Applied Information System and Management (AISM)
Volume 8, (2) 2025, p. 333–340
P-ISSN: 2621-2536; E-ISSN: 2621-2544; DOI: 10.15408/aism.v8i2.46688

Online-to-Offline (O2O) E-Commerce Adoption Using Technology Acceptance Model 3 (TAM 3): The Case of GrabKios

Elwin Jusuf Togatorop[1], Mardiana Purwaningsih[2*]

***Abstract*—The rapid growth of digital technology has streamlined workflows and accelerated information exchange. However, it has also introduced risks such as data theft and online fraud, which make people hesitant to engage in online transactions. To address these concerns, platforms such as GrabKios have introduced online-to-offline (O2O) solutions, enabling users to order goods online through local agents and pay in cash. While GrabKios shows strong potential, its adoption remains limited, particularly among small kiosk (*warung*) owners who face difficulties navigating the app. This study examines the factors influencing the use of GrabKios by applying the Technology Acceptance Model 3 (TAM3). A total of 108 respondents participated in the survey. The findings indicate that perceived usefulness significantly influences behavioural intention; however, adoption does not occur unless the app is user-friendly. Usability issues, therefore, remain a significant barrier to broader adoption. These results underscore the importance of intuitive interface design and user-friendly features in promoting the broader adoption of O2O e-commerce applications. This research contributes to the field by extending the application of TAM3 in the O2O context, which remains underexplored. It offers practical implications for developers in designing simpler and more accessible digital platforms.**

***Index Terms*—GrabKios, online to offline, O2O, technology acceptance model 3, TAM 3.**

I. Introduction

The rapid growth of e-commerce in Indonesia has significantly transformed consumer shopping behaviors, particularly with the emergence of online-to-offline (O2O) transactions. In this model, consumers browse or select products online but complete their purchases offline by paying in physical stores, using cash-on-delivery, or picking up items directly from sellers [1], [2], [3]. Although digital platforms aim to provide seamless transactions, the persistent preference for offline payments highlights challenges related to consumer trust, technological readiness, and cultural attitudes toward digital shopping [1], [4], [5], [6].

Research indicates that security concerns, limited access to digital financial services, fear of fraud, and unfamiliarity with online transactions are key drivers of this behaviour [7], [8]. In Indonesia, O2O adoption is further shaped by uneven digital infrastructure, low financial literacy, and the predominance of cash usage, particularly in semi-urban and rural areas [9].

GrabKios, developed initially by PT Kudo Teknologi Indonesia in 2014 and later acquired by Grab, represents a leading O2O platform. It enables individuals, kiosk (warung) owners, and small businesses to access online marketplaces through local agents and pay with cash [4]. Beyond product purchases, the application offers services such as mobile credit top-ups and bill payments. Despite its potential, many kiosk operators face challenges related to ease of use. Interviews reveal that non-technical users often find the application difficult to navigate, which reduces long-term adoption.

The use of ICT is an option for micro, small, and medium enterprises (MSMEs) in running their businesses through e-commerce [10]. People who want to buy goods online but lack access can meet agents and pay in cash [11]. Conversely, agents can meet people and offer goods available on the GrabKios application. The GrabKios application is an Android-based application that can be downloaded and installed on Android-based mobile devices.

In addition to online goods transactions, the GrabKios application also offers credit top-up services and bill payments for various services, including electricity, insurance, home telephone, and others. Transactions are primarily carried out by self-employed users who sell or operate kiosks. The number of transactions made per day is a result of components that influence clients to use the GrabKios application.

In the case of the GrabKios app, stall managers face several challenges, particularly concerning ease of use. Interviews with app users, particularly those with non-technical backgrounds, revealed that they found it difficult to access and utilize the app's features. This case resulted in low effectiveness and

Received: 12 July 2025; Revised: 17 August 2025; Accepted: 1 September 2025.
*Corresponding author

[1]Elwin Jusuf Togatorop, Perbanas Institute, Jakarta, Indonesia (e-mail: elwin.jusuf26@perbanas.id).
[2]Mardiana Purwaningsih, Perbanas Institute, Jakarta, Indonesia (e-mail: mardiana@perbanas.id).

long-term usage. Recognizing this, the developer has focused on improving both performance and interface design to make the app better suited to the needs and abilities of its target users.

To enhance an app's performance and effectiveness, a systematic, evidence-based approach is critical [1], [2], [12]. Understanding the current situation and the specific challenges faced by users requires a thorough examination of the factors that influence app usage. This analysis helps identify not only usability issues but also hidden barriers to adoption and sustained use.

A clear understanding of these factors allows designers to make informed and strategic decisions during the development process [13]. Designers must consider a wide range of psychological, technical, and experiential elements, such as user perceptions, output quality, control, self-confidence, cognitive discomfort, enjoyment, convenience, ease of use, usage duration, and actual usage [1]. This type of analysis is essential for understanding the factors that influence how GrabKios app operators perform tasks like purchasing and handling down payments. The insights gained from this analysis will help clarify adoption barriers and guide the creation of a user-centric application tailored to the characteristics and needs of its target users [14].

The determinants of technology adoption and user behaviour have been accommodated in several theoretical models. The most influential model is the Technology Acceptance Model (TAM) [15], [16], [17] and some of the newest models—TAM 2 [18], and also TAM 3 [19]. By identifying perceived usefulness and perceived ease of use as the primary predictors of behavioral intention, the original TAM [20] laid the groundwork for understanding user acceptability. TAM was initially derived from the Theory of Reasoned Action proposed by Fishbein and Ajzen in 1980. TAM has two main factors for recognizing any information system or technology: perceived usefulness and perceived ease of use.

Although TAM has become the most widely applied model for adoption research, this early framework has been criticized for its explanatory limitations. TAM fails to capture the broader spectrum of adoption variables from psychological, social, and contextual perspectives that also influence technology adoption in the real world. To address these limitations, TAM 2 and particularly TAM 3 were developed as more comprehensive models. The position of TAM 3 in this study is emphasized by showing that, compared to previous models (TAM and TAM 2), which focus on fundamental factors of technology acceptance, TAM 3 offers more in-depth variables such as experience and facilitating conditions. However, in the context of O2O platforms, this topic remains relatively underexplored, thereby opening up opportunities for further research.

A more comprehensive understanding of user behaviour is made possible by TAM 3's incorporation of a broader range of categories, including subjective norm, perceived enjoyment, computer apprehension, computer self-efficacy, and previous user experience [19]. This model bridges individual cognitive perceptions with environmental and social influences, thereby enhancing its applicability across diverse user groups and technological contexts. Through its key elements—perceived ease of use, perceived usefulness, behavioural intention, and usage behaviour—TAM 3 offers a reliable and thoroughly investigated paradigm for comprehending user acceptance and ongoing O2O platform utilization.

Previous research on O2O applications in Indonesia, such as studies by [12], [21], has primarily used TAM to analyze user behavior. While TAM is effective in identifying the core factors influencing technology adoption—especially perceived ease of use and perceived usefulness—it only partially addresses the complexities of dynamic and evolving digital environments, such as O2O platforms.

To address these gaps, the extended version of TAM, known as TAM 3 [19], adds new factors, including output quality and external control. Despite its broader approach, TAM 3 has not been widely applied to O2O platforms in empirical studies. Much of the existing research using TAM 3 focuses on general e-commerce [22], [23], without considering the unique combination of online and offline interactions and trust dynamics inherent to O2O systems.

The above-mentioned case presents a clear gap in the research, offering an opportunity to apply TAM 3 to O2O platforms, where digital engagement is closely intertwined with offline activities. By utilizing TAM 3, this research aims to comprehensively examine the factors influencing O2O platform usage, particularly in Indonesia, where digital transformation intersects with diverse infrastructure, varying trust levels, and differing user readiness [24].

Given the varied and complex user characteristics among GrabKios operators, many of whom have limited technological experience, TAM 3 serves as the primary analytical framework in this study. Its comprehensive structure is well-suited to examining the various factors that influence app usage, enabling a deeper exploration of the cognitive, emotional, and contextual aspects that shape user interactions with the GrabKios system.

This research extends the application of TAM 3 to the context of online-to-offline (O2O) platforms, a relatively underexplored area. For O2O app developers like GrabKios, these findings offer valuable insights into simplifying interface design, reducing feature complexity, and enhancing user experience, thereby encouraging broader adoption and sustained use of the app.

II. Related Work

A variety of interconnected factors influence the adoption and utilization of mobile applications. Numerous studies have examined how these elements interact, aiming to uncover the dynamics behind user adoption and continued usage behavior [12], [25], [26]. Findings from previous research on technology adoption have highlighted two crucial factors: perceived usefulness and perceived ease of use. Building on these foundational studies, researchers have developed models that combine these factors into unified theoretical frameworks. These models not only explain user behavior but also inform future research and aid in the design of more user-friendly mobile applications.

A. Output Quality

Output quality refers to users' confidence in the

Applied Information System and Management (AISM)
Volume 8, (2) 2025, p. 333–340
P-ISSN: 2621-2536; E-ISSN: 2621-2544; DOI: 10.15408/aism.v8i2.46688

technology's ability to deliver good results in their work [19]. It is about how users perceive the system's ability to perform tasks with high-quality outcomes. "Users benefit from the system when it produces good results" [27]. In other words, output quality is crucial when evaluating the usefulness of a system or technology in supporting one's work. If customers experience good results from using the GrabKios app, they are more likely to view it as applicable.

B. External Control

External control refers to a person's belief or perspective about the availability of resources or support for using technology [19]. It specifically refers to how people view behavioral control, which encompasses available resources and technology. External control is crucial when implementing a new system, as the right resources can facilitate its effective use by people. With proper support, users feel more confident and can overcome challenges that may arise. When the conditions supporting technology use are met, ease of use is expected to improve.

C. Perceived Ease of Use and Usefulness

Convenience refers to the perception that using technology is natural and straightforward [18]. The ease of use perspective, conversely, refers to the belief that using technology enhances one's ability and efficiency. In its development, research by [28] found a noteworthy relationship between the convenience and comfort perspectives. When clients perceive ease in using technology, they also tend to recognize its benefits in facilitating their tasks. Stated differently, the convenience perspective contributes to increased comfort since consumers will consider technology a valuable tool if they find it easy to use. The convenience perspective has become a key factor in influencing users' perceptions of the value of technology.

One of the main factors encouraging customers to use technology is convenience. People are more inclined to stick with technology if they think it is simple to use [18]. If clients believe the technology is user-friendly, they can complete their work faster. It also familiarizes clients with technology use, as they recognize over time that they can accomplish more tasks with it than without it. Additionally, the study found that a user's behavioral intention to use technology for an e-commerce platform is influenced by the perceived ease of use [12].

A person's intention to use technology is also influenced by their perception of convenience [18]. Customers are more willing to embrace technology if the e-commerce platform is very user-friendly. To reinforce openness to technology use, announcements are usually made regarding its usage and benefits. Such announcements can be delivered through notifications or outreach to potential clients, as GrabKios has done to encourage the adoption of its application.

In the context of TAM 3's application in ERP adoption among Small and Medium Enterprises (SMEs), perceived ease of use and perceived usefulness have a significant influence on behavioral intention [29]. Therefore, the ease of use of a system increases users' intention to adopt it and directly influences how they use it.

D. Behavioral Intention and Use Behavior

Intention is a state in which someone wants to carry out a specific activity. User intention is the primary driver of actual technology usage. When a client believes that a technology will benefit them, they develop the intention to adopt it [29]. Socialization is carried out to introduce the GrabKios application, and by promoting its benefits, the public will begin to consider using the application, which in turn fosters intention and ultimately leads to actual usage.

The limited literature on the application of TAM 3 is evident in the lack of studies specifically examining technology adoption in the context of SMEs. Most previous studies adopting this model still focus on e-commerce in general and have not explored the online-to-offline (O2O) phenomenon in depth. Therefore, the variables used in this study are partly constructed from previous findings but adapted to the characteristics of O2O. This study aims to fill this gap by utilizing the TAM 3 framework to understand the factors influencing the adoption of O2O platforms among e-commerce players, most of whom are SMEs.

III. RESEARCH METHOD

A. Data Collection

Data collection was conducted through the distribution of questionnaires. The statements used to measure O2O adoption factors based on TAM 3 were adapted from [18]. All statements were rated on a 5-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Demographic questions were also included to identify respondents' gender, age, education, place of residence, and experience.

Before the questionnaire was distributed, three potential respondents were selected to represent demographic groups and to conduct a readability test. The readability test was intended to ensure that all statements were understood consistently by all potential respondents. The indicators used to measure each variable are taken from several previous studies.

Through purposive sampling, respondents were selected from among users of the GrabKios application. The criteria for respondents were GrabKios users who had used the application for at least three months. Data were collected through surveys administered both online and in person to ensure diverse participation.

B. Data Analysis

The study's hypotheses were tested using a quantitative approach, which emphasizes the use of quantifiable data to produce unbiased conclusions. At its core, this research adopts

a positivist paradigm, utilizing numerical data to examine patterns and relationships, thereby facilitating broader generalizations.

The data were analyzed using SPSS software, chosen for its capability to manage complex statistical tasks and its efficiency in hypothesis testing. The analysis proceeded through several key stages, starting with data cleaning and validation to ensure the completeness and consistency of the 105 valid responses. Descriptive statistics were first used to summarize demographic details and general response trends. Cronbach's Alpha reliability testing was then applied to evaluate the internal consistency of each construct. The measurement tools were found to be reliable, and all variables satisfied appropriate reliability thresholds [30].

Multiple linear regression was then employed to test the hypotheses, following inferential analyses such as correlation analysis to examine relationships between variables. Simple path analysis was also applied to examine the relationships between variables in the path model. Throughout the analysis, significance levels (p-values) and standardized coefficients (β) were used to interpret statistical support for each hypothesis. The validity and reliability of the research findings are enhanced by the use of SPSS, ensuring a structured and comprehensive data analysis process.

C. Model Development

The O2O platform acceptance model, utilizing the TAM 3 approach, is illustrated in the conceptual model (Figure 1).

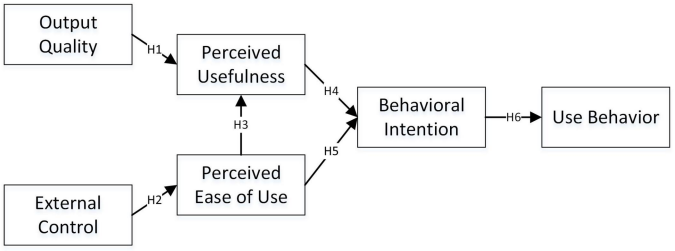

Fig.1. Conceptual model [19].

The hypotheses tested are as follows:

- H1: Output quality influences the perceived usefulness of the GrabKios platform.
- H2: External control influences the perceived ease of use of the GrabKios platform.
- H3: Perceived ease of use influences the perceived usefulness of the GrabKios platform.
- H4: Perceived ease of use influences the behavioral intention to use the GrabKios platform.
- H5: Perceived usefulness influences the behavioral intention to use the GrabKios platform.
- H6: Behavioral intention influences the use behavior of the GrabKios platform.

Figure 1 presents the conceptual model of the research, which includes the formulation of the hypothesis.

IV. RESULT

Of the 110 questionnaires distributed to GrabKios app users, 108 were returned, yielding a high response rate. However, upon review, three responses were found to be incomplete and were excluded from the analysis. Consequently, 105 valid responses were retained for statistical analysis. These responses served as the data for examining the proposed model and hypotheses. The respondents' characteristics—namely age, gender, education level, and duration of app use—are presented in Table 1. This demographic information provides context for interpreting the results and understanding user behavior across different segments.

Table 1.
Respondent Demographics

Classification	Details	Amount	%
Gender	Man	73	69,52
	Woman	32	30,48
Age	20–25 y/o	30	28,57
	26–30 y/o	38	36,19
	31–35 y/o	15	14,29
	36–40 y/o	7	6,67
	41–45 y/o	5	4,76
	46–50 y/o	8	7,62
	51–55 y/o	2	1,90
Education	High school	10	9,52
	Diploma	23	21,90
	Bachelor	72	68,57
Occupation	Student	5	4,76
	Private employee	80	76,19
	PNS employees	4	3,81
	Non-PNS Employees	1	0,95
	Nurse	1	0,95
	Self-employed	14	13,33
Duration of application usage	3-12 months	26	24,76
	1–2 years	39	37,14
	3–4 years	32	30.48
	> 5 years	8	7,62

Most respondents were male (69.52%, n = 73), indicating a male-dominated user base, which may reflect a gender-related trend in GrabKios adoption. Based on age distribution, the largest group was between 26 and 30 years old, showing that the app is primarily used by individuals in their twenties and early thirties. Regarding education, the majority held a bachelor's degree (68.57%, n = 72).

The occupational breakdown suggests that GrabKios is mainly used by private-sector professionals. In terms of usage duration, 37.14% of respondents (n = 39) had used the app for 1–2 years, followed by 30.48% (n = 32) for 3–4 years, and 24.76% (n = 26) for 3–12 months. Only 7.62% (n = 8) reported usage longer than 5 years. This distribution indicates a moderate level of user experience, with most respondents having sufficient exposure to provide reliable feedback on usability and features.

A. Validity Test

To assess the validity of the survey items, a Pearson Bivariate Correlation test was conducted using IBM SPSS v.20. An indicator is considered valid if its *r-count* value exceeds its *r-table* value. Based on the results, all indicators used as research instruments were deemed valid.

Applied Information System and Management (AISM)
Volume 8, (2) 2025, p. 333–340
P-ISSN: 2621-2536; E-ISSN: 2621-2544; DOI: 10.15408/aism.v8i2.46688

B. Reliability Test

Reliability testing was conducted using Cronbach's Alpha. A variable is considered reliable if its Cronbach's Alpha value exceeds 0.60. According to the results, all variables demonstrated acceptable reliability (Table 2).

Table 2.
Reliability Test Results

Variable	Cronbach's Alpha
Output Quality (OQ)	0,765
External Control (EC)	0,650
Perceived Ease of Use (PEOU)	0,604
Perceived Usefulness (PU)	0,640
Behavioral Intention (BI)	0,752
Usage Behavior (UB)	0,829

C. Normality Test

The normality test is a key prerequisite for parametric analysis, as it requires data to be normally distributed. This test determines whether the dataset follows a normal distribution, which guides the choice between parametric and non-parametric methods. A variable is considered normally distributed if its Standard Deviation Is Approximately Equal to Its Mean. Sig. (2-tailed) value exceeds 0.05. The results confirm that all variables met the normality assumption (Table 3).

Table 3.
Normality Test

Variable	Asym. Sig (2-tailed)
Output Quality (OQ)	0,212
External Control (EC)	0,600
Perceived Ease of Use (PEOU)	0,182
Perceived Usefulness (PU)	0,577
Behavioral Intention (BI)	0,282
Usage Behavior (UB)	0,621

D. Model Consistency Test

The F-test was first conducted to examine model consistency. A variable has a significant effect if the P-value is Significant. Value is less than 0.05. Following the F-test, the R-squared test was conducted to evaluate the explanatory power. Results are presented in Table 4.

Table 4.
F and R-Square Tests Results

Variable	Mean Square	F	Sig.	R Square	Adjusted R Square
OQ → PU	1.700	41.911	.000b	.289	.282
EC → PEOU	.739	14.384	.000b	.123	.114
PEOU → PU	1.200	26.415	.000b	.204	.196
PEOU → BI	.004	.057	.812b	.001	-.009
PU → BI	.016	.228	.634b	.002	-.007
BI → UB	2.356	32.907	.000b	.492a	.242

In the F-test, OQ → PU, EC → PEOU, and PEOU → PU, the calculated F-value (Sig.) is 0.000. This value is smaller than the significance level of 0.05. It can be concluded that the OQ variable affects the PU variable, the EC variable influences the PEOU variable, and the PEOU variable, in turn, impacts the PU variable. Additionally, in the PEOU → BI test, the calculated F value (Sig.) is 0.812, which is greater than the significance level of 0.05. Therefore, it can be concluded that the PEOU variable does not affect the BI variable. In the PU → BI test, the calculated F value (Sig.) is 0.634, which is also greater than the significance level of 0.05. It follows that the PU variable impacts the BI variable. Finally, for the BI → UB test, the calculated F value (Sig.).

Meanwhile, in the R-Square Test, for the OQ → PU model, the R-square value, or the proportion of the OQ variable's influence on the PU variable, is 0.289, or 28.9%. Other variables influence the remaining 71.1%. For the EC → PEOU model, the R-square value, or the proportion of the influence of the EC variable on the PEOU variable, is 0.123, or 12.3%. Other variables influence the remaining 87.7%.

In the third model, PEOU → PU, the R-squared value, or the proportion of the PEOU variable's influence on the PU variable, is 0.204. 20.4% while other variables influence the remaining 79.6%. Testing the PEOU → BI model, the R-square value, or the proportion of the PEOU variable's influence on the BI variable, is 0.001, or 0.1%. Other variables influence the remaining 99.9%. The next model, PU → BI, has an R-square value of 0.002, or 0.2%, indicating that the PU variable accounts for a small proportion of the influence on the behavioural intention variable. In comparison, the remaining variables collectively account for the remaining 0.2%. Furthermore, the R-squared value, which represents the proportion of the influence of the Behavioral Intention variable on the usage behavior variable, is 0.242, or 24.2%. In comparison, the other variables account for the remaining 75.8%.

E. Hypothesis Testing

A hypothesis is considered significant if the t-value exceeds 1.660 and the P-value is Less than 0.05. value is below 0.05. Of the six hypotheses tested, five were supported while one (PU → BI) was not. Complete results are shown in Table 5.

V. Discussion

A. Output Quality Influences Perceived Usefulness

Output quality is a TAM variable that reflects a person's belief that technology will deliver good results and assist in their work. Depending on the type of technology, output quality can be measured in different ways. For example, if the technology is a computer program, output quality may be associated with factors such as correctness, consistency, usability, user interface, or efficiency. If the technology is a physical product, output quality may include durability, appearance, and overall superiority. These attributes not only influence user satisfaction but also shape perceptions of the application's usefulness in fulfilling its intended purpose.

The findings indicate that output quality has a significant impact on perceived usefulness. The output quality variable has a t-count greater than the t-table (3.882 > 1.660) and a significance value below 0.05 (0.000 < 0.05). Based on this, H1 is accepted, proving that perceived usefulness is influenced by output quality. Several respondents reported using GrabKios because of its convenience and the quality of its results. These findings support previous research indicating that output quality can be observed through the benefits provided by technology [23]. They also align with empirical studies showing that reducing complexity and improving user interface design significantly increase perceived usefulness [19].

These results also support empirical evidence showing that reducing complexity and improving user interface design significantly improve perceived system utility. In the context of GrabKios, this confirms that ease of use not only influences operational convenience but also acts as a catalyst in shaping user confidence in the app's ability to support their business activities practically and efficiently.

Output quality significantly influences perceived usefulness in the online-to-offline (O2O) context, as the quality of the results produced by an application directly impacts users' perceptions of the value and benefits of the technology. On O2O platforms like GrabKios, output quality includes transaction accuracy, processing speed, and the reliability of information provided to agents or kiosk owners. When users perceive that an application can provide accurate, fast, and reliable results, they are more likely to view the application as a handy tool to support their operations and improve their business efficiency.

In the context of GrabKios, this suggests that usability enhancements not only improve user satisfaction but also reinforce the belief that the application delivers tangible benefits in managing transactions or business operations. Consequently, developers and decision-makers should prioritize simplicity and intuitive design in application development, as these aspects not only lower user resistance but also strengthen users' perceived value of the application—ultimately supporting greater adoption and continued usage. In the end, this approach not only increases the number of new users but also ensures that existing users remain loyal and actively use the application in the long term.

B. Perceived Ease of Use Influences Behavioral Intention of Grabkios Application

Perceived ease of use has a direct impact on behavioral intention. A person's intention to use technology often arises from the convenience it provides. The results show that the ease of use variable has a t-count greater than the t-table (5.164 > 1.660) and a significance value below 0.05 (0.000 < 0.05). Thus, H4 is accepted, confirming that behavioral intention is significantly influenced by ease of use.

These findings are consistent with earlier research [12], [23], which found that the intention to continue using technology is strongly influenced by its simplicity of use. Empirical support for this relationship has been widely documented across mobile applications and digital platforms. In the case of GrabKios, the more intuitive and user-friendly the application is perceived to be, the more likely users are to integrate it into their business processes.

This case highlights the strategic importance of user-centred design and interface simplicity, particularly in O2O platforms where digital literacy levels vary. For kiosk owners and small businesses, simple navigation, clear features, and accessible design reduce psychological and technical barriers, ultimately fostering long-term engagement and adoption.

C. Perceived usefulness has a significant effect on the Behavioral Intention of the Grabkios Application

An individual's decision to use technology often depends on the benefits it offers. However, the results indicate that perceived usefulness does not have a significant effect on behavioral intention. H5 is therefore rejected. This result suggests that convenience and perceived benefits do not strongly determine whether users intend to continue using GrabKios.

These results are consistent with prior studies [23], which also found that behavioral intention is not always significantly influenced by perceived usefulness. They suggest that users may understand the long-term benefits of an application, but do not consider those benefits as the sole motivation for continued usage. This result differs slightly from findings by [31], which showed that satisfaction with O2O applications was influenced by perceived usefulness.

In the context of GrabKios, most users are kiosk owners and small businesses. Their adoption decisions may be driven more

Table 5.
Hypothesis Testing Results

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Result
	B	Std. Error	Beta			
1 OQ → PU	12.532	1.703	.357	7.358	.000	Significant
	.326	.084		3.882	.000	
2 EC → PEOU	10.924	2.129	.352	5.132	.000	Significant
	.411	.108		3.819	.000	
3 EC → PEOU	13.862	1.720	.289	8.059	.000	Significant
	.276	.090		3.066	.003	
4 PEOU → BI	-9.140E	.021	.454	.000	1.000	Significant
	.447	.087		5.164	.000	
5 PU → BI	20.648	2.273	.009	9.083	.000	Not Significant
	.011	.118		.092	.927	
6 BI → UB	8.349	2.050	.501	4.072	.000	Significant
	.573	.098		5.870	.000	

Applied Information System and Management (AISM)
Volume 8, (2) 2025, p. 333–340
P-ISSN: 2621-2536; E-ISSN: 2621-2544; DOI: 10.15408/aism.v8i2.46688

by operational convenience, trust in agents, or habitual reliance on cash transactions than by the perceived benefits of the app itself. This case explains why perceived usefulness alone does not significantly motivate ongoing use.

D. Behavioral Intention Influences Usage Behavior of the Grabkios Application

Behavioral Intention has a strong influence on actual usage behavior. The test results indicate that behavioral intention has a t-count greater than the t-table (5.870 > 1.660) and a significance value below 0.05 (0.000 < 0.05). This result confirms that H6 is accepted: usage behavior is significantly influenced by behavioral intention.

These findings align with studies by [12], [23], [32], which concluded that behavioral intention strongly shapes actual technology use. The stronger the intention to continue using an application—driven by either benefits or convenience—the higher the likelihood of consistent system usage.

In the case of GrabKios, most users are shop owners or small businesses who rely on the app to simplify ordering and manage inventory. When they feel confident and committed to using the platform, this is reflected in consistent behaviors such as placing regular orders, exploring new features, and integrating the app into their daily business processes.

VI. CONCLUSION

The analysis results regarding the application and the variables influencing GrabKios usage show that five hypotheses are accepted, while one is rejected. Within the TAM 3 framework, this outcome can be explained through two perspectives.

First, behavioral intention is no longer primarily determined by perceived usefulness, especially when barriers in perceived ease of use remain high. This result indicates that although consumers acknowledge the app's value, their inability to use it effectively serves as a significant deterrent.

Second, the weak influence of perceived usefulness (PU) on behavioral intention (BI) may also be attributed to the role of mediating or moderating variables in TAM 3, such as subjective norms, image, or output quality, which may not be fully present in the target user context. For example, suppose the application has not yet gained sufficient social recognition or demonstrated tangible benefits in daily business practices. In that case, its perceived usefulness may not be strong enough to trigger consistent usage intentions. This rejection emphasizes the need for a more comprehensive approach to application development—one that focuses not only on functional benefits but also on usability, convenience, and contextual adaptation based on end-user characteristics.

This finding reinforces a central premise of TAM 3: behavioral intention is a direct predictor of actual behavior. Therefore, developers must continuously improve factors that strengthen positive user intentions, such as ease of access, system reliability, and customer support services. Practically, this study contributes insights for O2O application developers—such as GrabKios—in designing simpler, more intuitive interfaces that cater to users with limited technological backgrounds.

This study, however, has several limitations that provide directions for future research. First, the focus remains on key TAM 3 constructs and does not yet explore other potential mediating or moderating factors such as subjective norms, user experience, or social influence. Second, the study context is limited to shop owners and small business managers, which may reduce generalizability to other user groups. Third, the reliance on perception-based questionnaire data does not fully capture users' direct experiential interactions with the application.

Based on these limitations, future research is recommended to adopt a more comprehensive strategy for information system development. This study incorporates additional TAM 3 elements, including computer self-efficacy, output quality, and facilitating conditions. Moreover, further studies should investigate the role of mediating or moderating variables that may strengthen the relationship between PU and BI, and complement survey methods with field experiments that directly capture user experience. Finally, interventions should incorporate training programs, technical assistance, and initiatives to enhance digital literacy, all of which can improve computer self-efficacy—a factor proven to positively influence perceived ease of use and intention to use technology consistently.

REFERENCES

[1] Y. Li, P. Yao, S. Osman, N. Zainudin, and M. F. Sabri, "A thematic review on using food delivery services during the pandemic: insights for the post-COVID-19 era," *Int. J. Environ. Res. Public Health*, vol. 19, no. 22, Art. no. 15267, 2022, doi: 10.3390/ijerph192215267.

[2] P. Yao, S. Osman, M. F. Sabri, and N. Zainudin, "Consumer behavior in online-to-offline (O2O) commerce: A thematic review," *Sustain.*, vol. 14, no. 13, Art. no. 7842, 2022, doi: 10.3390/su14137842.

[3] A. S. Mahapatra, S. Sengupta, A. Dasgupta, B. Sarkar, and R. T. Goswami, "What is the impact of demand patterns on integrated online-offline and buy-online-pickup in-store (BOPS) retail in a smart supply chain management?," *J. Retail. Consum. Serv.*, vol. 82, no. August 2024, Article 104093, 2025, doi: 10.1016/j.jretconser.2024.104093.

[4] P. T. Y. Lee, F. E, and M. Chau, "Defining online to offline (O2O): a systematic approach to defining an emerging business model," *Internet Res.*, vol. 32, no. 5, pp. 1453–1495, 2022, doi: 10.1108/INTR-10-2020-0563.

[5] H. Wan, M. Q. Mei, J. Yan, J. Xiong, and L. Wang, "How does apology matter? Responding to negative customer reviews on online-to-offline platforms," *Electronic Commerce Research and Applications*, vol. 61, Art. no. 101291, Jul. 2023, doi: 10.1016/j.elerap.2023.101291.

[6] Y. Yang, Y. Gong, L. P. W. Land, and T. Chesney, "Understanding the effects of physical experience and information integration on consumer use of online to offline commerce," *Int. J. Inf. Manage.*, vol. 51, no. April, Art. no. 102046, 2020, doi: 10.1016/j.ijinfomgt.2019.102046.

[7] C. C. Dinulescu, L. L. Visinescu, V. R. Prybutok, and M. Sivitanides, "Customer relationships, privacy, and security in social commerce," *J. Comput. Inf. Syst.*, vol. 62, no. 3, pp. 642–654, 2022, doi: 10.1080/08874417.2021.1975172.

[8] Z. Wu, S. Shen, H. Zhou, H. Li, C. Lu, and D. Zou, "An effective

approach for the protection of user commodity viewing privacy in e-commerce website," *Knowledge-Based Syst.*, vol. 220, Art. no. 106952, 2021, doi: 10.1016/j.knosys.2021.106952.

[9] J. S. Lopus, D. S. Amidjono, and P. W. Grimes, "Improving financial literacy of the poor and vulnerable in Indonesia: An empirical analysis," *Int. Rev. Econ. Educ.*, vol. 32, no. June, Art. no. 100168, 2019, doi: 10.1016/j.iree.2019.100168.

[10] Y. Religia, M. Ekhsan, M. Huda, and A. D. Fitriyanto, "TOE framework for e-commerce adoption by MSMEs during the COVID-19 pandemic: Can Trust Moderate?," *Appl. Inf. Syst. Manag.*, vol. 6, no. 1, pp. 47–54, 2023, doi: 10.15408/aism.v6i1.30954.

[11] S. H. Liao, R. Widowati, and P. N. My Linh, "Delivery service and omni-channel online and offline in retailing during the Covid-19 pandemic," *SAGE Open*, vol. 14, no. 4, pp. 1–19, 2024, doi: 10.1177/21582440241305047.

[12] R. E. Riantini, Vional, and Aries, "Adoption of e-commerce online to offline with technology acceptance model (TAM) approach," *2018 4th Int. Conf. Comput. Inf. Sci. Revolutionizing Digit. Landsc. Sustain. Smart Soc. ICCOINS 2018 - Proc.*, no. August 2018, 2018, doi: 10.1109/ICCOINS.2018.8510613.

[13] P. Yao, M. F. Sabri, S. Osman, N. Zainudin, and Y. Li, "Consumers' continued intention to use online-to-offline (O2O) services in omnichannel retail: Differences between to-shop and to-home models," *Sustain.*, vol. 15, no. 2, Art. no. 945, 2023, doi: 10.3390/su15020945.

[14] A. H. P. K. Putra, "Learning from the past bridging digital and physical markets: A guidelines for future research agenda of online-to-offline (O2O) marketing strategy," *Int. Rev. Manag. Mark.*, vol. 14, no. 3, pp. 82–96, 2024, doi: 10.32479/irmm.16145.

[15] F. D. Davis and V. Venkatesh, "A critical assessment of potential measurement biases in the technology acceptance model: Three experiments," *Int. J. Hum. Comput. Stud.*, vol. 45, no. 1, pp. 19–45, 1996, doi: 10.1006/ijhc.1996.0040.

[16] M. T. N. Hidayat, T. Hariguna, and D. I. S. Saputra, "Assessing the acceptance and trust in student information systems through a modified TAM perspective," *Appl. Inf. Syst. Manag.*, vol. 8, no. 1, pp. 95–102, 2025, doi: 10.15408/aism.v8i1.42324.

[17] A. Susanto, Q. Aini, and A. Fitriyani, "Integrasi model: Uji empiris keberhasilan perdagangan elektronik berbasis individu (C2C e-commerce)," *Appl. Inf. Syst. Manag.*, vol. 6, no. 1, pp. 29–38, 2023, doi: 10.15408/aism.v6i1.25383.

[18] V. Venkatesh and F. D. Davis, "A theoretical extension of the technology acceptance model: Four longitudinal field studies University of Maryland at College Park," *Manage. Sci.*, vol. 46, no. 2, pp. 186–204, 2003.

[19] V. Venkatesh and H. Bala, "Technology acceptance model 3 and a research agenda on interventions," *Decis. Sci.*, vol. 39, no. 2, pp. 273–315, 2008.

[20] F. D. Davis, "A technology acceptance model for empirically testing new end-user information systems: Theory and results," Ph.D Dissertation, Massachusetts Institute of Technology, 1986. [Online]. Available: http://hdl.handle.net/1721.1/15192

[21] S. Saribut, "Moderating effects of generation Y's online-to-offline e-commerce (O2O e-commerce) shopping experience," *Indian J. Mark.*, vol. 52, no. 8, pp. 8–25, 2022, doi: 10.17010/ijom/2022/v52/i8/171221.

[22] M. G. Salimon, O. Kareem, S. S. M. Mokhtar, O. A. Aliyu, J. A. Bamgbade, and A. Q. Adeleke, "Malaysian SMEs m-commerce adoption: TAM 3, UTAUT 2 and TOE approach," *J. Sci. Technol. Policy Manag.*, vol. 14, no. 1, pp. 98–126, 2023, doi: 10.1108/JSTPM-06-2019-0060.

[23] A. Zakaria, "Analisis penerimaan dashboard monitoring pendataan sensus penduduk 2020 provinsi nusa tenggara barat menggunakan technology acceptance model," *JSiI (Jurnal Sist. Informasi)*, vol. 8, no. 2, pp. 128–136, 2021, doi: 10.30656/jsii.v8i2.3525.

[24] L. Xiao, Y. Zhang, and B. Fu, "Exploring the moderators and causal process of trust transfer in online-to-offline commerce," *J. Bus. Res.*, vol. 98, no. February, pp. 214–226, 2019, doi: 10.1016/j.jbusres.2019.01.069.

[25] J. K. Chen, "The influence of behavioural intention on third-party e-commerce payment," *South African J. Econ. Manag. Sci.*, vol. 21, no. 1, pp. 1–9, 2018, doi: 10.4102/sajems.v21i1.2157.

[26] K. Seo and T. Roh, "Online and offline delivery qualities: O2O satisfaction and loyalty through technology acceptance model," *Journal of Retailing and Consumer Services*, vol. 82, Art. no. 104079, Sep. 2024, doi: 10.1016/j.jretconser.2024.104079..

[27] O. S. Sinaga, F. K. Marpaung, R. S. Dewi, and A. Sudirman, "Kontribusi perceived usefulness, perceived ease of use dan perceived security terhadap behavioral intention to use aplikasi JAKET," *Insight Manag. J.*, vol. 1, no. 3, pp. 86–94, 2021, doi: 10.47065/imj.v1i3.71.

[28] M. R. Julianto and B. Daniawan, "E-commerce information system using technology acceptance model approach," *Jurnal TAM (Technology Acceptance Model)*, vol. 13, no. 1, pp. 1–8, Jul. 2022, doi: 10.56327/jurnaltam.v13i1.1106..

[29] T. Siregar, W. Puspitasari, and M. Saputra, "ERP in indonesia SMEs: a study for post implementation evaluation from user's perspective acceptance," in *9th International Conference on ICT for Smart Society: Recover Together, Recover Stronger and Smarter Smartization, Governance and Collaboration, ICISS 2022 - Proceeding*, IEEE, 2022, pp. 1–6. doi: 10.1109/ICISS55894.2022.9915088.

[30] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. 2017. doi: 10.1108/EBR-10-2013-0128.

[31] H. Y. Choi and S. S. Kim, "How is Satisfaction with Online-to-Offline App Formed? Importance of Confirmation Through Offline Experience," *SAGE Open*, vol. 12, no. 4, pp. 1–13, 2022, doi: 10.1177/21582440221134899.

[32] N. P. R. Parwati, L. Yupita, and L. Yupita, "User Acceptance Analysis of Danamas Peer To Peer Lending Services in Denpasar City," *J. TAM (Technology Accept. Model.*, vol. 13, no. 1, p. 64–71, 2022, doi: 10.56327/jurnaltam.v13i1.1221.