruen *et al.*, 2000). Both affective and continuance commitment are operationalized in this study as a higher-order commitment construct.

Within the relationship marketing realm of research, it has been long theorized that trust is a critical antecedent of commitment (Ameen *et al.*, 2020b; Bapat and Khandelwal, 2023; Fullerton, 2011; Khan *et al.*, 2020; Sanchez-Franco, 2009). Building on extant research and informed by the commitment-trust framework (Morgan and Hunt, 1994), the following hypothesis is proposed:

H4: Trust in app recommendations has a positive and significant relationship with commitment.

3.4 Involvement and Commitment

According to the involvement-commitment model, involvement has a vital role in creating commitment (Beatty *et al.*, 1988; Rothschild and Houston, 1980). Prior research on the association between involvement and commitment revealed that high levels of involvement increase consumer commitment to adopt a product or service provider (Inoue *et al.*, 2017; Sanchez-Franco, 2009). Within the research context, it stands to reason that customers will become more committed to utilizing food delivery app consistently the more involved they are with the app, leading to the following hypothesis:

H5. Involvement has a positive and significant relationship with commitment.

3.5 Trust in App Recommendations, Involvement, Commitment, and Willingness to Provide Feedback

Consumers' feedback assists firms in developing and improving their long-term plans for creating services (Groth *et al.*, 2004). They are the ones who are affected by staff's actions, and firms can substantially take advantage of customer suggestions for improved service through their citizenship behavior (Yi and Gong, 2012). In this vein, trust has long been considered the key to sustaining a favorable relationship between a business and its customers (Anderson and Weitz, 1989; Chesney *et al.*, 2017; Luk *et al.*, 2018; Zboja and Voorhees, 2006) and hence influencing customers' behavioral intentions (Ashraf *et al.*, 2020; Malodia *et al.*, 2023; Osakwe *et al.*, 2022; Wang *et al.*, 2023). For example, trust shown in a passenger's online review influences their willingness to provide feedback (i.e., suggest the service to others) (Wang *et al.*, 2023). Based on prior studies, the relationship between trust in app recommendations and customers' extra-role behaviors such as their willingness to provide feedback is examined and the following is proposed:

H6: Trust in app recommendations has a positive and significant relationship with willingness to provide feedback.

Researchers like Homburg and Ukrainets (2021) and Reichheld (2003) asserted that consumers' loyalty can be determined by gauging how enthusiastically customers refer a particular good or service to their friends and relatives and provide them with feedback. According to past studies (e.g., Sundaram *et al.*, 1998), product participation and involvement are considered powerful motivations to propagate positive word-of-mouth about a brand or service provider, with significant implications for brand loyalty (Kim & Lee, 2017). Similarly, a recent review of the literature by Gong and Yi (2021) found that desirable customers' behavior, such as the desire to provide feedback, is influenced and frequently driven by a customer's positive feeling of commitment to a certain service provider (see also

Natarajan *et al.*, 2023). Drawing upon the preceding discussion, it is asserted that an

individual's involvement as well as commitment to the food delivery app, will have a

considerable impact on their willingness to provide feedback, leading to the following

propositions:

H7: Involvement has a positive and significant relationship with willingness to provide

feedback.

H8: Commitment has a positive and significant relationship with willingness to provide

feedback.

3.6 Trust in App Recommendations, Involvement, Commitment, and Willingness to Share Personal Data

Previous studies revealed that individuals are more likely to share their personal

information with the brand or service provider when their perception of enjoyment and

informativeness about the product or service is increased (Smink *et al.*, 2019). However,

when customers are asked too many questions to reveal their information "i.e., Intrusiveness"

and if they are unsure as to how their information will be utilized, they are likely to

experience discomfort, distrust, and hesitation to disclose it (Baek and Morimoto, 2012;

Poushneh, 2018), particularly within the mobile app context (Wottrich *et al.*, 2018).

Nevertheless, Smink *et al.* (2019) revealed different results within augmented reality (AR)

shopping as they suggested that a higher perception of intrusiveness increased the customers'

desire to divulge and share their personal information, which is possible because the

advantages of using AR for online product presentations.

Interaction and constant connection between the customer and the service provider is

considered "commitment" (Khan *et al*., 2020; Gruen *et al.,* 2000; Morgan and Hunt, 1994).

Indeed, both constructs of customer involvement and commitment are considered to play an

important role in promoting willingness to disclose/share personal information to service

providers by individuals (Campbell, 2019; Jai and King, 2016). Similarly, recent research that

was undertaken among US consumers reports that willingness to share personal information

could benefit from the development of customer trust (Song and Kim, 2021). Consequently,

the following hypotheses are proposed:

H9: Trust in app recommendations has a positive and significant relationship with willingness

to share personal data.

H10: Involvement has a positive and significant relationship with willingness to share

personal data.

H11: Commitment has a positive and significant relationship with willingness to share

personal data.

3.7 Trust in App Recommendations, Involvement, Commitment, and Willingness to Pay More

The concept of willingness to pay more or willingness to pay a price premium has

gained popularity in recent years due to economic benefits (Albert *et al.*, 2013; Hwang *et al.*,

2021; Temperini *et al.*, 2017; Wallace *et al.*, 2022). Past research supports the role of trust in

improving customer's willingness to pay more (Temperini *et al.*, 2017; Wallace *et al.*, 2022).

In the hospitality literature, higher customer involvement in a product has been

positively associated with willingness to pay more (Namkung and Jang. 2017), which

suggests that the degree to which a product is seen as relevant to a consumer will determine

whether the consumer will be willing to pay more for that product. Following are hypotheses

related hypotheses:

H12. Trust in app recommendations has a positive and significant relationship with

willingness to pay more.

H13. Involvement has a positive and significant relationship with willingness to pay more.

H14. Commitment has a positive and significant relationship with willingness to pay more.

3.8 The Moderating Role of Perceived Convenience and Rewards and Incentives

Previous research has recognized the significant influence of perceived service convenience on customer behavior, particularly within service industries (Berry *et al.*, 2002), which is evident in customers' time and effort savings (see also Dai and Salam, 2014; De Kerviler *et al.*, 2016; Malodia *et al.*, 2023). Scholars contend that the adoption of self-service technology streamlines routine tasks, reducing their time-consuming and burdensome nature (e.g., Kim *et al.*, 2010; Roy *et al.*, 2018), and is a crucial determinant of customer satisfaction (Kuo *et al.*, 2012; Seiders *et al.*, 2005), a factor long-established as closely related to relational variables such as trust, commitment, and involvement (also cf. Fullerton, 2011; Sanchez-Franco, 2009). Moreover, previous studies have identified perceived convenience as a significant driver of consumer trust in technology (Ameen *et al.*, 2021a; Collier and Sherrell, 2010; Khan and Khan, 2018; Malodia *et al*., 2023). This leads us to posit that perceived convenience, in addition to directly influencing trust in app recommendations, may also play a crucial moderating role in the relationships between trust, customer commitment, and involvement in the focal app.

Indeed, there is a growing body of empirical literature focusing on the moderating role of perceived convenience in both service and non-service settings (Hu *et al.*, 2020; Indiani *et al.*, 2020; Khan and Wahab, 2023; Kuo *et al.*, 2012; Roy *et al.*, 2018). While Roy *et al.* (2018) theorized but did not validate their assertions regarding the potential moderating effect of service convenience on the relationship between fairness and customer helping behavior, Kuo *et al.* (2012) demonstrated in their study that a customer's perception of service convenience can significantly impact the satisfaction-behavioral intention link.

Kwan and Wahab (2023) in their study in the hospitality industry found that service convenience moderates the impact of satisfaction on customer engagement. Given these findings, perceived convenience could be an important factor in moderating the impact of

trust in app recommendations on customer involvement and commitment in the food delivery services context. In fact, it is argued that individuals who perceive greater convenience in app usage are more likely to trust the app recommendations, thereby enhancing their involvement and commitment to the app and the services offered by their providers. Put more expertly, it is posited that perceived convenience will strengthen the positive influence of trust in app recommendations on both customer involvement and commitment. Hence, this pioneering study seeks to validate the following:

H15a. Perceived convenience strengthens the relationship between trust in app recommendations and involvement.

H15b. Perceived convenience strengthens the relationship between trust in app recommendations and commitment.

In the context of this study, rewards and incentives denote marketing incentives or price reductions (e.g., exclusive offers, flat-rate savings, percentage discounts, or earned points) provided to users of food delivery apps with the aim of bolstering customer retention and acquiring new customers (cf. Negi *et al.*, 2023). Prior research indicates that rewards and incentives significantly influence brand image and usage intentions in online food delivery services (Anbumathi *et al.*, 2023; Negi, 2023). Moreover, rewards and incentives have been shown to foster trust and commitment more broadly (Fang & Li, 2020; Ferrin and Dirks, 2003; Khare *et al.*, 2019). Hence, this study examined whether the concept of rewards and incentives moderates the relationships between trust in app recommendations, customer involvement, and commitment.

In examining the relationships, it is noted that related research serves as the guiding light. For instance, studies suggest that rewards and incentives reinforce trust-related connections (e.g., Kang *et al.*, 2015) and dampen consumer pessimism toward a product (Sadiq *et al.*, 2021). Additionally, Kumar and Gupta (2021) suggest that the impact of

consumer attitude on mobile wallet adoption is contingent upon monetary incentives, with

higher incentives strengthening the link between attitude and adoption. In online retail,

rewards and incentives interact significantly with affective commitment to enhance intentions

to revisit (Chiu *et al.*, 2018). However, research on the moderating role of rewards and

incentives is still evolving, prompting us to investigate whether they function similarly in the

context of online food delivery services.

As articulated by Wang *et al.* (2020:691), "when people have experienced [economic]

benefits from using [online-based platforms] … they will be more likely to trust [the

platform] spontaneously and will not feel pressured to be involved." This implies that when

users in the context of this study derive more rewards and incentives, they are more inclined

to trust app recommendations freely, thereby enhancing their level of involvement and

commitment to the app. In essence, it is hypothesized that rewards and incentives foster

greater trust in the app recommendations, leading to heightened involvement and

commitment.

In summary, the argument hinges on the notion that rewards and incentives will

strengthen the impact of trust in app recommendations on both customer involvement and

commitment to the app. Hence, this study seeks to validate the following:

H16a. Rewards and incentives strengthen the relationship between trust in app

recommendations and involvement.

H16b. Rewards and incentives strengthen the relationship between trust in app

recommendations and commitment.

4. Methodology

4.1 Study Design and Pilot Study

This research utilized a cross-sectional, self-administered online survey (see Appendix

A) to collect data. The survey consisted of four sections: consent letter, screening questions,

measurement items, and demographic questions. A five-point Likert scale with responses ranging from one (strongly disagree) to five (strongly agree) was used to measure constructs.

Past research was consulted for the study's measurement items. Specifically, the source for items related to involvement (cognitive, enduring, and situational) was Mou *et al.* (2020). The commitment measurement items (continuance and affective) came from Fullerton (2011). The trust-commitment related items including menu description, perceived app security and trust in app (product) recommendations were sourced from Mou *et al.* (2020), Kim *et al.* (2011), and Fang and Li (2020) respectively. Hwang *et al.* (2021), Yi and Gong (2013) and Smink *et al.* (2019) were consulted for the three outcome variables willingness to pay more, willingness to provide feedback, and willingness to share personal data, respectively. The source for perceived convenience, a moderating variable was De Kerviler *et al.* (2016). Lastly, items for the rewards and incentives scale was developed specifically for this study due to the absence of a scale specifically related to the food delivery app context. This practice is consistent with prior research (Sharma *et al.*, 2022; Slepchuk, 2022; Suh *et al.*, 2017; Tran *et al.*, 2020).

Before data collection, the survey was pilot tested using 20 students in a hospitality management program and food service industry employees to address any issues related to readability and comprehension. Industry and academic experts in food service also reviewed the survey for purposes of content validity.

4.2 Data Collection

Qualtrics™, a professional market research company, was engaged in data collection. The population for this study was individuals 18 and over who had utilized a food delivery app to order and pay at least once during the past year in the U.S. Due to needing to fulfil these specific characteristics, this study utilized purposive sampling. According to previous research (Abbasi *et al.*, 2023; Rehman *et al.*, 2023), purposive sampling is a useful tool for

hypothesis testing and for gathering data from a small sample of individuals. It has been

emphasised that this method is particularly useful for determining which individuals are most

likely to be trustworthy information providers (Asghar Ali et al., 2021). The context of the

food delivery app users in the U.S. was chosen due to the recent and continued expected

growth of this service (Expert Market Research, n.d.). Mobile-based apps continue to remain

the dominant platform for online food ordering, delivery, and payment (Expert Market

Research, n.d.). Qualtrics™ recruited participants who fit the sample criteria; the online

survey link was provided to a research panel of Qualtrics™. Once respondents consented to

participate, they were prompted to answer the survey questions. Data collection yielded 324

responses that were deemed usable for data analysis.

5. Results

5.1 Demographics

Most respondents were male (62.7%) aged between 25 to 35 years old (61.1%) having

at least a university degree or diploma (45.1%) in their education background. The majority

of respondents indicated they were U.S citizens (97.2%) with 22.5% reporting their

household income was $125,000 or more. Nearly half of the respondents reported using their

food delivery app on a weekly basis with 30.2% reporting they had been using their current

food delivery app for the past 7 to 12 months (30.2%). Doordash (31.2%) was named as the

food delivery app that first came to the respondent's mind followed by other food delivery

apps (e.g., Postmates, Zomatoo, Delivery.com, Blue Apron).

5.2 Data Analysis

To examine the research model, partial least squares structural equation modelling

(PLS-SEM) was seen as a compatible and useful technique due to its minimal demands in

terms of measurement model (reflective and formative), residual distribution, and sample size

compared to co-variance-based structural equation modelling (CB-SEM) (Sarstedt and

Cheah, 2019). Also, the purpose of using PLS-SEM conforms to the research objective which is predictive-oriented (Sharma et al., 2024; Chin *et al.*, 2020; Hwang *et al.*, 2021; Wong and Wong, 2024). Moreover, when evaluating complex models such as reflective-formative higher-order constructs (Sarstedt *et al.*, 2019), PLS-SEM was proven to be the best performance method. To address the research objectives, SmartPLS 3.3.7 software was used to estimate the current research model.

5.3 Common Method Bias (CMB)

Common Method Bias (CMB) was unavoidable in this study as it used a single instrument to assess the relationship between exogenous and endogenous constructs (Podsakoff *et al.*, 2013; Ali *et al.*, 2023). Two recommended remedies were used to minimize the effects of CMB, including procedural remedy and statistical remedy. With respect to procedural remedy, this study relied on contextual information, introductory messages, straightforward language, and detailed descriptions. Also, respondents were guaranteed anonymity to minimize their level of uneasiness or fearfulness when answering the questionnaire (MacKenzie and Podsakoff, 2012).

Statistical remedy was then applied using Harman's single factor test (Podsakoff *et al.*, 2013; Abbasi *et al.*, 2023) and full collinearity test (Kock and Lynn, 2012). The Harman's single factor test for the principal component factor analysis result illustrated that the variance explained by the first factor was 41.99% (<40%), indicating that there was minor CMB in this study (Babin *et al.*, 2016).

5.4 Assessment of the Reflective Measurement Model

Subsequently, the quality of the measurement model for the collected datasets was assessed. First, convergent validity of the constructs was checked using outer loadings and the average variance extracted (AVE). Results available in Table 1 show majority of the items met the suggested outer loading criteria of 0.70 (Bagozzi *et al.*, 1991) except for

MEU3, SIV3 and SIV4, which were deleted. Then, the AVE scores for all the constructs

exceeded the suggested value of 0.50 (Fornell and Larcker, 1981). Also, the internal

consistency of all the items was evaluated; results showed that all constructs had composite

reliability (CR) values that met the minimum rule of thumb of 0.70 (Hair *et al.*, 2019). Lastly,

Heterotrait-Monotrait (HTMT) ratio (see Table 2) was used to assess the dataset for

discriminant validity (Henseler *et al.*, 2015). As observed, the constructs' HTMT values were

all below the conservative threshold of 0.85 (Henseler et al., 2015), confirming their

discriminant validity.

Table 1: Assessment of reliability, convergent validity and full collinearity

Construct	Item	Loading	CR	AVE
Affective Commitment	ACM1	0.922	0.955	0.875
	ACM2	0.941		
	ACM3	0.943		
Continuance Commitment	CCM1	0.884	0.920	0.794
	CCM2	0.898		
	CCM3	0.892		
Cognitive Involvement	CIT1	0.700	0.841	0.571
	CIT2	0.815		
	CIT3	0.762		
	CIT4	0.741		
Perceived Convenience	COV1	0.811	0.851	0.656
	COV2	0.867		
	COV3	0.748		
Enduring Involvement	EN1	0.899	0.926	0.807
	EN2	0.898		
	EN3	0.899		
WPF	FED1	0.900	0.885	0.721
	FED2	0.779		
	FED3	0.864		
Menu Description	MEU1	0.882	0.862	0.757
	MEU2	0.858		
	MEU3	D		
WSP	PAY1	0.830	0.894	0.738
	PAY2	0.871		
	PAY3	0.876		
	RIC1	0.757		
Rewards and Incentives	RIC2	0.861	0.910	0.669
	RIC3	0.870		
	RIC4	0.851		

Construct	Item	Loading	CR	AVE
	RIC5	0.741		
Perceived app Security	SEC1	0.799	0.905	0.704
	SEC2	0.849		
	SEC3	0.876		
	SEC4	0.830		
WPM	SHARE4	0.913	0.924	0.802
	SHARE5	0.908		
	SHARE7	0.864		
	SIV1	0.922	0.906	0.829
	SIV2	0.898		
	SIV3	D		
	SIV4	D		
Trust	TRU1	0.855	0.909	0.714
	TRU2	0.854		
	TRU3	0.816		
	TRU4	0.854		

Note: D = Item deleted due to low loading result; CR (Composite Reliability); AVE (Average Variance Extracted); FC (Full Collinearity); WPF (Willingness to Provide Feedback); WSP (Willingness to Share Personal Data); WPM (Willingness to Pay More)

5.5 Assessment of Higher-order Construct (HOC)

This research consists of two constructs (involvement and commitment) which are manifested as a reflective-formative higher-order construct (HOC) (Table 3). The assessment of both HOCs was then adapted using the disjoint two-stage approach (Sarstedt *et al.*, 2019). The assessment revealed that for lower-order constructs (LOCs), there was none that been affected by collinearity as the VIF values were less than 3.33, ranging from 1.674 and 2.450, for all the datasets (Becker *et al.*, 2015). Therefore, collinearity was not an issue for the HOC of involvement and commitment. Finally, in the last step, the weight and significance were analyzed (Sarstedt *et al.*, 2019). All three items in the LOC for involvement were statistically significant ($p<0.05$) (i.e., enduring involvement = 0.135; cognitive involvement = 0.639; situational involvement = 0.375); similarly, both items in the LOC for commitment (i.e., affective commitment = 0.729; continuance commitment = 0.339) were statistically significant ($p<0.05$). Thus, consistent with the previous research, both HOCs were found to be formatively formed by several LOCs.

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5.6 Assessment of the Structural Model

The inner VIF of each path was first examined in the structural model stage. Table 4 shows all the VIF values ranging from 1.643 and 2.797, indicating collinearity is not an issue (Becker *et al.*, 2015). This implies that the path coefficients can be evaluated with confidence. Next, the hypotheses for each path were tested through a bootstrapping technique with 5000 sub-samples (Streukens and Leroi-Werelds, 2016).

Based on the assessment towards the full database (Table 4), results indicated that most of the suggested hypotheses were statistically significant. It can be observed that perceived app security (H1: $\beta=0.568$; $p<0.001$) and menu description (H2: $\beta=0.285$; $p<0.001$) have positive relationships with trust. The positive relationships between trust and involvement (H3: $\beta=0.771$; $p<0.001$), commitment (H4: $\beta=0.393$; $p<0.001$) and willingness to provide feedback (H6: $\beta=0.133$; $p=0.027$) are also observed, supporting H3, H4 and H6. Likewise, positive relationships were observed between involvement and commitment (H5: $\beta=0.382$; $p<0.001$), willingness to provide feedback (H7: $\beta=0.481$; $p<0.001$), willingness to share personal data (H10: $\beta=0.321$; $p<0.001$) and willingness to pay more (H13: $\beta=0.218$; $p<0.001$). Also, commitment was observed to have positive relationships with willingness to provide feedback (H8: $\beta=0.232$; $p<0.001$), willingness to share personal data (H11: $\beta=0.390$; $p<0.001$) and willingness to pay more (H14: $\beta=0.584$; $p<0.001$). However, in contrast to the hypotheses, trust did not positively influence willingness to share personal data (H9: $\beta=0.036$; $p=0.320$) and willingness to pay more (H12: $\beta=0.001$; $p=0.496$).

Table 2: Discriminant validity result using the Heterotrait-Monotrait (HTMT) ratio correlation

Construct	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Affective Commitment													
2. Cognitive Involvement	0.758												
3. Continuance Commitment	0.796	0.738											
4. Convenience	0.533	0.792	0.520										
5. Enduring Involvement	0.600	0.766	0.424	0.766									
6. Menu Description	0.499	0.643	0.323	0.776	0.736								
7. Perceived app Security	0.704	0.822	0.573	0.739	0.794	0.818							
8. Rewards and Incentives	0.642	0.633	0.598	0.592	0.587	0.472	0.654						
9. Situational Involvement	0.613	0.687	0.433	0.835	0.848	0.784	0.766	0.644					
10. Trust	0.772	0.866	0.623	0.695	0.731	0.833	0.864	0.615	0.766				
11. WPF	0.727	0.813	0.646	0.824	0.775	0.696	0.860	0.742	0.834	0.795			
12. WSP	0.698	0.728	0.657	0.667	0.538	0.577	0.648	0.582	0.626	0.653	0.698		
13. WPM	0.766	0.743	0.764	0.643	0.531	0.428	0.662	0.666	0.543	0.656	0.747	0.724	

Note: HTMT<0.85 (Kline, 2015); WPF (Willingness to Provide Feedback); WSP (Willingness to Share Personal Data); WPM (Willingness to Pay More)

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Table 3: Result of higher-order construct

Higher-Order Construct	Lower-Order Construct	VIF	Weight	t-value	p-value
Involvement	Enduring Involvement	2.450	0.135	2.062	0.039
	Cognitive Involvement	1.674	0.639	11.675	0.000
	Situational Involvement	2.089	0.375	5.153	0.000
Commitment	Affective Commitment	2.050	0.729	10.285	0.000
	Continuance Commitment	2.050	0.339	4.454	0.000

Note: VIF = Variance Inflation Factor

The structural model's assessment also revealed that 61% of the variance in trust was explained by perceived app security and menu description, which represents the highest explained variance. This was followed by a 59.8% variance in willingness to provide feedback explained by trust, involvement, and commitment and a 59.5% variance in involvement explained by trust. It was also observed that a 56.5% variance in willingness to pay more was explained by involvement and commitment while a 53.2% variance in commitment was explained by both trust and involvement. Lastly, only a 46.5% variance in willingness to share personal data was explained mostly by involvement and commitment.

Next, applying Cohen's (1988) guidelines in identifying the effect size within the relationships, it can be noted that a large effect size was observed on the relationship between perceived app security and trust (H1) ($f^2 = 0.449$), and commitment and willingness to pay more (H14) ($f^2 = 0.367$). A medium effect size can be seen in the relationship between involvement and willingness to provide feedback (H7) ($f^2 = 0.207$). Data also revealed a small effect size ($f^2 = 0.016 - 0.134$) on the relationships of H2 (menu description → trust), H4 (trust → Involvement), H5 (involvement → commitment), H6 (trust → willingness to provide feedback), H8 (commitment → willingness to provide feedback), H10 (involvement → willingness to share personal data), H11 (commitment → willingness to share personal data), and H13 (involvement → willingness to pay more). Lastly, a trivial effect size ($f^2 = 0.000 - 0.001$) was observed with the relationships of H12 (trust → willingness to pay more) and H9 (trust → willingness to share personal data).

Finally, a predictive relevance assessment was done by executing a blindfolding procedure to assess the Stone-Geisser's Q^2 statistic (Geisser, 1974; Stone, 1974) (see Table 4). The highest Q^2 values were observed for trust at 0.599, followed by involvement at 0.551, and willingness to provide feedback at 0.463. It is also noted that a Q^2 value of 0.345 was recorded for commitment followed by 0.288 for willingness to share personal data, and lastly 0.279 for willingness to pay more. Because Q^2 values were found to be greater than zero for all variables, the conclusion is that the model possessed predictive quality (Hair *et al.*, 2019).

5.7 Assessment of Moderating Effect

To assess the moderating effect, a two-stage latent interaction technique (Becker *et al.*, 2018) was used (see Table 4). Perceived convenience was found to moderate the relationship between trust and involvement (H15a: β=0.097; p=0.012) and trust and commitment (H15b: β=0.110; p<0.001). Likewise, it can be observed that rewards and incentives did moderate the relationships between trust and involvement (H16a: β=0.090; p=0.039) as well as with trust and commitment (H16b: β=0.085; p=0.003). Next, a simple slope analysis was performed to determine the interaction plot within the relationship interaction.

With regards to the moderating effect of perceive convenience (H15a: β=0.097; H15b: β=0.110) along with rewards and incentives (H16a: β=0.090; H6b: β=0.085), the interaction plot reflects that high perceived convenience (green line) together with high rewards and incentive (green line) are steeper than low perceived convenience (blue line) along with low rewards and incentives (blue line) (see Fig.2 - Fig.5). Hence, it is concluded that when perceive convenience is high, the relationship between trust and involvement together with trust and commitment becomes stronger. Similarly, when rewards and incentives are high the relationship between trust and involvement along with trust and commitment is inclined to be stronger.

Table 4: Assessment of structural mode

Hypotheses	Std Beta	Std Error	t-value	p-value	CILL	CIUL	VIF	f^2	R^2	Q^2
H1) Perceived app Security -> Trust	0.568	0.047	12.012	0.000	0.487	0.644	1.643	0.499	0.607	0.599
H2) Menu Description -> Trust	0.285	0.048	5.886	0.000	0.203	0.362	1.643	0.126		
H3) Trust-> Involvement	0.771	0.028	27.582	0.000	0.718	0.813	NA	NA	0.595	0.551
H4) Trust -> Commitment	0.393	0.068	5.822	0.000	0.278	0.502	2.467	0.134	0.532	0.345
H5) Involvement -> Commitment	0.382	0.065	5.904	0.000	0.274	0.488	2.467	0.126		
H6) Trust -> WPF	0.133	0.069	1.925	0.027	0.019	0.247	2.797	0.016		
H7) Involvement -> WPF	0.481	0.071	6.752	0.000	0.355	0.590	2.779	0.207	0.598	0.463
H8) Commitment -> WPF	0.232	0.067	3.480	0.000	0.124	0.345	2.136	0.063		
H9) Trust -> WSP	0.036	0.077	0.468	0.320	-0.087	0.167	2.136	0.001		
H10) Involvement -> WSP	0.321	0.074	4.328	0.000	0.192	0.439	2.779	0.069	0.465	0.288
H11) Commitment -> WSP	0.390	0.066	5.953	0.000	0.285	0.498	2.779	0.133		
H12) Trust -> WPM	0.001	0.073	0.009	0.496	-0.115	0.126	2.136	0.000	0.565	0.279
H13) Involvement -> WPM	0.218	0.073	2.978	0.001	0.092	0.334	2.779	0.039		
H14) Commitment -> WPM	0.584	0.061	9.596	0.000	0.481	0.682	2.779	0.367		
H15a) Trust*Convenience -> Involvement	0.097	0.044	2.205	0.012	0.042	0.186		0.047		
H15b) Trust*Convenience -> Commitment	0.110	0.021	5.201	0.000	0.073	0.135		0.038		
H16a) Trust*RandI -> Involvement	0.090	0.052	1.731	0.039	0.012	0.200		0.026		
H16b) Trust*RandI -> Commitment	0.085	0.031	2.772	0.003	0.024	0.127		0.023		

Note: WPF (Willingness to Provide Feedback); WSP (Willingness to Share Personal Data); WPM (Willingness to Pay More); RandI (Rewards and Incentives); CILL (Confidence Interval Lower Limit); CIUL (Confidence Interval Upper Limit)

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Subsequently, the effect size of moderation of perceived convenience on the

relationships between trust and involvement (H15a: $f^2 = 0.047$) and trust and commitment

(H15b: $f^2 = 0.038$) were reported to be small. Also, it can be found that rewards and

incentives had a small effect size when moderating trust and involvement (H16a: $f^2 = 0.026$)

along with trust and commitment (H6b: $f^2 = 0.023$). This implies that perceive convenience

together with rewards and incentives can be meaningful moderators under extreme

moderation conditions despite having a small effect size (Chin *et al.*, 2003).

Figure 2

Interaction Plot of Trust*Perceived Convenience towards Involvement
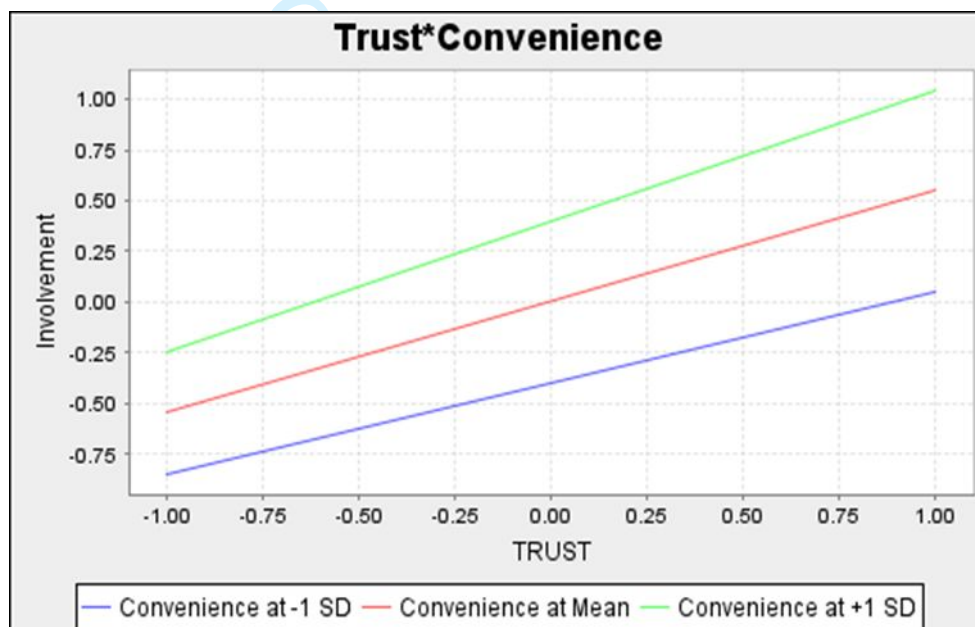
Figure 3

Interaction Plot of Trust*Perceived Convenience towards Commitment
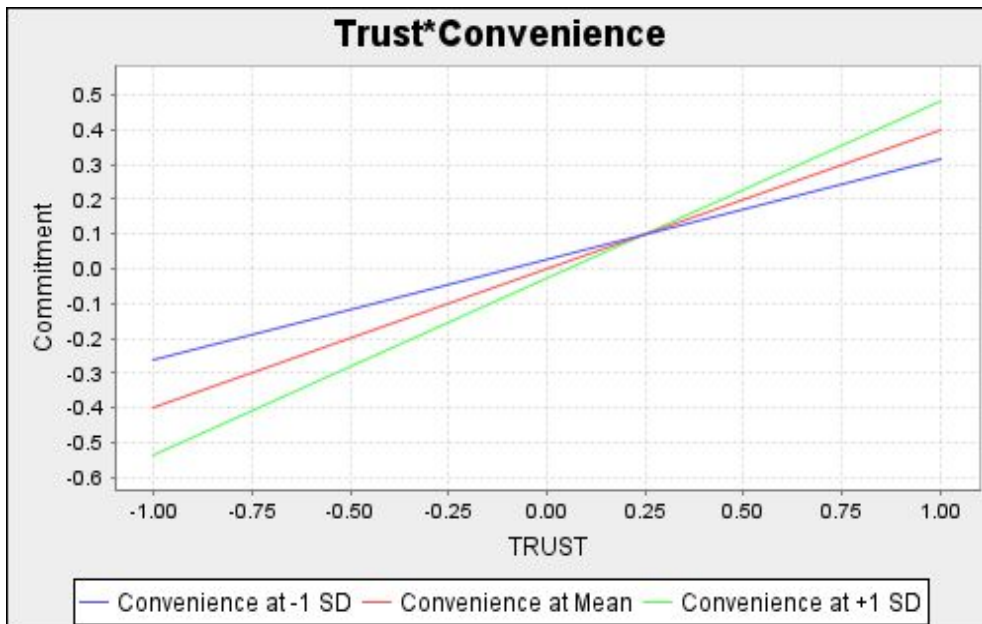
Figure 4

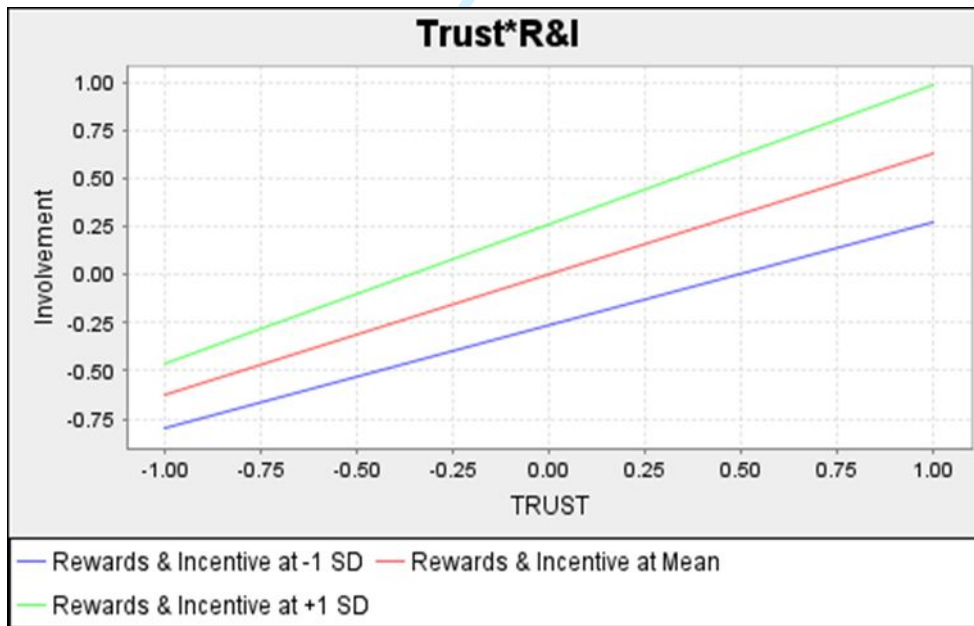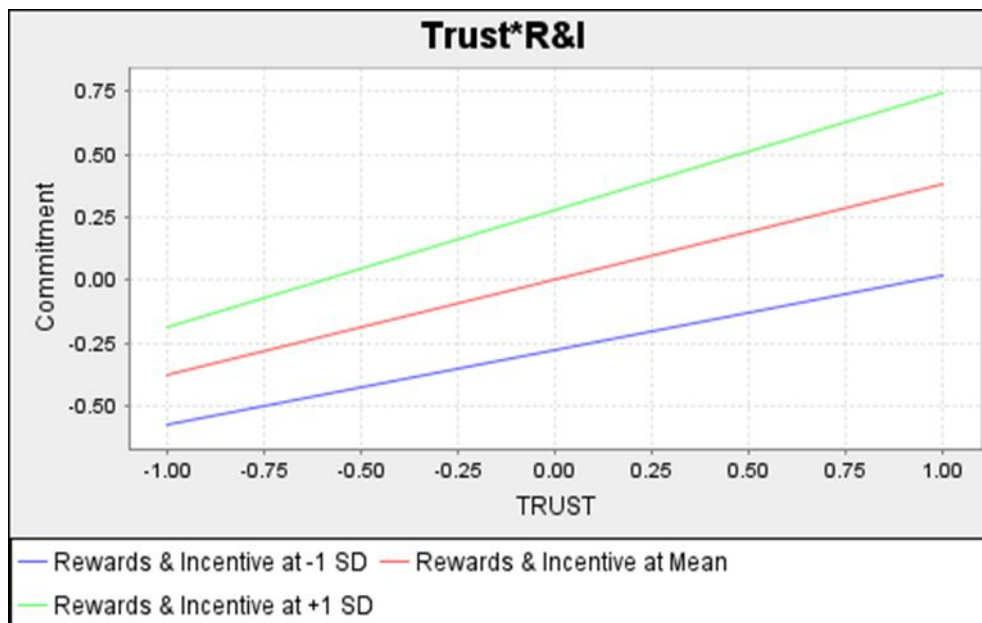*Interaction Plot of Trust*Rewards and Incentives towards Involvement*

Figure 5

Interaction Plot of Trust* Rewards and Incentives towards Commitment

6. Discussion

This research utilizes an integrated research model consisting of an expanded commitment-trust theory and involvement-commitment model to elucidate understanding of relevant antecedents to individuals' willingness to provide feedback, share their personal data with the service provider, and willingness to pay more within the context of food delivery apps.

The study's findings validated that both perceived app security and menu description exerted a favourable and substantial relationship with trust in app recommendations. These findings align with the studies conducted by Kim *et al.* (2011), Quan *et al.* (2023), Shuhaiber *et al.* (2023), and Yue *et al.* (2017) respectively. More specifically, this suggests that as customers' perceptions of security increases, their trust in food delivery app recommendations further increases. In a similar vein, this study's research findings also validate the positive role of menu descriptions in cultivating customers' trust in app recommendations, further adding to existing evidence about the specific drivers of trust in product recommendations and

beyond the issue of sociability as found in Fang and Li's (2020) study on trust-building in social commerce sites.

The results of the study also validated that trust has a significant and positive relationship with involvement, commitment, and willingness to share feedback. The results were consistent with the studies conducted by Keusch (2015) and Wang *et al.* (2013). In contrast, it was shown that trust did not have a substantial impact on individuals' inclination to provide personal data or their readiness to pay more for it. This suggests that while an increase in customers' perception of security leads to greater trust in app recommendations, this trust does not necessarily translate into a willingness to share personal data and thereby somewhat contradicting the idea that trust generally may increase consumers' willingness to share their personal data with a third-party (cf. Song and Kim (2021). Like those sought in professional services, it is possible that food app users are looking for communication and social bonds (Ponder *et al.*, 2016) prior to being willing to share personal data.

This study's findings also suggest that trust in app recommendations does not manifest in a manner that would prompt consumers to spend more money when utilizing food delivery applications. This discovery holds substantial significance for practitioners, since it prompts them to explore other characteristics that may incentivize increased payment. The results of this study, however, demonstrate that there is a positive and significant correlation between involvement, commitment, and their inclination to offer feedback, provide personal data, and exhibit a readiness to pay more, expanding upon the seminal work by Beatty *et al.* (1988) as well as Mou *et al.* (2020), in the larger e-commerce context.

Finally, this study also observed the positive and statistically significant moderating roles of perceived convenience and rewards and incentives in connection to consumers' trust in app recommendations, involvement, and commitment. The research results encourage practitioners to continue providing rewards and incentives, such as price discounts and points,

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as well as recognition programs, since it seems that all this amplifies the significance of trust

(in app recommendations) on customer involvement and commitment.

7. Theoretical contributions

There are various theoretical advances in the current study. First, the present study

closes a knowledge gap by providing a deeper understanding of factors—particularly their

primary causes and potential moderating effects—that affect trust in food delivery apps. This

has been addressed by creating and validating a comprehensive model that explains post-

consumption decisions pertaining to the use of food delivery apps. There is a dearth of

information in current empirical studies (i.e., Raza *et al.*, 2023; Su *et al.*, 2023) related to the

comprehension of these links, which are thought to be essential for providers who depend on

their in-app recommendations to interact with clients and cultivate long-term relationships. In

addition, studies such as Chesney *et al.* (2017), Malodia *et al.* (2023) and Sekhon *et al.* (2013)

made a case for trust being a situational factor (see also Greenwood and Buren, 2010),

necessitating studies such as this to research trust in varied contexts.

Second, the study makes a distinction between two as-yet-unstudied factors that could

affect users' trust in app recommendations: technological factors (like perceived app security)

and contextual cues (like menu descriptions), both of which are hypothesized to be essential

for users to perceive recommendations as genuine. The role of elements of perceived app

security, i.e., data privacy in influencing trust has been contradictory, making the results of

this research valuable. For example, in a study involving household cyber-physical system

(CPS), Gary and Harwood (2019) found a lack of significance of data privacy on experiential-

based performance assessment (a trust dimension) of the household CPS or consumers' faith

in its performance. This contrasts the rhetoric about importance of data privacy in online

transactions.

Third, this is the first study to identify the antecedent and moderating factors that influence food delivery app users' propensity to provide feedback to service providers, divulge personal data, and pay more. Related studies (Raza *et al.*, 2023; Wen *et al.*, 2022) typically explore continuance use intentions as a consequence of trust; however, this study identifies customer involvement, commitment, and willingness to provide feedback as critical outcomes of trust in app recommendations. This new empirical evidence adds to existing research on online food delivery services and, by extension, enriches the services marketing research strand exploring the customer outcomes of trust-building (e.g., Luk *et al.*, 2018; Wong and Wong, 2024; Zboja and Voorhees, 2006).

Fourth and relatedly, this study complements and extends existing services marketing literature by identifying two primary situational factors—service convenience and rewards and incentives—that moderate consumer trust in food delivery app recommendations. Specifically, by providing empirical insights into the moderating effect of service convenience on the trust-involvement and trust-commitment relationships, this study enhances prior services marketing research (e.g., Khan and Khan, 2018; Malodia *et al.*, 2023) that has explored service convenience as a direct antecedent of consumer trust. Additionally, it contributes to the existing but limited body of research on the moderating effect of service convenience within the services industry (cf. Kuo *et al.*, 2012; Kwan and Wahab, 2023). Furthermore, to the best of the authors' knowledge, this is the first empirical work to validate the moderating role of rewards and incentives in the relationships between trust, involvement, and commitment within the context of online-to-offline services, particularly in the hospitality industry.

Fifth, this study is among the first in the literature to validate the integrated theories of trust-commitment and involvement-commitment in the context of online food delivery services, and more broadly, online-to-offline services. In doing so, we demonstrate that both

the trust-commitment theory (Morgan and Hunt, 1994) and the involvement-commitment model (Beatty *et al.*, 1988), along with their extended versions, provide a comprehensive explanatory framework for investigating complex phenomena such as extra-role behaviors and their distal antecedents, like menu descriptions and perceived app security, particularly within the context of this study. This approach broadens the applicability and theoretical richness of these research lenses.

To sum up, this research contributes to a better understanding of the customer journey in the service industry as it relates to food delivery apps; the issues tackled in this paper via an original model are pertinent to scholars who wish to research topics related to build and preserving confidence in (food) app suggestions. The study also provides insights into methods for developing deep connections with the creators and consumers of online food delivery services.

8. Managerial Implications

In terms of managerial implications, it is proposed that service marketers and food delivery app developers collaborate to make the app more secure and efficient. This is because users' trust in the app is strongly correlated with their perceptions of its security and menu description. The study found that the perceived app security and menu description both impact trust in app recommendations. Mobile apps are becoming increasingly technologically proficient and diversified, which has led to an increase in the prevalence of security problems (Liu *et al.*, 2023). In addition to consumers' credit card details and GPS coordinates, these apps typically gather further personal information and require additional permissions (Liu *et al.*, 2023). Consequently, users will likely start caring more about how an app protects their personal information (Balapour *et al.*, 2020). End-to-end encryption, proactive vulnerability identification and resolution, firewalls, secure wireless connections, and third-party vendor evaluation can improve transaction security (Ong *et al.*, 2023).

Similarly, marketers may leverage the findings of this study to their benefit by enhancing menu descriptions in order to attract a larger consumer base and boost revenue. Merchants should enhance the online menu by incorporating visually captivating animations or films, vibrant photos, and a more comprehensive elucidation. Likewise, the utilization of a thorough menu that encompasses detailed information, such as nutritional values, in addition to a menu organized into categories such as meal portions, dietary restrictions, amount, and popular items are also recommended. Moreover, consumers should be able to review dishes with photos, and share them on social media, track their order status, potentially enhancing the reach and popularity of the apps organically. From the findings of this study, it is also deduced that enhanced information related to menu offerings will likely lead to an increase in customers' level of trust, involvement, and commitment. Rather than accentuating the cognitive impact of menu items on consumers, vendors might strive to establish an affective (emotional) bond between customers and the menu items. By appealing to consumers' sentiments, online food delivery service providers can enhance the possibility that customers would buy by personalizing menu descriptions based on factors such as their geography, cultural background, religious beliefs, and more.

From the standpoint of a mobile applications platform, vendors should consider the attributes and trends of mobile food delivery apps and endeavour to alleviate consumers' apprehensions regarding these apps. For example, sellers may utilize the many features of mobile applications to actively communicate with consumers, in a clear and succinct manner regarding specific inquiries that arise during the purchasing journey. This may include providing guidance on expediting the buying process or encouraging consumers to share their evaluations. Furthermore, merchants may utilize the mobile app platform to engage in online communication with customers, aiming to enhance their overall trust in recommending the mobile app, situational and long-lasting involvement and their commitment to the process.

This, in turn, can augment the willingness of customers to share, offer feedback, and pay more.

Additionally, this research revealed that the relationship between trust, involvement, and commitment was effectively influenced by both the perceived convenience of utilizing the service and the presence of rewards and incentives. The implications of these findings hold great importance within the competitive landscape of mobile food delivery applications. It is recommended that service providers implement a loyalty program that allows consumers to accumulate points for each order, which can enhance the existing relationships. It is also suggested providing incentives to customers for their support can foster loyalty and motivate them to remain dedicated and engaged with the service provider. Simultaneously, rewards and incentives in the form of referral bonuses empower customers to become brand advocates. Incorporating various conveniences such as frictionless order processing, prompt and dependable delivery, convenient payment options, order tracking updates, and personalized suggestions will also enhance the entire consumer experience.

8. Conclusions

Using an extended commitment-trust and involvement-commitment models for the first time in the context of food delivery apps, this study reinforces several proposed relationships related to food delivery apps while making contributions to the self-service technology literature. Perceived security and menu description were both found to have positive relationships with trust in app recommendations. Trust in app recommendation was found to have favourable and significant relationships with involvement, commitment, and willingness to share feedback. However, trust was not found to have a significant relationship with their desire to provide personal data or willingness to pay more. This is a cautionary note to food app developers that consumers are still wary of sharing personal data with a third party even though they have trust in app recommendations. Significant positive relationships

were found between involvement, commitment, and consumers' willingness to offer

feedback, provide personal date, and pay more. Lastly, research results reinforce of use of

rewards and incentives and consumer recognition programs because these factors were found

to moderate the relationship between trust in app recommendations, and involvement and

commitment. The same holds true for the moderating role of consumers' perceived

convenience.

9. Limitations and Future Research

In the realm of mobile food delivery apps, this study significantly enhances the current

understanding of the commitment-trust and involvement-commitment paradigm.

Notwithstanding, it is imperative to recognize a number of constraints that may need more

exploration in subsequent scholarly inquiries. According to the study, trust in app

recommendation is conceptualized as a unidimensional phenomenon. Due to its complex

characteristics, future studies can conceptualize trust as a multidimensional phenomenon.

Furthermore, it is important to exercise care when generalizing the findings due to the

restricted data collection in the US, as the study employed a cross-sectional approach. In order

to enhance the strength of the study, future research should investigate the diverse elements

that influence trust among consumers, engagement, and commitment, and how these aspects

impact different outcomes of consumer behaviour. Future research can also replicate this

model in other contexts and nations.

Throughout the process of preparing this work, we utilized DeepL to do copy editing and enhance the language and usability of the content written by the authors themselves. Upon utilizing these resources, we meticulously assessed and revised the material as required, assuming complete accountability for the content of the publication.

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Appendix A: Measurement items

Construct	Items	Source
Cognitive involvement (CIT)	Ordering food using the app is a very important decision (CIT1). Ordering food with the delivery app requires a lot of thought. (CIT2). There is a lot to lose if you choose the wrong menus and/or food items with the delivery app. (CIT3). Food ordering using my delivery app is based mainly on functional facts (Search, browse, view, etc.). (CIT4).	Mou et al. (2019)
Enduring involvement (ENI)	The pleasure of food ordering using the delivery app is important (ENI1). The pleasure of ordering food with the delivery app matters a lot (ENI2). The pleasure of being able to order for food using the delivery app means a lot (ENI3).	Mou et al. (2019)
Situational involvement (SIV)	I am really enjoying buying food/meals online with the delivery app (SIV1). I am confident that ordering food/meals using the delivery app is the right activity right now (SIV2). Ordering food/meals with the delivery app gives a glimpse of the type of person I really am (SIV3). I will be annoyed if food ordering with the delivery app proves to be a poor activity (SIV4).	Mou et al. (2019)
Continuance commitment (CCM)	It would be very hard for me to switch away from my currently installed food delivery app right now even if I wanted to (CCM1). Switching away from my current delivery app could be disruptive to me (CCM2). It would be too costly for me to switch from the current delivery app right now (CCM3).	Fullerton, G. (2011)
Affective commitment (ACM)	I feel emotionally attached to the delivery app (ACM1) The delivery app has a great deal of personal meaning for me (ACM2) I feel a strong sense of identification with the delivery app (ACM3)	Fullerton (2011)
Perceived convenience (COV)	Using the food delivery app would allow me to save time. Using the food delivery app would be less time consuming compared to other delivery ordering methods.	De Kerviler et al. (2016)

Construct	Items	Source
	Using the food delivery app is convenient.	
Perceived busyness (BUS)	I am a busy person I have less time on my hands than the average person I feel like I am rushing too often I have very little free time	Ertz et al. (2016)
Menu description (MEU)	The menu descriptions in the app are easy to understand I am able to comprehend the descriptions of the menus that are often displayed in the app The menu descriptions are hard to understand	Mou et al. (2019)
Willingness to pay more (PAY)	I am likely to pay more for using food delivery app services It is acceptable to pay more for app-based food delivery services. I am likely to spend extra in order to use app-based food delivery services	Hwang et al. (2021)
Perceived security (SEC)	Using credit/debit cards to make purchases using the FDA is safe. My privacy would be guaranteed with FDA. Companies using FDA can be trusted to safeguard my personal information	Kim et al. (2011)
Willingness to provide feedback (FED)	If I have a useful idea on how to improve the food delivery company's service, I will let them know about it. When I experience any problem with the food/menu bought using the food delivery app, I will let the company know about it. When I receive good service from the food delivery company, I will comment about it.	Yi & Gong (2013)
Willingness to share personal data	To be able to use the food delivery app in the future, I am willing to give the company my name To be able to use the food delivery app in the future, I am willing to provide the company with my physical address and e-mail I am willing to provide the company with information about my hobbies I am willing to provide the company with my date of birth I am willing to give my phone number to the company I am willing to provide my purchase history of last month to the company	Smink et al. (2019)
Trust in app (product) recommendations (TRU)	I think the recommendations in the food delivery app are sincere I think the recommendations in the food delivery app are honest The food delivery app does not make false recommendations I think that the recommendations in the food delivery app are trustworthy	Fang & Li (2020)

Construct	Items	Source
Rewards and incentives (RIC)	The service provider provides me with discounts for using the FDA The beauty of using my current FDA is that I can earn points and then use it to make purchases My current FDA allows me to easily take advantage of exclusive menu offers I often collect points for every dollar spent, which can be exchanged for food and drinks I often take advantage of discounts on the FDA	Self-developed for the study with feedback from hospitality practitioners and academics

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