

Bridging Intention-Behavior Gap in Food Rescue App Usage

Khaerunnisa Nur Fatimah Syahnur^{1*}, Mulyana Sari², Mirandha Ariesca Riana³

^{1*,2,3}Institut Teknologi dan Bisnis (ITB) Kalla, Jl. Urip Sumoharjo Lt 5 & 6, Panaikang, Kec. Panakkukang, Kota Makassar, Sulawesi Selatan 90231, Indonesia

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ABSTRACT

The emergence of food rescue applications offers a digital solution to reduce food waste and promote sustainable consumption. However, their effectiveness depends on users' actual usage rather than intention alone. This study aims to examine the transition from behavioral intention to actual usage behavior by incorporating habit and moral norm. A survey was conducted with 153 users of food rescue applications in Indonesia. The results show that behavioral intention, habit, and moral norm significantly influence actual usage behavior, with moral norm as the strongest predictor. This study highlights the importance of ethical and behavioral factors in digital sustainability.

Email Correspondence :

khaerunnisanfsyahnur@kallabs.ac.id

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ABSTRAK

Aplikasi penyelamatan makanan menawarkan solusi digital untuk mengurangi limbah makanan dan mendorong konsumsi berkelanjutan. Namun, keefektifannya bergantung pada penggunaan aktual pengguna, dan bukan sekadar niat semata. Penelitian ini bertujuan untuk menguji transisi dari niat perilaku ke perilaku penggunaan aktual dengan menggunakan faktor kebiasaan dan norma moral. Survei dilakukan terhadap 153 pengguna aplikasi penyelamatan makanan di Indonesia. Hasil penelitian ini menunjukkan bahwa niat perilaku, kebiasaan, dan norma moral secara signifikan memengaruhi perilaku penggunaan aktual, dengan norma moral sebagai prediktor terkuat. Penelitian ini menyoroti pentingnya faktor etika dan perilaku dalam keberlanjutan digital.



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INTRODUCTION

The rapid development of digital technology has transformed various aspects of consumption behavior, including the emergence of digital-based sustainability practices (Olga, 2024). One notable innovation is the development of food rescue applications, which aim to reduce food waste by redistributing surplus food through digital platforms (Apostolidis et al., 2021; Kör et al., 2022). In Indonesia, the increasing adoption of such applications reflects a growing awareness of sustainable consumption, particularly among urban consumers who are more exposed to digital ecosystems (Asfarian et al., 2024; Kembau et al., 2025; Novianti et al., 2025). However, despite this promising development, the effectiveness of these platforms largely depends on users' actual and sustained usage behavior rather than mere initial adoption (Prasetyo et al., 2025; Tang & Yang, 2025).

Prior studies have extensively examined the adoption of digital platforms by emphasizing technological and cognitive determinants, such as perceived usefulness, perceived ease of use, and social influence (Syahnur & Rohman, 2025). These studies predominantly rely on established frameworks, including UTAUT2, and position behavioral intention as the primary outcome variable (Tamilmani et al., 2021). While this stream of research provides valuable insights into users' willingness to adopt technology, it remains limited in explaining whether such intentions are translated into actual and continuous usage behavior (Chen & Chen, 2022; Dwivedi et al., 2020;

Shah & Zhongjun, 2021). This limitation indicates that the current literature is still dominated by a pre-adoption perspective, with insufficient attention given to post-adoption behavior (Cho & Kwon, 2025; Dongshuo & Yie, 2025).

The discrepancy between intention and actual behavior, commonly referred to as the intention behavior gap, has been widely acknowledged in behavioral and sustainability research (ElHaffar et al., 2020). In the context of environmentally responsible consumption, individuals may express strong intentions to engage in sustainable practices; however, these intentions do not necessarily lead to consistent behavioral outcomes (ElHaffar et al., 2020; Margariti et al., 2024; Rausch & Kopplin, 2021). This phenomenon suggests that additional psychological mechanisms are required to better explain how users transition from intention to actual behavior, particularly in the context of digital sustainability platforms (Cimino et al., 2024; Filippelli et al., 2025; Lo Dato et al., 2025).

In the specific context of Indonesia, the urgency to bridge this gap is critical as the country remains one of the largest food waste contributors globally (The Economist Intelligence Unit and Barilla Foundation, 2021). While digital literacy among urban consumers is rising (K. N. F. Syahnur et al., 2024), the transition from initial adoption to routine food rescue behavior is often hindered by cultural perceptions and a lack of structural reinforcement (Margariti et al., 2024). Unlike conventional e-commerce, food rescue behavior in Indonesia is closely linked to social responsibility and collective ethics (Eitiveni et al., 2025). Therefore, investigating the catalysts that transform sporadic intentions into actual and persistent actions is essential to support Indonesia's circular economy goals and address the food waste crisis. Indonesia provides a unique setting because food waste challenges coexist with rapid digitalization and strong collectivist cultural values.

Recent studies have begun to highlight the importance of habit and moral norm as key determinants of actual behavior (Oehman et al., 2022; Venkatesh et al., 2012). Habit reflects the extent to which behavior becomes automatic through repeated actions, while moral norm represents an individual's internalized ethical obligation to perform a particular behavior (Lo Dato et al., 2025; Margariti et al., 2024). In the context of food rescue applications, habit may encourage repeated usage through routine purchasing patterns, whereas moral norm may drive users to act based on environmental responsibility and ethical awareness toward food waste reduction (Cimino et al., 2024; Filippelli et al., 2025). Despite their theoretical relevance, these constructs have received limited empirical attention, particularly in the context of digital sustainability applications in developing countries such as Indonesia.

Furthermore, existing studies in Indonesia have primarily focused on identifying the determinants of behavioral intention, with limited exploration of how such intentions evolve into actual usage behavior (Eitiveni et al., 2025). This indicates a significant research gap in understanding the mechanisms that sustain long-term engagement with food rescue applications. Therefore, this study aims to examine the transition from behavioral intention to actual usage behavior by incorporating habit and moral norm as key explanatory variables (Lo Dato et al., 2025; Oehman et al., 2022; Venkatesh et al., 2012).

This study contributes to the literature through a novel theoretical integration between UTAUT2 and the Value-Belief-Norm (VBN) perspective to explain actual usage behavior of food rescue applications. While previous studies primarily examined behavioral intention as the ultimate outcome of technology adoption, this study conceptualizes actual usage behavior as the focal outcome and introduces habit and moral norm as complementary post-adoption mechanisms. This approach addresses the long-standing intention-behavior gap frequently reported in sustainability research. Furthermore, empirical evidence on food rescue applications remains scarce in emerging economies, particularly Indonesia.

Theoretical Framework and Literature Review

Integrating UTAUT2 and VBN Theory

This study is not intended to re-test the original UTAUT2 model. Rather, UTAUT2 serves as a foundational technology adoption perspective that explains how behavioral intention influences users' acceptance and use of digital technologies (Venkatesh et al., 2012). Previous studies on food rescue applications and other digital sustainability platforms have extensively employed UTAUT2 to explain users' adoption intentions, emphasizing cognitive and technological determinants of technology acceptance (Tamilmani et al., 2021; Eitiveni et al., 2025). However, despite its strong predictive power, UTAUT2 has been criticized for its limited ability to explain post-adoption behavior when behavioral intention is treated as the ultimate outcome variable (Chen & Chen, 2022; Dwivedi et al., 2020). In sustainability-oriented contexts, individuals often express strong intentions to engage in environmentally responsible behaviors but fail to consistently translate these intentions into actual actions. This phenomenon, commonly referred to as the intention-behavior gap, suggests that additional behavioral and normative mechanisms are needed to explain actual usage behavior (ElHaffar et al., 2020; Margariti et al., 2024).

To address this limitation, this study extends the post-adoption perspective of UTAUT2 by integrating constructs derived from behavioral and sustainability theories. Specifically, habit is incorporated as a behavioral mechanism that reflects the automaticity of repeated technology use, while moral norm is adopted from the VBN theory to capture users' internalized ethical obligations toward reducing food waste and promoting sustainable consumption (Filippelli et al., 2025). The integration of UTAUT2 and VBN theory is theoretically justified by the dual nature of food rescue applications, which simultaneously involves technology adoption and pro-environmental action. While UTAUT2 explains the cognitive pathway through behavioral intention, VBN theory explains the ethical motivations underlying sustainable behavior. Together with habit as a post-adoption mechanism, these perspectives provide a more comprehensive explanation of how users transition from intention to actual usage behavior in the context of food rescue applications.

This study deliberately does not incorporate the full set of UTAUT2 antecedents, such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value. These constructs have been extensively examined in prior food rescue and technology adoption studies and primarily explain the formation of behavioral intention. In contrast, the objective of the present study is not to investigate the determinants of intention but to examine the post-adoption transition from intention to actual usage behavior. Therefore, behavioral

intention is retained as the key cognitive antecedent, while habit and moral norm are introduced as complementary mechanisms to explain how intention is translated into sustained action.

Intention-Behavior Gap in Digital Sustainability Context

In the context of food rescue applications, users may express strong intentions to reduce food waste and support sustainable consumption but fail to use the platform regularly (ElHaffar et al., 2020b; Margariti et al., 2024). Several barriers may contribute to this gap, inconvenience in accessing offers, lack of trust in food quality, weak behavioral routines, and insufficient moral commitment (Jahan et al., 2025). As a result, behavioral intention alone may not be sufficient to explain actual usage behavior. This study argues that habit and moral norm function as bridging mechanisms that help transform intention into action (M. H. Syahnur & Rohman, 2025). Habit facilitates repeated and automatic usage, whereas moral norm reinforces commitment to sustainable behavior even when external incentives are limited (Oehman et al., 2022). Therefore, understanding these mechanisms is essential for explaining how intention evolves into actual food rescue behavior.

The limitation of intention-based models is closely related to the intention-behavior gap, which refers to the inconsistency between individuals' stated intentions and their actual actions (Margariti et al., 2024). This phenomenon has been widely observed in sustainability-related behaviors, where individuals express strong pro-environmental intentions but fail to act accordingly (ElHaffar et al., 2020; Rausch & Kopplin, 2021). In the context of food rescue applications, users may demonstrate willingness to reduce food waste through digital platforms; however, such intentions do not always lead to consistent usage behavior (Margariti et al., 2024; Oehman et al., 2022). This gap suggests that additional psychological and behavioral mechanisms are required to bridge the transition from intention to action, particularly in digital sustainability environments (Cimino et al., 2024; Lo Dato et al., 2025). Consequently, extending traditional adoption models becomes necessary to better explain actual user behavior.

Behavioral Intention and Actual Usage Behavior

Food rescue application usage differs from conventional digital consumption because its primary objective extends beyond obtaining products or services (M. H. Syahnur & Rohman, 2025). By purchasing surplus food through these platforms, users actively participate in reducing food waste, lowering environmental impacts, and supporting more sustainable consumption patterns (Ozdemir et al., 2025). Consequently, the decision to use a food rescue application is not merely a technological behavior but also a moral and ethical behavior (Chandra et al., 2025). From the Value-Belief-Norm (VBN) perspective, individuals who perceive food waste as a social and environmental problem may develop a personal moral obligation to act responsibly (Oehman et al., 2022). Moral norm therefore becomes particularly relevant because it captures users' internal sense of duty to prevent unnecessary waste and contribute to environmental sustainability. In this context, actual usage behavior may be motivated not only by functional benefits such as convenience and price savings but also by ethical responsibility toward food waste reduction (Ozdemir et al., 2025). Despite its limitations, behavioral intention remains a central construct in predicting actual behavior. It reflects the degree to which individuals are willing to perform a particular action and serves as a cognitive precursor to behavior (Eitiveni et al., 2025; Filippelli et al., 2025). Prior studies in digital platforms confirm that behavioral intention significantly influences actual usage,

especially when supported by facilitating conditions and reinforcing factors (Shah & Zhongjun, 2021; Tang & Yang, 2025). In the context of food rescue applications, users who have a strong intention to participate in food waste reduction are more likely to engage in actual platform usage. Therefore, this study posits that: **H1:** Behavioral intention has a positive and significant effect on the actual usage behavior of food rescue applications.

Habit and Actual Usage Behavior

Habit is a key determinant of post-adoption behavior, particularly in digital environments characterized by repeated interactions (Sarmiento & Loureiro, 2021). Habit refers to automatic behavior formed through repeated usage, which reduces the need for conscious decision-making (Oehman et al., 2022; Ghasemaghahi et al., 2021). In the context of digital platforms, habit strengthens continuance behavior by embedding usage into users' daily routines (Amoroso et al., 2023). For food rescue applications, habitual usage may develop when users consistently check and purchase surplus food, transforming intentional actions into automatic behavior. Empirical evidence indicates that habit significantly influences actual usage behavior and long-term engagement with digital services (Wang et al., 2024). Therefore, this study proposes that: **H2:** Habit has a positive and significant effect on the actual usage behavior of food rescue applications.

Moral Norm and Ethical Motivation

Moral norm represents an internal obligation that remains stable even when external incentives (like discounts) are absent. Unlike external influences, moral norm is driven by intrinsic values and personal responsibility (Lo Dato et al., 2025; Margariti et al., 2024). In the case of food rescue applications, users may be motivated not only by economic incentives but also by ethical considerations, such as reducing food waste and contributing to environmental preservation. Recent studies highlight that moral norm plays a significant role in shaping pro-environmental behavior and encouraging sustainable consumption practices (Cimino et al., 2024). Therefore, this study posits that: **H3:** Moral norm has a positive and significant effect on the actual usage behavior of food rescue applications.

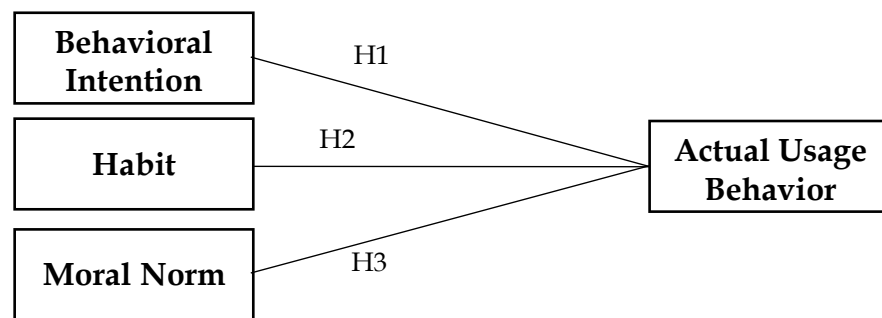


Figure 1 *Research Framework*

Theoretical Orchestration

This study proposes an integrated framework that combines the Unified Theory of Acceptance and Use of Technology (UTAUT2) and the Value-Belief-Norm (VBN) theory to explain the transition from behavioral intention to actual usage in food rescue applications (Asfarian et al., 2024; M. H. Syahnur & Rohman, 2025). While UTAUT2 provides a robust explanation for the cognitive

and technological drivers of adoption (Venkatesh et al., 2012), it often falls short in addressing the normative and ethical dimensions inherent in sustainable consumption (Margariti et al., 2024). By incorporating moral norm from the VBN perspective and habit as a post-adoption construct, this study addresses the "black box" of the intention-behavior gap (ElHaffar et al., 2020). The integration is justified by the dual nature of food rescue applications, which function simultaneously as technological tools and platforms for environmental activism. In this model, behavioral intention remains the primary cognitive antecedent, while habit represents the automaticity of the behavior, and moral norm serves as the internal ethical obligation that reinforces the translation of intention into sustained action (Stern, 2000; Limayem et al., 2007). The proposed framework is illustrated in Figure 1.

RESEARCH METHOD

Research Design

This study employs a quantitative approach with a causal approach to examine the relationship between behavioral intention, habit, moral norm and actual usage behavior in the context of food rescue applications. The investigation focuses on post-adoption behavior among users of food rescue applications in Indonesia. A survey method is utilized to collect primary data from users of food rescue applications in Indonesia, as this approach is considered appropriate for capturing individual perceptions and behavioral tendencies in digital platform usage. The data are analyzed using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach (Hair et al., 2021). In this study, food rescue applications refer to digital platforms that facilitate the redistribution of surplus yet still edible food from restaurants, retailers, cafes, bakeries, and other food providers to consumers at reduced prices, with the primary objective of preventing food waste and promoting sustainable consumption.

Population and Sample

The population of this study consists of individuals who have experience using food rescue applications in Indonesia. Given the relatively specific characteristics of the target population, a purposive sampling technique is employed to ensure that respondents meet the required criteria. The sampling criteria include: (1) individuals who are aware of food rescue applications, (2) individuals who have used such applications at least once, and (3) individuals aged 17 years and above. Individuals aged 17 years is more likely to possess autonomy in digital consumption decisions, including access to mobile devices, digital payment systems, and the ability to engage in actual transactions within food rescue applications. Respondents were recruited using purposive sampling through online distribution channels, including social media platforms and online communities related to sustainable consumption and food rescue initiatives. To ensure data validity, only individuals who confirmed prior experience using a food rescue application were allowed to proceed to the main questionnaire. Food rescue applications were defined as digital platforms that connect consumers with surplus food from restaurants, cafés, bakeries, retailers, or other food providers to reduce edible food waste. Examples include Surplus Indonesia and similar food rescue platforms operating in Indonesia. The adequacy of the sample size was assessed based on the recommendations for PLS-SEM analysis. According to Hair et al. (2021), PLS-SEM can be effectively applied with relatively small sample sizes when the model complexity is limited. Furthermore,

following the ten-times rule, the minimum sample size should be at least ten times the largest number of structural paths directed at any endogenous construct. Since Actual Usage Behavior receives three direct paths, the minimum required sample size is 30 observations. Therefore, the final sample of 153 respondents substantially exceeds the minimum requirement and is considered sufficient for robust PLS-SEM estimation.

Data Collection Method

Data are collected through a structured questionnaire distributed online using digital platforms such as Google Forms. The online distribution method is chosen to effectively reach users of food rescue applications, who are typically active digital users. All measurement items are adapted from prior validated studies and modified to fit the context of food rescue applications.

Measurement of Variables

This study includes four main variables: habit, moral norm, behavioral intention and actual usage behavior. The measurement scales were adapted from recent literature to ensure contextual relevance with digital sustainability platforms. Habit is measured based on the frequency and automaticity of usage behavior (Cho & Kwon, 2025; Venkatesh et al., 2012). Moral norm is measured through indicators related to ethical responsibility and environmental awareness (Filippelli et al., 2025; Margariti et al., 2024). Behavioral intention is measured using indicators that reflect users' willingness and plans to use food rescue applications (Novianti et al., 2025; M. H. Syahnur & Rohman, 2025). Meanwhile, actual usage behavior is measured by capturing the frequency and consistency of application usage (Cho & Kwon, 2025; Tang & Yang, 2025). All measurement items were assessed using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The use of a five-point scale was considered appropriate for capturing respondents' perceptions and behavioral tendencies while maintaining ease of response and measurement consistency. Several questionnaire items were negatively worded to reduce response bias. Prior to data analysis, all negatively worded indicators were reverse-coded to ensure directional consistency across measurement items. This procedure ensured that higher scores consistently reflected stronger levels of the underlying construct.

Table 1 *Research Instruments*

No.	Variables	Questionnaire Instruments
1.	Behavioral Intention (Novianti et al., 2025; M. H. Syahnur & Rohman, 2025)	1) I do not intend to continue using the food rescue app in the future. 2) I will try to use this app as often as possible. 3) I plan to recommend the use of this app to my social circle.
2.	Habit (Cho & Kwon, 2025; Venkatesh et al., 2012)	1) I do not use the food rescue app as a part of my daily routine. 2) I use the food rescue app automatically without having to think twice. 3) Using this app is something I do as a matter of course every day.
3.	Moral Norm (Filippelli et al., 2025; Margariti et al., 2024)	1) I do not feel responsible for reducing food waste through the use of this app. 2) Using the food rescue app aligns with my ethical principles.

4.	Actual Usage Behavior (Cho & Kwon, 2025; Tang & Yang, 2025)	3) I would feel guilty if I ignored the opportunity to save edible food through this platform.
		1) I rarely use the food rescue app to purchase surplus food.
		2) I spend a significant amount of time each week checking food availability on this app.
		3) I have used various transaction features available within the food rescue app.

Source: Researcher's (2026)

RESULT and DISCUSSION

Demographic Respondents

Based on the data presented in Table 2, this study involved a total of 153 respondents. In terms of gender, female respondents dominated the sample for 55%, while male respondents represented 45%. This finding indicates a higher level of engagement of women in the use of food rescue applications. Regarding age distribution, respondents aged 17–29 years constituted the largest proportion (30%), followed by those aged 30–39 years (27%). Meanwhile, respondents aged 40 years and above represented a smaller proportion of the sample. This finding suggests that younger individuals are the primary users of food rescue applications. From a geographical perspective, respondents were primarily concentrated in urban areas. The largest proportion originated from the Jakarta region (39%), followed by Bandung and Bali (12%), and D.I. Yogyakarta (10%). This distribution indicates that the adoption of food rescue applications is more prevalent in metropolitan areas. In terms of employment status, private sector employees accounted for the largest proportion (29%), followed by entrepreneurs (23%), students (20%), government employees (BUMN/PNS/TNI/Polisi) (17%), and academics (11%). The dominance of private employees and students highlight the role of economically active and digitally engaged individuals in utilizing food rescue platforms. Overall, the respondent profile demonstrates that food rescue application users in Indonesia are predominantly young, urban, and digitally active individuals, reinforcing the positioning of these platforms within the digital sustainability ecosystem.

Table 2 *Demographic Respondents*

Male	69	45%
Female	84	55%
Total	153	100%
Age Group	Number of Respondents	Percentage
>60 Years	17	11%
17-29 Years	46	30%
30-39 Years	42	27%
40-49 Years	27	18%
50-59 Years	21	14%
Total	153	100%
City of Residence	Number of Respondents	Percentage
Jakarta Region	59	38%
Bandung	18	12%

Bali	19	13%
D.I. Yogyakarta	16	10%
Others	41	27%
Total	153	100%
Occupation	Number of Respondents	Percentage
Academics (Teachers/Lecturers, etc.)	17	11%
Students	30	20%
Government Employees	26	17%
Private Employees	45	29%
Entrepreneurs	35	23%
Total	153	100%

Source: Researcher's (2026)

Data Analysis

The measurement model evaluation indicates that all constructs meet the required validity and reliability criteria, as evidenced by outer loading values ranging from 0.828 to 0.898, exceeding the recommended threshold of 0.70. This confirms that all indicators are valid in representing their respective constructs. The detailed results of the measurement and structural model evaluations are presented in Table 3. Furthermore, the structural model shows moderate explanatory power, with an R² value of 0.234 for actual usage behavior, indicating that behavioral intention, habit, and moral norm explain 23.4% of the variance in the dependent variable as shown on table 4. In addition, the construct reliability and validity assessment further confirms the robustness of the measurement model. As shown in Table 5, all constructs exhibit Cronbach's Alpha and Composite Reliability values above the recommended threshold of 0.70, indicating strong internal consistency. Furthermore, the Average Variance Extracted (AVE) values for all constructs exceed 0.50, demonstrating adequate convergent validity. The rho_A values are also above the acceptable level, reinforcing the reliability of the constructs. These results confirm that all constructs used in this study are both reliable and valid for further structural analysis.

Table 3 Outer Loading

	Actual Usage Behavior	Behavioral Intention	Habit	Moral Norm
BI1			0,840	
BI2			0,863	
BI3			0,828	
MN1				0,879
MN2				0,883
MN3				0,848
H1		0,891		
H2		0,898		
H3		0,887		
AUB1	0,851			
AUB2	0,868			
AUB3	0,875			

Source: Researcher's (2026)

Although the model explains 23.4% as seen on Table 4, the variance in actual usage behavior, a substantial proportion of the variance remains unexplained. This suggests that actual usage behavior is likely influenced by additional factors beyond behavioral intention, habit, and moral norm. Variables such as trust, perceived value, facilitating conditions, platform reliability, food availability, and perceived convenience may also play important roles in shaping users' continued engagement with food rescue applications.

The discriminant validity of the constructs was further assessed using the Heterotrait-Monotrait Ratio (HTMT). As presented in Table 6, all HTMT values are below the recommended threshold of 0.85, ranging from 0.208 to 0.473. These findings indicate that the constructs are empirically distinct from one another and that discriminant validity has been satisfactorily established.

Table 4 R-Square

	R Square	R Square Adjusted
<i>Actual Usage Behavior</i>	0,234	0,219

Source: Researcher's (2026)

Table 5 Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
<i>Actual Usage Behavior</i>	0,831	0,832	0,899	0,748
<i>Behavioral Intention</i>	0,797	0,800	0,881	0,712
<i>Habit</i>	0,872	0,876	0,921	0,796
<i>Moral Norm</i>	0,840	0,843	0,904	0,757

Source: Researcher's (2026)

Table 6 Heterotrait-Monotrait Ratio (HTMT)

	Actual Usage Behavior	Behavioral Intention	Habit	Moral Norm
<i>Actual Usage Behavior</i>				
<i>Behavioral Intention</i>	0,366			
<i>Habit</i>	0,387	0,208		
<i>Moral Norm</i>	0,473	0,336	0,388	

Source: Researcher's (2026)

Table 7 Path Coefficients Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
<i>Behavioral Intention -> Actual Usage Behavior</i>	0,188	0,191	0,075	2,517	0,012
<i>Habit -> Actual Usage Behavior</i>	0,205	0,202	0,080	2,551	0,011
<i>Moral Norm -> Actual Usage Behavior</i>	0,277	0,276	0,089	3,119	0,002

Source: Researcher's (2026)

Discussion

The results of this study confirm that behavioral intention, habit, and moral norm have positive and significant effects on actual usage behavior of food rescue applications. Based on the SEM-PLS analysis, all hypotheses are supported, with moral norm showing the strongest effect ($\beta = 0.277$; $p < 0.01$), followed by habit ($\beta = 0.205$; $p < 0.05$) and behavioral intention ($\beta = 0.188$; $p < 0.05$) shown in Table 7. These findings indicate that users' engagement with food rescue applications is influenced not only by cognitive intention but also by behavioral reinforcement and ethical considerations. Specifically, H1 (behavioral intention $\rightarrow$ actual usage behavior), H2 (habit $\rightarrow$ actual usage behavior), and H3 (moral norm $\rightarrow$ actual usage behavior) are all accepted. Among these variables, moral norm shows the strongest effect ($\beta = 0.277$; $p < 0.01$), followed by habit ($\beta = 0.205$; $p < 0.05$) and behavioral intention ($\beta = 0.188$; $p < 0.05$). These findings indicate that users' engagement with food rescue applications is influenced not only by cognitive intention but also by behavioral reinforcement and ethical considerations.

The significant effect of behavioral intention on actual usage behavior supports H1 and is consistent with recent studies in technology adoption, which highlight intention as a primary predictor of user behavior in digital platforms (Dwivedi et al., 2020; Tamilmani et al., 2021). However, the relatively lower coefficient compared to habit and moral norm suggests that intention alone is insufficient to drive sustained usage. This finding supports recent research emphasizing the persistence of the intention-behavior gap in digital and sustainable consumption contexts, where users may express willingness but fail to consistently act on it (Ciocîrlan & Rowe, 2025; ElHaffar et al., 2020a; Hagger et al., 2023).

Furthermore, the positive and significant effect of habit on actual usage behavior confirms H2 and highlights the importance of habitual processes in post-adoption behavior. This result aligns with recent findings that habit plays a crucial role in reinforcing repeated usage and transforming conscious decisions into automatic actions in digital environments (Chen & Chen, 2022; Söllner et al., 2024; Wang et al., 2024). In the context of food rescue applications, habit enables users to integrate the platform into their daily routines, thereby increasing the likelihood of continuous engagement.

Notably, moral norm emerges as the strongest predictor of actual usage behavior, confirming H3 and highlighting the critical role of ethical motivation in sustainable digital consumption. This finding is consistent with recent studies showing that moral obligation significantly influences pro-environmental behavior and sustainability-oriented decision-making (Cimino et al., 2024; Margariti et al., 2024). In the context of food rescue applications, users are not solely driven by functional benefits but also by a sense of responsibility to reduce food waste, which strengthens their commitment to using the platform (Chandra et al., 2025; Jahan et al., 2025; Keller & Gombos, 2025).

From a theoretical standpoint, this study advances the technology adoption literature by demonstrating that actual usage behavior in digital sustainability platform is not solely determined by cognitive intention, as suggested by traditional UTAUT2 research. Instead, ethical motivation (moral norm) and behavioral automaticity (habit) emerge as critical mechanisms that bridge the intention-behavior gap (Filippelli et al., 2025; Lo Dato et al., 2025). This finding provides a new

perspective on post-adoption behavior and enriches the theoretical dialogue between technology acceptance theory and sustainability-oriented behavioral theories.

In the Indonesian context, the strong influence of moral norm suggests that cultural values related to social responsibility and collective awareness may play a significant role in shaping sustainable consumption behavior (Kusdiyanto et al., 2023). Therefore, this study contributes to the literature by demonstrating that bridging the intention-behavior gap requires not only technological readiness but also the reinforcement of habitual usage and ethical awareness.

CONCLUSION & IMPLICATION

This study aims to examine the transition from behavioral intention to actual usage behavior of food rescue applications by incorporating habit and moral norm as key explanatory variables. The findings confirm that all proposed hypotheses are supported, indicating that behavioral intention, habit, and moral norm significantly influence actual usage behavior. Among these factors, moral norm emerges as the strongest predictor, followed by habit and behavioral intention.

These results highlight that actual usage behavior in digital sustainability platforms cannot be fully explained by cognitive intention alone. Instead, behavioral reinforcement through habit and ethical motivation through moral norm play crucial roles in driving consistent user engagement. This study extends the technology adoption literature, particularly UTAUT2, by integrating behavioral and ethical dimensions to better explain post-adoption behavior.

Among the surveyed users of food rescue applications in Indonesia, moral norm emerged as the strongest predictor of actual usage behavior. Therefore, this study contributes to the growing body of research on digital sustainability by providing empirical evidence on how the intention behavior gap can be addressed through habit formation and moral norm activation.

The findings suggest that increasing actual usage of food rescue applications requires strategies that go beyond promoting initial adoption. Platform providers should prioritize features that encourage habitual use, such as personalized reminders and simple user interfaces that facilitate repeated transactions. In addition, given the strong influence of moral norm, integrating sustainability driven messaging into platform communication can strengthen users' sense of responsibility toward reducing food waste. Therefore, combining behavioral reinforcement and ethical appeal is essential to enhance sustained user engagement.

This study has several limitations that provide opportunities for future research. First, the study focuses on a limited number of variables, namely behavioral intention, habit, and moral norm, which may not fully capture the complexity of user behavior in digital sustainability platforms. Future studies are encouraged to incorporate additional variables, such as perceived value, trust, or social influence. Second, the data were collected using a cross-sectional design, which limits the ability to observe behavioral changes over time. Longitudinal studies are recommended to better understand the development of habitual behavior. Third, this study is limited to the Indonesian context, which may affect the generalizability of the findings. Future research could conduct comparative studies across different countries to examine cultural influences on sustainable digital behavior.

STATEMENT OF USE OF GENERATIVE AI

ChatGPT, an AI-based generative tool, was employed during manuscript preparation to enhance language editing, clarity, readability, and grammatical accuracy. The tool was not used to generate research data, conduct data analysis, or determine research findings and conclusions. All AI-assisted content underwent critical review, verification, and editing by the authors. The authors assume full responsibility for the accuracy, originality, integrity, and final content of the manuscript.

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