

From App Cues to Trust: A Stimulus–Organism–Response Study of Engagement and Continuance Intention in Indonesian Food Ordering Apps

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Abstract

This study investigates the influence of design, performance, and user reviews on consumer engagement and continuance intention, with situational factors serving as a moderating variable in the context of food ordering applications. To explain consumer engagement and continuance intention as behavioral outcomes shaped by app-related cues and internal user evaluations, this study draws on consumer behavior theory. The Stimulus–Organism–Response (SOR) model is used as the conceptual framework. Empirical study using quantitative cross-sectional technique is conducted on 338 respondents from nine major cities in Indonesia. PLS-SEM is used to examine data. The findings show that design, performance, and user reviews significantly influence user engagement, with app performance having the strongest effect. Engagement significantly predicts continuance intention, while situational factors moderate this relationship. Managerially, food-ordering platforms should focus on app stability and speed, enhance trust signals, manage user reviews strategically, and design situational features that address delivery uncertainty and time pressure.

Dari Isyarat Aplikasi menuju Kepercayaan: Studi Stimulus–Organism–Response tentang Keterlibatan dan Minat Penggunaan Berkelanjutan pada Aplikasi Pemesanan Makanan di Indonesia

Abstrak

Penelitian ini mengkaji pengaruh desain, kinerja, dan ulasan pengguna terhadap keterlibatan konsumen dan niat penggunaan berkelanjutan, dengan faktor situasional berperan sebagai variabel moderasi dalam konteks aplikasi pemesanan makanan. Untuk menjelaskan keterlibatan konsumen dan niat penggunaan berkelanjutan sebagai luaran perilaku yang dibentuk oleh isyarat terkait aplikasi dan evaluasi internal pengguna, penelitian ini mengacu pada teori perilaku konsumen. Model Stimulus–Organism–Response (SOR) digunakan sebagai kerangka konseptual. Studi empiris dengan pendekatan kuantitatif potong lintang dilakukan terhadap 338 responden dari sembilan kota besar di Indonesia. Analisis data dilakukan menggunakan PLS-SEM. Hasil penelitian menunjukkan bahwa desain, kinerja, dan ulasan pengguna berpengaruh signifikan terhadap keterlibatan pengguna, dengan kinerja aplikasi sebagai faktor yang memiliki pengaruh paling kuat. Keterlibatan pengguna secara signifikan memprediksi niat dan kecepatan aplikasi, memperkuat sinyal kepercayaan, mengelola ulasan pengguna secara strategis, serta merancang fitur situasional yang mampu mengatasi ketidakpastian pengiriman dan tekanan waktu.

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INTRODUCTION

The usage of mobile apps has become a daily routine, especially food ordering applications (Shorbaji et al., 2025). The apps allow their users to browse and search nearby restaurants and their menus, including any ongoing promotions, then place food orders and pay with digital money (Cahyani et al., 2020; Xu et al., 2024). In early 2025, GoFood became the market leader for food ordering in Indonesia, ShopeeFood and GrabFood followed in the next ranks (Baihaqi, 2025). The rapid growth of this market has intensified competition among platforms. Normalization of on-demand services, modern digital lifestyles, and urban time pressures drive huge cultural changes and shift the way people order food (Padmavathy et al., 2025). App-based food ordering becomes social identity and emotional satisfaction (Handayani et al., 2022; Liu, 2023; Baihaqi, 2025). Despite this rapid adoption, many food ordering platforms still face difficulties in sustaining user engagement and encouraging continued usage, indicating that market growth does not automatically translate into long term user retention. Practitioners and academicians need to thoroughly understand these factors that encourage users to continue using the food ordering application.

The growth of the digital market has an impact on stakeholders, especially the app developers. The main goal of mobile app developers has changed from getting initial users to retaining active loyal users. Most users start installing a couple of apps before ultimately sticking with the most suitable one. This suggests that sustainability is a factor that developers need to consider (Alalwan, 2020; Handayani et al., 2022; Duy et al., 2025). Competitions have forced developers to allocate big attention in app performance enhancement, app visual design, and trustworthy user reviews. The ultimate goal is to strengthen user engagement and loyalty (Putri

et al., 2022; Sandesara et al., 2022). Previous studies indicate that sustainability is influenced by several factors, such as emotional and cognitive connections established between users and applications, rather than technical features alone (Berni & Borgianni, 2021; Xiang et al., 2022; Yapp & Kataraiian, 2022). Those emotional-cognitive connections are influenced by an eye-catching visual interface, easy navigation, fast app performance, and trustworthy user reviews. All of these factors affect user confidence while using the app (Rahardja et al., 2023). Indonesia's digital market is characterized by increasing technological literacy, so user engagement acts as a psychological mechanism affecting user experiences to continued intention (Handayani et al., 2022; Xiang et al., 2022; Satya et al., 2023).

The Stimulus Organism Response (SOR) theory is used to conceptualize this interaction. Mehrabian and Russell (1974) stated that internal human psychological states may be affected by external stimuli, which in turn drive human behaviors. The SOR theory has been implemented in various domains of studies, such as information systems, marketing, and distribution studies (Mehrabian & Russell, 1974; Bigne et al., 2020). This study also uses the SOR theory to get more insights into how environmental conditions may influence human behaviors. The SOR framework is particularly appropriate for the food ordering context because users are continuously exposed to technological stimuli and social cues that shape their internal involvement during repeated usage situations. This study focuses on several stimulus that affects food ordering mobile applications, such as visual app design, application performance, and user reviews. In most cases, these stimuli may influence the user's internal psychological state, which is represented by their level of interaction while using the application. In this study, user engagement reflects the internal psychological state that emerges during interaction

with the application. The user interaction generates behavioral responses that contribute to user willingness to keep using the application (Alalwan, 2020; Roni et al., 2021). Previous studies also stated that eye-catching visual design and fast response performance of applications can improve loyalty and user engagement while users are using the app (McLean, 2018; Marino & Lo Presti, 2019; Rahardja et al., 2023; Wahyudin et al., 2024; Duy et al., 2025). User reviews can also be used as social measures that influence user perceptions. The mix of social and technological stimuli can trigger simultaneous changes in behavioral engagement (Qu et al., 2022; Schneider et al., 2022; Kamal et al., 2023).

The limited studies of these factors in Indonesia triggered this study. Previous studies have investigated only initial application adoption and user satisfaction, rather than post-install and long-term use (Putri et al., 2022; Wahyudin et al., 2024). Many prior studies tend to focus primarily on technical factors and give less attention to the psychological states that develop during repeated application use. Previous studies also generalized Western contexts and ignored the Indonesian background culture. In fact, the local environment has a significant role in shaping digital behaviors, i.e., promotional strategies, situational conditions, and social influence. Until today, the study on the effect of environmental factors that may influence user engagement and intention to keep using the application is still limited (Nugroho et al., 2019; Negara et al., 2020; Riaz et al., 2022; Rialisnawati et al., 2024). This study tries to understand these environmental dynamics and create inclusive behavioral models that are affected by real-life consumer conditions in various situations.

This study utilizes SOR to investigate the factors that affect user intention to keep using food ordering applications in Indonesia. User reviews, application visual design, and its performance are stated as the primary stimuli that can affect user

engagement. User engagement is conceptualized as an internal psychological state reflecting users' emotional and cognitive involvement during application use. Situational factors are also studied as variables that drive contextual variations, such as online and offline promotions, time constraints, and user location. Furthermore, application promotions, incentives, and discounts may strengthen or weaken user engagement and intention to keep using the app. This conceptual combination will broaden the understanding of user behavior while using the app and tackle the limitations of conventional studies, such as user satisfaction level or digital app usability. By integrating technological stimuli, social cues, and situational conditions, this study aims to provide clearer managerial guidance for food ordering platforms in designing applications that support sustained user engagement and long-term usage.

Hypothesis Development

App Design and User Engagement

Visual design of an application affects the user's first impression and determines the emotional attraction formed during the initial interaction. Generally, an application's visual design is influenced by clear layout, good color, typography, and aesthetic appeal (Rahardja et al., 2023; Kurniawan et al., 2024). Within the SOR perspective, these visual elements function as environmental stimuli that shape users' affective and cognitive evaluations during interaction. An attractive visual design app may facilitate navigation ease to help users take full advantage of the application features. Thereby fostering user satisfaction and engagement while using the app. If a visual design is appealing and user-friendly, users are more likely to be emotionally attached to the application (Gunden et al., 2020; Rahardja et al., 2023). Previous studies stated that visual design may affect user interactions, which will increase cognitive and emotional engagement (Peters

et al., 2018; Sandesara et al., 2022; Tian et al., 2022).

During the initial phase, users frequently switch apps due to the ease of installation and use. App visuals play an important role in user engagement. An attractive visual, a clear visual hierarchy, and consistent icons may enhance user ease and trust in the app. Visual appeal and simplicity create a sense of comfort. It boosts interaction. App visual improves user engagement by improving emotional relations and capturing user attention (Gumber, 2023; Rahardja et al., 2023).

H1: App visual positively affects user engagement in food ordering applications.

App Performance and User Engagement

App performance affects how users can use specific features to complete a definitive task. It is constructed among several factors, i.e., speed, responsiveness, and reliability. These metrics are also affecting app features, like restaurant search, find food menu, seamless payment processes, and delivery tracking from restaurant to destination. App effectiveness depends on its ability to reduce user frustration while waiting for a delivery and foster a sense of autonomy (Villalobos-Zúñiga & Cherubini, 2020; Xu et al., 2024; Shorbagi et al., 2025). As a technological stimulus, app performance reduces uncertainty and frustration, which strengthens users' psychological involvement during repeated interactions. Previous studies stated that app performance is a reliable predictor of user engagement. App performance helps maintain positive experiences during repeated cognitive interactions (Tian et al., 2022; Rahardja et al., 2023; Wahyudin et al., 2024).

The variability across different regions in internet connection bandwidth, quality, and stability drives difficulties in providing app performance consistency. Consistent app performance reflects the

reliability and professionalism of its developer. It strengthens user trust and comfort (Akin, 2024; Wahyudin et al., 2024). Modern recent apps rarely show errors. It makes developers now focus more on user convenience. This improves user psychological involvement. Good app performance may strengthen user engagement through a perception of reliability and efficiency (Molinillo et al., 2022; Rahardja et al., 2023).

H2: App performance positively affects user engagement in food ordering applications.

User Reviews and User Engagement

In the digital market, user reviews deserve special attention as an important social factor. They constitute a source of information and emotional and normative signals that can influence users' perceptions of an application and its services. The quantity and content of positive reviews may be considered as social proof, reinforcing the image of a restaurant and its delivery services. Most users use negative reviews, especially their content, as an information source about potential problems in the future. User interaction in the reviews section affects a sense of belonging to the app. User reviews sections also encourage their participation through the sharing of experiences and knowledge about menus, restaurants, and maybe problems (Al Maalouf et al., 2025; Duy et al., 2025). Indonesian user culture, which highly values social validation, provides fertile ground for user reviews. User reviews amplify persuasive power, in line with Indonesian culture (Kurniawan et al., 2024). Previous studies also showed that before making a purchase decision, most users rely on the opinions and perspectives of others to reduce uncertainty and avoid mistakes. Cognitive and emotional interaction with the application is enhanced by the sense of transparency generated by the visibility of restaurant photos and information, including its menu, the star

rating system, and user-generated comments. These studies have also highlighted a positive correlation between the credibility of user reviews and interaction. It is a result of a combination of trust and user engagement (Cho et al., 2022; Riaz et al., 2022; Al Maalouf et al., 2025; Shorbaji et al., 2025). From the SOR perspective, user reviews act as social stimuli that reduce perceived risk and encourage cognitive and emotional involvement.

H3: User reviews positively affect user engagement in food ordering applications.

User Engagement and Continuance Intention

Previous studies have concluded that user engagement is based on an emotional connection between user and application, user cognitive investment, and active participation in a specific service or product (Saikia & Bhattacharjee, 2024). In the SOR framework, this internal state functions as the mechanism that links external stimuli to behavioral responses. Mobile application, which is shown by high usage frequency, loyalty to the app, and interest in exploring new features. User engagement is a key factor influencing the relationship between behavior and user experience (Rahardja et al., 2023; Benz et al., 2024). The intention to keep using the same application is affected by the sense of ownership and involvement in its operation. User engagement impacts the perceived added value of the service used (Riaz et al., 2022; Rahardja et al., 2023).

Previous studies have shown that user engagement is directly linked to the user's intention to keep using the same application. The users of mobile banking, entertainment, and e-commerce applications show similar behaviour. In a competitive market like food ordering applications, users may switch between applications. This condition makes user loyalty act as the foundation of brand engagement (Wahyudin et al., 2024). Although service mal-

functions may occur occasionally, heavily active users demonstrate greater tolerance. A strong psychological bond can compensate for temporary dissatisfaction, thus inducing greater leniency. Active users tend to be more permissive (Peters et al., 2018). User continuance intention also encourages them to recommend the application to others, which directly impacts its market share growth (Shorbaji et al., 2025). User continuance intention can be defined as a link between stimuli and user behavioral responses.

H4: User engagement positively affects continuance intention in food ordering applications.

The Moderating Role of Situational Factors

In some cases, user behavior may be changed by situational factors, i.e., time pressure, location, emotional state, and exposure to promotions. These situational conditions can strengthen or weaken the translation of user engagement into continuance intention. User engagement becomes less effective in determining user intention to keep using the same app. For example, users who are relaxing are more receptive to promotional and discount content. Conversely, busy working users tend to prioritize more on speed and reliability. The impact of user engagement on the intention to keep using an application can vary and evolve depending on the contextual user condition and time (Chen et al., 2020; Goh & Yang, 2021; Riaz et al., 2022).

Situational variability of the Indonesian market is particularly high. This is caused by differences in lifestyles, infrastructure, and even collective cultural contexts. Recent studies have mentioned the existence of situational uncertainty behavior of mobile service consumers. A thorough understanding is necessary to grasp the situational contingencies of the digital marketplace. When situational factors are favorable, user engagement can strengthen

their engagement to keep using an application. For example, during a promotional period or when delivery times are reasonable. Conversely, the user engagement may significantly decline when users are stressed. Situational factors can serve as contextual signals that affect the transfor-

mation of emotional engagement into lasting behavior (Kim et al., 2017; Zolkepli et al., 2021; Tarnanidis et al., 2023).

H5: Situational factors moderate the relationship between user engagement and continuance intention in food ordering applications.

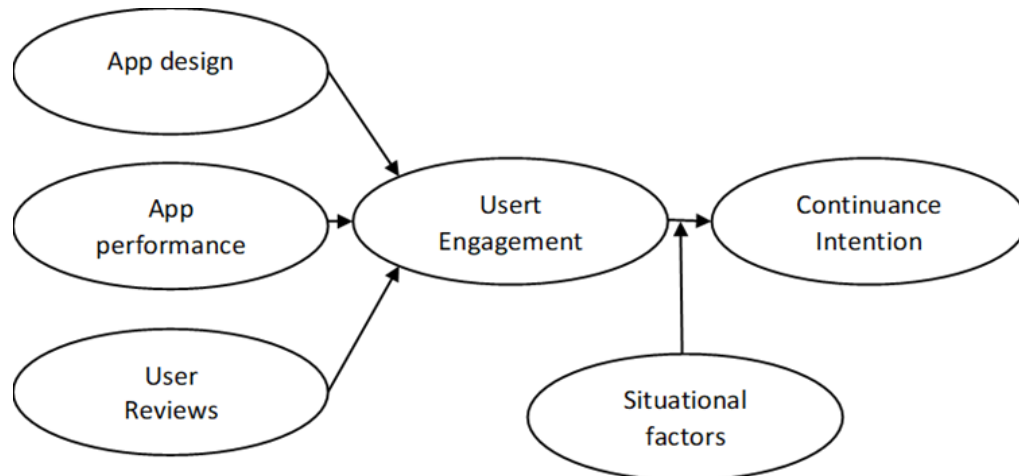


Figure 1. Research Model

METHOD

This study used a cross-sectional quantitative method. This design follows the dominant post-adoption and continuance research tradition in information systems and marketing, where survey-based SEM is commonly used to explain continued usage after initial adoption.

The population consisted of active users of the GoFood, GrabFood, and ShopeeFood apps, who placed at least two food orders in the last three months. This selection process aimed to ensure the quality of the study by guaranteeing a complete understanding of the apps being used by the user. Data were collected from 338 active users in nine major cities, i.e. Medan, Jakarta, Bandung, Semarang, Yogyakarta, Solo, Surabaya, Makassar, and Denpasar. The sample was obtained using non-probability convenience and self-selection sampling, as the questionnaire was distributed online via social media and community groups. Therefore, the findings should be interpreted as most applicable to digi-

tally literate repeat users and may not fully represent all food-ordering app users in Indonesia.

The sample size was chosen to meet the minimum threshold for Partial Least Squares Structural Equation Modeling (PLS SEM) analysis. While the ten-times rule provides a basic guideline (Hair & Alamer, 2022), this study also considers sample adequacy in relation to model complexity, including the moderation effect.

The study used primary quantitative data collected directly from respondents through an online structured questionnaire. The online method was chosen due to the participants' digital literacy, as they were accustomed to using mobile applications daily. The unit of analysis was the individual user, and the data captured perceptions of app-related stimuli, psychological involvement during use, continuance intention, and situational conditions during ordering.

Data collection took place from February to June 2025. The questionnaire

was distributed via social media platforms such as Instagram and WhatsApp, as well as in online food and lifestyle groups. Before completing the questionnaire, respondents were informed about the study's purpose and anonymity. Screening questions were used to confirm that respondents were active users and met the minimum usage criteria.

PLS-SEM was selected to analyse the data because the study is prediction-oriented and aims to explain continuance intention through user engagement while accounting for multiple stimuli and a moderation effect. PLS-SEM is also appropriate when models include interaction terms and when data may deviate from multivariate normality. These considerations make PLS-SEM suitable for the current research context compared with covariance-based SEM.

The analysis was conducted in two stages, i.e., measurement model evaluation and structural model validation. Evaluation at the first stage was conducted to ensure the validity and reliability of the measurement model. At the second stage, an empirical test was conducted on structural models to assess hypothetical relationships between them. The strength and significance of the relationships were determined by calculating path coefficients and R-squared values. Bootstrapping was used to estimate the statistical significance of each path. Moderation effects are tested using the product indicator or two-stage approach, and the interpretation focuses on the conditional strength of the engagement to continuance relationship.

Measurement of Variables

Previous validated instruments were used as the basis for all measurement elements. This approach ensured validity and reliability. Five-point Likert scale is used to measure each element. The scale ranges from scale 1 as strongly disagree, to scale 5 as strongly agree. In line with the SOR logic, app design, app performance, and

user reviews represent external stimuli. User engagement represents the organism, defined as users' affective and cognitive involvement during app use. Continuance intention represents the behavioral response, defined as the intention to keep using the same application in the future. Situational factors represent ordering context conditions that may strengthen or weaken the engagement to continuance relationship.

Studies by Fang et al. (2017) and Rahardja et al. (2023) used five indicators to measure visual design perception. Those five indicators are adapted to this study. It will measure clarity of user interface, functional integration, design aesthetics, ease of navigation, and perceived security. They also measured app performance perception. This study adapts seven indicators from those studies. It measures perception of transaction speed, response time, system stability, and information reliability. Those factors are related to the app effectiveness to fulfill the user's needs.

A study proposed by Alalwan (2020) used four items to measure the impact of user reviews. These four items are also adopted in this study. These items will capture the social and informational signals that may affect user engagement. It measures accuracy, relevance, completeness, and usefulness of user reviews content.

Five item scales from previous study by Fang et al. (2017) are adopted to measure user engagement. These items are intended to capture affective and cognitive involvement during app use. To maintain conceptual clarity in the SOR operationalization and avoid overlap with continuance intention, engagement items should focus on involvement and psychological attachment rather than direct behavioral outcomes. This is an organic component of SOR model, which affects user internal states triggered by external stimuli.

Previous studies by Chea & Luo (2008) are used to create four indicators. These indicators are used to measure the

continuance intention, which is the willingness to keep using the app. It measures the intention to keep using the app and the likelihood of continued usage in the future. Continuance intention items are specified as intentional statements and should not duplicate engagement indicators.

Lastly, four items adapted from the studies by Padmavathy et al. (2025) are used to measure situational factors. The perception of a fair price, adherence to

delivery deadlines, promotional benefits, and value for money are indicators being investigated in this study. These items reflect situational conditions experienced during ordering episodes, particularly price and promotion context and delivery time expectations. Therefore, the situational factor construct is interpreted within this scope and does not claim to represent all possible situational events.

Table 1. Demographic Profile of Respondents (n=338)

Demographic Variable	Category	Frequency	%
Gender	Male	153	45.3
	Female	185	54.7
Age	18–20 years	28	8.3
	21–30 years	171	50.6
	31–40 years	92	27.2
	≥40 years	47	13.9
Occupation	Student	97	28.7
	Private employee	128	37.9
	Entrepreneur	67	19.8
	Civil servant	29	8.6
	Others	17	5.0
City of Residence	Jakarta	68	20.1
	Bandung	46	13.6
	Surabaya	55	16.3
	Medan	32	9.5
	Semarang	27	8.0
	Solo	23	6.8
	Yogyakarta	31	9.2
	Denpasar	28	8.3
	Makassar	28	8.3
Frequency of App Use	Daily	74	21.9
	Several times per week	142	42.0
	Once a week	62	18.3
	One to three times per month	46	13.6
	Less than once per month	14	4.1

Source: Processed Data (2025)

RESULT AND DISCUSSION

Demographic Profile of Respondents

The online survey was conducted to 338 active app users and summarized at

Table 1. The user's profile draws diversity in gender, age, occupation, their residence, and frequency of app using. The demographic statistics reported in Table 1 and the accompanying text are now fully aligned.

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ned and internally consistent.

The gender distribution shows a slight dominance of female users. 54.7% of respondents are female users and slightly higher than male respondents at 45.3%. Align with national digital trends. Female users tend to use it more often compared to male users, mainly due to the convenience and their lifestyles.

Data from Table 1 shows that the age group below 20 years is only 8.3%. Age group above 40 years, also small, only 13.9%. The largest age group is from 21 to 30 years, reaching 50.6%. The second group is the age range from 31 years to 40 years (27.2%). These two large groups reflect the strong presence of young adults who are proficient with mobile transactions. The data in Table 1 also shows that users under 20 and over 40 constitute smaller segments. This suggests that most food purchases via apps are made by middle-aged consumers and young adults.

Respondent occupation data in Table 1 shows that respondents belonged to four groups: students (28.7%), private sector employees (37.9%), entrepreneurs (19.8%), and civil servants (8.6%). Stu-

dents and professionals are the two largest groups, and they reach more than 65% of respondents. It suggests that convenience and time savings affect their purchasing decisions. A big proportion of entrepreneurs show relatively stable purchasing power and a flexible lifestyle.

Distribution of respondent residence, as shown in Table 1, shows that they are distributed across nine major cities in Indonesia. This residence distribution shows their presence at key regions of food ordering applications in Indonesia. These regions are Java, Sumatra, Sulawesi, and Bali.

The data in Table 1 also shows that 21.9% of respondents use the app more than three times a week. 42% of them, almost half, use the app daily. Only a small portion of them use the app once a week (18.3%) or a couple of times a month (13.6%). This concludes that more than 63% of respondents have a very high frequency of app usage. It suggests that the app usage has evolved from occasional convenience to a daily habitual action for most users.

Table 2. Outer Loadings of Measurement Items

Construct	Item Codes	Outer Loading
App Design	AD1	0.812
	AD2	0.826
	AD3	0.841
	AD4	0.835
	AD5	0.849
App Performance	AP1	0.823
	AP2	0.845
	AP3	0.832
	AP4	0.866
	AP5	0.852
	AP6	0.839
	AP7	0.814
User Reviews	UR1	0.847
	UR2	0.833
	UR3	0.856
	UR4	0.844

Construct	Item Codes	Outer Loading
User Engagement	UE1	0.829
	UE2	0.855
	UE3	0.848
	UE4	0.862
	UE5	0.839
Continuance Intention	CI1	0.871
	CI2	0.883
	CI3	0.861
	CI4	0.874
Situational Factors	SF1	0.826
	SF2	0.841
	SF3	0.832
	SF4	0.818

Source: Processed Data (2025)

Six indicators in Table 2 exhibit high elevated outer loadings, ranging from 0.812 to 0.883. All indicator loadings ex-

ceeded the recommended threshold of 0.70, indicating satisfactory indicator reliability.

Table 3. Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
App Design	0.872	0.906	0.659
App Performance	0.903	0.926	0.678
User Reviews	0.864	0.904	0.704
User Engagement	0.888	0.920	0.697
Continuance Intention	0.897	0.926	0.758
Situational Factors	0.851	0.899	0.689

Source: Processed Data (2025)

Further evaluations confirmed the initial finding. All constructs achieved substantial internal consistency (see Table 3). Cronbach's alpha values for each construct ranged between 0.85 to 0.91. Composite reliability values ranged bet-

ween 0.89 to 0.93. Both data sets meet the recommended threshold by most experts (Hair & Alamer, 2022). Convergent validity was confirmed as the average variance extracted (AVE) values for all constructs were above 0.50.

Table 4. Fornell-Larcker Criterion Results

Construct	AD	AP	UR	UE	CI	SF
App Design (AD)	0.812					
App Performance (AP)	0.621	0.824				
User Reviews (UR)	0.534	0.578	0.839			
User Engagement (UE)	0.593	0.607	0.552	0.835		
Continuance Intention (CI)	0.544	0.562	0.516	0.667	0.871	
Situational Factors (SF)	0.423	0.486	0.475	0.552	0.589	0.830

Source: Processed Data (2025)

Table 4 shows six diagonal values of six variables, which correspond to the square root of the AVE, whose values are above the inter-construct correlation values. This data pattern indicates that each construct exhibits a higher level of shared variance with its indicators compared to other constructs in the model. The square root of the AVE for user engagement (0.835) exceeds its correlation with continuance intention (0.667). This data strengthens the discriminant separation between psychological engagement and behavioral intention.

Table 4 shows that the constructs representing the stimulus components exhibit moderate intercorrelations. This indicates a theoretical correlation but not conceptual overlap. The situational factor also maintains its discriminant validity,

showing a lower correlation with other constructs than with the square root of its own AVE (0.830).

These results strengthen the conclusion that the measurement model meets the requirements for discriminant validity. Each variable that is designed to capture a distinct conceptual dimension aligns with the SOR. This ensures that subsequent structural analysis can be reliably interpreted without concerns about multicollinearity or construct redundancy.

Structural Model Assessment

The next step after validating the measurement model is to assess the structural relationships between constructs to test the proposed hypotheses. Table 5 shows the results of the five hypothesized paths, which were statistically significant.

Table 5. Path Coefficients, t-Statistics, and p-Values

Path	β	t-statistics	p-value	Result
App Design → User Engagement	0.241	4.872	0.000	Supported
App Performance → User Engagement	0.312	6.045	0.000	Supported
User Reviews → User Engagement	0.268	5.334	0.000	Supported
User Engagement → Continuance Intention	0.522	10.763	0.000	Supported
User Engagement × Situational Factors → Continuance Intention	0.116	2.441	0.015	Supported

Source: Processed Data (2025)

The results in Table 5 indicate a strong positive influence on user engagement. This can be observed in app performance ($\beta=0.312$, $p<0.001$), user reviews ($\beta=0.268$, $p<0.001$), and visual design ($\beta=0.241$, $p<0.001$). Those strong positive influences show that, although initial appeal is strongly affected by visual design, continuance intention is more affected by fast app performance and credible user reviews.

Results in Table 5 also show that User engagement has a significant positive effect on continuance intention ($\beta=0.522$,

$p<0.001$). This proves that actively engaged users are more likely to keep using the app. The moderating effect of situational factors on the relationship between user engagement and continuance intention is statistically significant ($\beta=0.116$, $p=0.015$). It proves that situational factors, such as promotions and fast delivery, strengthen this relationship. These results collectively explain a substantial proportion of variance in user engagement and continuance intention, as reflected in the R-squared values reported in Table 6.

Table 6. Coefficient of Determination

Endogenous Construct	R ²	Adjusted R ²
User Engagement	0.654	0.649
Continuance Intention	0.587	0.580

Source: Processed Data (2025)

Table 6 shows that 65.4% of the observed variance in user engagement is attributed to visual design, app performance, and user reviews. Conversely, 58.7% of the variance in continuance intention is explained by user engagement and its interaction with situational factors.

A previous study Ozili (2022) divides R^2 into three categories of explanatory power. If R^2 value is above 0.67, then it is categorized as substantial. The second category for R^2 value is between 0.33 to 0.67, then categorized as moderate. Last, if the R^2 value is below 0.19, then it is categorized as weak. Based on Chin's categories, findings in this study show moderate to substantial explanatory power. This strengthens the efficacy of the proposed measurement model in explaining user engagement and continuance behavior.

Discussion

This study aims to examine three main research objectives: (1) to investigate how app design, app performance, and user reviews influence user engagement; (2) to examine the effect of user engagement on continuance intention; and (3) to assess the moderating role of situational factors in the engagement–continuance relationship. Overall, the findings indicate that app-related stimuli significantly shape user engagement, which in turn drives continuance intention, while situational factors condition the strength of this relationship.

First, the results show that app design, app performance, and user reviews significantly influence user engagement. Among these factors, app performance emerges as the most influential predictor, highlighting the importance of system speed, responsiveness, and reliability in food-ordering applications. This finding aligns with recent studies emphasizing performance as a critical determinant of user involvement in mobile services (Wahyudin et al., 2024; Duy et al., 2025). Second, user engagement is found to have a

significant positive effect on continuance intention. This result supports the view that affective and cognitive involvement during application use plays a central role in transforming usage experiences into sustained behavioral intention, consistent with recent engagement and continuance research (Benz et al., 2024; Saikia & Bhattacharjee, 2024). Third, the significant moderating effect of situational factors suggests that contextual conditions such as time pressure, delivery expectations, and promotional exposure can strengthen or weaken the translation of engagement into continuance intention. This finding extends prior work by demonstrating that engagement-driven continuance is not uniform across situations but depends on real-life consumption contexts (Tarnanidis et al., 2023; Padmavathy et al., 2025).

This study found that user engagement is affected by app design, i.e. visual aesthetics and usability. Studies by Rahardja et al. (2023) and Kurniawan et al. (2024) also stated that visual appeal, simple navigation, and intuitive layout increase user engagement.

This study aligns with the SOR framework. Stimulus (design) drives psychological responses and user engagement. A study Rahardja et al. (2023) also confirmed that. Visual design features, i.e., color selection, icon, and menu arrangement, enhance user control and comfort. Smooth and seamless visual design also helps task completion and fosters curiosity. It encourages users to explore the app and invest more time in the experience (Miya & Govender, 2022).

Most users in Indonesia's major cities are digitally savvy. They use smartphones as a common part of their daily activity. Users expect good visual designs that are engaging and functional. They also interpret it as a reflection of credibility, reliability, and trustworthiness. These aligned with a previous study Molinillo et al. (2022). Brand reliability is reflected by the presence of aesthetic visual design. Visu-

al design becomes a fundamental factor that builds emotional resonance. The strong correlation between user engagement and visual design increases satisfaction and long-term commitment. It reinforces the first hypothesis stated in the previous chapter of this study.

Next, the findings in this study support the second hypothesis. It states that app performance affects user engagement. App performance is found to be the strongest stimulus among the three engagement factors. Wahyudin et al. (2024) found that user trust and engagement are built by efficiency, reliability, and responsiveness. Smooth app execution gives a sense of control and predictability, which increases user engagement (Villalobos-Zúñiga & Cherubini, 2020)

Technical quality fosters perceived value and emotional involvement. Wang et al. (2021) found that fast loading improves attention and reduces fatigue. Rahardja et al. (2023) reported that performance reliability increases satisfaction and loyalty. Together, these findings confirm that app performance supports both functional success and emotional connection.

Compared to other predictors, app performance emerges as the most dominant one due to unpredictable internet quality and low logistics availability across different areas (Wahyudin et al., 2024). Technical measurements such as response time, payment reliability, and delivery accuracy are used to reflect the overall system performance (Situmorang et al., 2023). Slow apps tend to reduce trust. Reliable systems represent provider readiness and build emotional security for its users. Nestian et al. (2020) noted at stable and predictable performance, which strengthens engagement through trust, and it helps to retain users.

Most of the time, Indonesian users pay much attention to discounts, promotions, and reliability. Nevertheless, they are also sensitive to bad performing apps. Anticipated performance reduces cogni-

tive discomfort and forms a solid brand association (Marikyan et al., 2023). Reliable systems convert occasional users into active long-term participants, who use the app daily. In this manner, strong performance continues to drive continuance intention by combining technical accuracy and emotional assurance (Rahardja et al., 2023).

The third hypothesis is confirmed by findings in this study. Al Maalouf et al. (2025) Also confirmed that reviews may shape user decisions and emotions. Combining other user experiences and information that drives the decision-making process effectively. It increases trust and reduces uncertainty. This process strengthens user engagement (Cho et al., 2022).

This study defined user reviews as external stimuli. Findings confirmed that it triggers internal user trust and belonging. According to Sivarethinamohan (2023), social validation can be built by user-generated content. Feedback may encourage emotional connection with the platform (Duy et al., 2025). This peer interaction creates a participatory environment that supports community feeling, an essential part of long-term intention (Turmudi, 2020).

Under collectivist habits, most users rely on group opinion rather than self-decision. A social proof, which is a cultural preference for harmony and shared trust (Negara et al., 2020; Kamal et al., 2023). User reviews serve as a digital form of word of mouth, presenting structured public opinion (Bartschat et al., 2022). This study confirmed that Indonesian users respond strongly to public opinion. It builds socially based trust rather than transactional trust.

User reviews provide information and engage its readers. They allow users to identify with others and feel empathy. This finding extends prior work on social influence in e-commerce (Bigne et al., 2020). In Indonesia's food ordering market, engagement grows where information

and community meet.

Analysis results also confirmed the fourth hypothesis, which tested the relationship between user engagement and continuance intention. Qu et al. (2022) stated that engagement is the medium to convert external stimuli into behavioral outcomes. Highly engaged users tend to keep using the apps. It aligns with the SOR model, which postulates a transition from organism to response.

Xiang et al. (2022) and Riaz et al. (2022) stated that engagement directs emotional, cognitive, and behavioral dimensions that collectively lead to loyalty. Emotionally engaged users perceive continuation as a natural and desirable action. These study findings are also consistent with Benz et al. (2024) the statement, which describes engagement as a psychological bridge connecting positive experience to retention. This perspective is reinforced by Duy et al. (2025), engagement transforms transactional interactions into relational experiences.

Kurniawan et al. (2024) found that engaged users can be considered as routines and social identities. Daily usage of food ordering apps is widely spread and has become a new norm. Handayani et al. (2022) also confirmed that highly active users may lead to emotional familiarity. Over time, it builds a high degree of loyalty. When a user is attached to one of the selected platforms, switching to another becomes cognitively and emotionally impossible.

Lastly, this study's results confirmed the fifth hypothesis. Engagement and continuance intention can be disturbed by situational factors. Moderation analysis showed that when situational factors are conducive, such as during promotional periods, on-time delivery times, or periods of heightened personal needs, the effect of situational disturbance becomes more pronounced. Conversely, under unfavorable conditions, the influence weakens.

This study refined the SOR frame-

work by leveraging contextual dynamics into the relationship between internal states and behavioral responses. Chen et al. (2020) stated that psychological behaviour can be disturbed by situational factors that function as reinforcers. Duy et al. (2025) emphasize that contextual variability shapes how engagement is translated into actions. Padmavathy et al. (2025) also found that price fairness and promotional value have an impact on the post-adoption intentions.

Analysis results show that users exhibit responsiveness to contextual stimuli. User engagement is influenced by several external factors such as weather conditions, time constraints, and promotional offers (Benz et al., 2024). Users may postpone orders under certain conditions. For example, when delivery costs increase during bad weather or periods of traffic congestion. In contrast, when surrounding elements are conducive, users tend to act based on their emotional decision.

This study identifies engagement as dynamic, rather than static behavior. Its momentary conditions interaction produces observable behavior. Findings indicate that situational alignment is as important as psychological readiness. These moderating factors need to be addressed by service providers, as maintaining engagement alone is insufficient. Timely and contextual interventions are needed to uphold user interaction. Kolomaznik et al. (2024) also agreed that surrounding alignment drives emotional interaction, which affects continued use.

Managerially, all the findings imply that food-ordering platforms should prioritize app performance stability and speed as a foundation for user engagement, actively manage and respond to user reviews to maintain social credibility, and design situation-aware features such as accurate delivery time information and clear communication during delays or peak demand periods. By addressing situational disruptions proactively, platforms can better sus-

tain user engagement and encourage long-term usage.

CONCLUSION AND RECOMMENDATION

This study investigates the phenomenon of continued use of food-ordering applications in Indonesia, where high market competition and low switching costs make user retention a critical managerial and theoretical issue. Guided by the SOR framework, the findings show that continuance intention is primarily driven by user engagement as an internal psychological state, which is shaped by app-related stimuli, namely app design, app performance, and user reviews, and conditioned by situational factors.

The results confirm the core premises of the SOR framework by demonstrating that external technological and social cues influence users' affective and cognitive involvement during application use, which subsequently translates into continued usage intention. In this study, user engagement is consistently defined as users' affective and cognitive involvement during interaction with the application, rather than as a behavioral outcome, thereby clarifying its role as the organism component in the SOR model. App design, performance and reviews drive user engagement by building user trust and comfort.

These findings extend prior continuance and engagement studies by integrating social proof and situational conditions into the SOR framework, which have often been examined separately in earlier research. Unlike earlier studies that focused primarily on initial adoption or satisfaction, this study provides empirical evidence from a post-adoption context among active users in an emerging digital market.

The theoretical contribution of this study lies in refining the operationalization of the SOR model for mobile service contexts by positioning user engagement

as a psychological mechanism linking app-related stimuli to continuance intention, while situational factors operate as contextual moderators that condition this relationship.

From a practical perspective, the findings suggest that food-ordering platforms should prioritize app performance stability and speed as a foundation for engagement, actively manage user reviews to maintain social credibility, and design application features that respond to situational disruptions such as delivery delays and time pressure.

This study has some limitations. First, it focuses only on Indonesia, which has distinct user patterns shaped by collectivist behavior. It may not be suitable for individualistic or developed markets. Conducting further study in other countries may identify that the pattern also exists. Second, a cross-sectional design is unable to observe engagement or intention changes over time. Future research is encouraged to employ longitudinal or experimental designs to examine causal dynamics and temporal changes in engagement.

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