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Exploring the Barriers to Public Transport App Adoption Using Innovation Resistance Theory

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Abstract

Background: The adoption of digital solutions in public transportation has transformed mobility services worldwide. However, resistance to innovation remains a significant challenge, preventing the successful implementation of transport applications. Despite advancements in mobile technology and smart transit solutions, many users remain hesitant to adopt new applications due to various barriers, including information quality concerns.
Objective: This study aims to investigate the relationship between information quality and innovation resistance in the adoption of public transport applications. Utilizing the Innovation Resistance Theory (IRT), this research examines how different resistance factors impact the intention to use transport apps.
Methods: A mixed-methods approach was applied, consisting of a quantitative survey with 443 respondents from an urbanized region and analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM). Additionally, qualitative insights were gathered through interviews with 30 individuals, analyzed using content analysis.
Results: Findings indicate that information quality significantly reduces innovation resistance, facilitating the adoption of transport applications. Moreover, usage barriers, value barriers, and tradition barriers negatively affect users' intention to use transportation apps, while risk, image, and complexity barriers show no significant influence.
Conclusion: This study underscores the critical role of information quality in overcoming resistance to innovation in public transportation applications. The findings provide insights for app developers to enhance data accuracy and usability, as well as for policymakers to improve digital transportation services by addressing key resistance factors.

Keywords: Public Transport App, Innovation Resistance, M-Commerce, Intention to Use, Innovation Resistance Theory, Information Quality, PLS-SEM

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I. INTRODUCTION

The rapid urbanization of major cities has led to significant challenges such as traffic congestion, environmental pollution, and inefficiencies in transportation networks [1]. As a response, digital transportation applications have emerged as a solution to integrate various mobility services, improving accessibility and operational efficiency in urban transit systems [2], [3]. However, despite technological advancements, resistance to adopting digital transport solutions remains a critical barrier to their widespread implementation. The reluctance to embrace these applications stems from concerns regarding usability, perceived risks, and the complexity of the technology. Understanding the factors that contribute to this resistance is essential for developing more user-friendly and widely accepted transport solutions.

The adoption of public transport applications is influenced by multiple factors, including technological complexity, user perception, and information quality. Innovation Resistance Theory (IRT) provides a structured framework to understand the barriers that hinder users from embracing new transport technologies. Chen et al. [4] applied IRT to analyze barriers to mobile ticketing app adoption in Taiwan and found that all six IRT factors negatively affected user intention. However, this study was conducted outside Indonesia, making its findings potentially less relevant due to cultural and infrastructural differences. Indonesia, as a developing country, faces unique challenges in public transport digitalization such as limited infrastructure, fragmented transit systems, and uneven digital literacy among users [5].These conditions differ significantly from those in developed countries like Taiwan. Thus, applying IRT in the Indonesian context offers new insights into how innovation resistance manifests in emerging economies, especially in urban transportation ecosystems such as Jakarta. This study aims to bridge this gap by applying IRT in the context of

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Indonesian public transport applications. In the context of Indonesia, particularly Jakarta, the government has launched the JakLingko application as a digital platform to integrate various modes of public transportation, such as TransJakarta buses, MRT (Mass Rapid Transit), LRT (Light Rail Transit), and commuter lines. The app allows users to plan routes, view real-time transit schedules, and access cashless payments through an integrated QR system. Operating across the Greater Jakarta area (Jabodetabek, which includes Jakarta, Bogor, Depok, Tangerang, and Bekasi), JakLingko aims to unify fragmented transport services in the region. Despite its wide functionality, JakLingko has encountered adoption challenges, which makes it a relevant case for examining innovation resistance in urban mobility services in Indonesia.

One of the key determinants of user adoption is information quality, which influences innovation resistance [6]. Previous studies have produced mixed findings regarding the role of informativeness, a subset of information quality. Ram [7] found that informativeness can influence resistance to innovation, while studies by Tricahyono et al. [8] and Wijaya et al. [9] reported that informativeness had no significant effect on user adoption in Indonesia. Meanwhile, Cahyani et al. [10] demonstrated that information quality significantly impacts intention to use travel mobile apps in Indonesia. Despite these findings, research on the relationship between information quality and innovation resistance remains limited, particularly in the context of public transportation apps. Moreover, most studies examining innovation resistance have been conducted in different domains, such as e-health [11], mobile payment [12], and mobile wallets [13],rather than in public transportation applications. Given these gaps, this study seeks to extend the IRT framework by incorporating information quality as a factor influencing user resistance to transportation application, providing new insights into the barriers to adopting digital transportation services in Indonesia.

By applying the Innovation Resistance Theory (IRT) framework, this research seeks to analyze how resistance to innovation influences the adoption of public transport applications, with a particular focus on Information Quality (IQ) as a critical factor. Innovation resistance is categorized into Functional Barriers—comprising Usage Barrier (UB), Value Barrier (VB), and Risk Barrier (RB)—and Psychological Barriers, which include Tradition Barrier (TB), Image Barrier (IB), and Complexity Barrier (CB). This study focuses specifically on mobile-based public transportation applications in developing urban settings, with empirical data drawn from a large-scale multimodal integration initiative in Indonesia. A mixed-methods approach—combining PLS-SEM for quantitative analysis and content analysis for qualitative insights—is applied to examine how these resistance factors interact and how IQ may reduce their impact. The objective of this study is to investigate the extent to which each type of resistance barrier affects users' intention to adopt public transportation applications, and how information quality moderates or reduces these barriers. Understanding these resistance factors is crucial for enhancing digital mobility solutions, improving user experience, and fostering greater adoption of public transport applications. This research is important because it addresses an understudied area in digital mobility adoption within developing countries, where infrastructural and behavioral challenges can hinder the success of smart transportation initiatives. The findings of this study will provide actionable insights for developers, policymakers, and transport authorities to minimize resistance, build trust in digital mobility platforms, and support the seamless integration of smart transportation systems into urban mobility.

This study contributes to the academic literature by addressing gaps in the application of Innovation Resistance Theory (IRT) to public transport applications in developing countries. While prior research has explored innovation resistance in domains like mobile payments and e-health—mostly in developed nations—limited attention has been given to digital public transportation in emerging economies. Most existing IRT-based models emphasize functional or psychological barriers, but tend to overlook how information quality factors—such as accuracy, timeliness, and clarity—impact user resistance, particularly in time-sensitive applications like public transport. This study uses the case of JakLingko merely as a contextual lens to collect data. The contribution of this study lies not in the case study itself, but in the theoretical extension of the Innovation Resistance Theory (IRT) by integrating Information Quality (IQ) in the context of public transport app adoption in developing countries. By integrating Information Quality (IQ) into the IRT framework, the research extends theoretical understanding of how accuracy, reliability, and usability influence adoption behavior. These findings provide actionable insights not only for local app developers and policymakers but also for the global community seeking to design inclusive, context-aware digital mobility solutions.

II. Literature Review

A. Mobile Commerce and Public Transportation Applications

M-commerce is a development of e-commerce that allows users to wirelessly execute transactions and interact with businesses and other people without being restricted by time or place [14]. Over time, m-commerce has expanded into various forms, including financial services such as mobile stock trading, mobile banking and mobile ticketing for transportation and entertainment [15]. The worldwide adoption of m-commerce continues to increase [16], and the rapid increase in smartphone users and improved internet quality in Indonesia contribute to an increased reliance on

digital transactions in daily life [17]. This trend has created a more efficient, faster and seamless payment system, improving the overall digital transaction experience for consumers [18].

Major cities in Indonesia, which have more than 270 million people, face many transportation problems, including congestion, high vehicle emissions and energy consumption [19]. To tackle these challenges, the government has introduced various strategic measures aimed at enhancing the quality of public transportation services [20]. Public transportation encompasses passenger transport systems that are open and available for public use. Digital platforms were created and deployed to improve service efficiency and boost user convenience [21], [22].

B. Innovation Resistance Theory and Complexity Barrier

Innovation Resistance Theory (IRT) was first introduced by Ram [7] and addresses the phenomenon of consumer reluctance to try or use a new innovation, despite the fact that this innovation may provide tangible benefits. As stated by Ram and Sheth [23], this resistance creates two main types of barriers, which are functional and psychological. Functional barriers are related to an innovation's inability to satisfy user needs or expectations, while psychological barriers are based on humans' general aversion to change. These challenges together delay the adoption of new technologies because users tend to view the innovation as too complex or conflicting with their habitual modes of operation [23]. This understanding of the challenges can help in overcoming consumer resistance and enabling smooth adoption of any technological innovation.

The complex nature of a technology is significantly associated with innovation resistance as it creates more challenges for users to understand how it works or how it can be beneficial [24]. Graham [25] found varying levels of complexity results in varying adoption in socioeconomic groups. If users cannot easily find their way around an interface or its features, they'll likely give up on using it before ever experiencing its benefits [24]. This makes it essential to design technologies in an intuitive and user-friendly way, in order to increase adoption rates and reduce resistance. This is paramount for public transportation because the power of digital tools is increased by simplifying them.

C. Information Quality

The quality of information is defined as the accuracy and relevance of information that an information system produced in order to satisfy user needs [6]. Errors or missing information cause user dissatisfaction due to insufficient information [26]. On the other hand, systems that deliver comprehensive, relevant, and easily digestible information are more likely to enhance user satisfaction [27]. User satisfaction is often used as a key indicator of the success or failure of a system [28]. Therefore, information quality is a critical factor in the success of information systems, as it directly influences user satisfaction and perceived value.

D. Hypotheses Development and The Proposed Conceptual Model

This study adopts the Innovation Resistance Theory (IRT) by Ram and Sheth [23] to analyze factors influencing user resistance toward the JakLingko application, focusing on five barriers: usage, value, risk, tradition, and image. Additionally, it integrates the complexity barrier from Chung and Liang [24] to assess the impact of technological challenges on adoption. Given the limited research on antecedents of these barriers in Indonesia, this study incorporates *information quality* as a key predictor, inspired by Pitchay et al. [29], to better understand user resistance. Previous studies [12], [30] have highlighted the significance of these barriers in shaping user adoption behavior, yet their interactions remain underexplored in the context of public transport applications. The conceptual model in this study includes six independent variables from IRT along with *information quality*, with *intention to use* as the dependent variable. A total of 11 hypotheses are proposed to examine these relationships, aiming to provide a deeper understanding of the factors affecting the adoption of JakLingko. Fig. 1 illustrates the proposed theoretical framework based on the IRT model.

1) Information Quality

Information quality refers to the extent to which the information provided by a system meets user needs and possesses characteristics such as accuracy, timeliness, completeness, and relevance [31], [32]. High-quality information enables users to better understand and utilize services, ultimately influencing their perception of ease of use and usefulness of a system [33]. In the context of public transportation applications, clear and timely information about app features can reduce user uncertainty and enhance the overall user experience.

Usage barrier reflects the difficulties users face in learning and using a new system compared to an existing one [24]. If app information is unclear, incomplete, or inaccurate, users may have difficulty understanding its features and functions. This can increase their resistance to use [4]. Clear instructions and guidance, which make it easy for users

to adapt, can help overcome this problem [34]. Therefore, it is expected that better information quality will reduce perceived barriers to use. Based on these findings, the following hypothesis is proposed:

H1: Information Quality (IQ) has a negative significant influence towards Usage Barrier (UB)

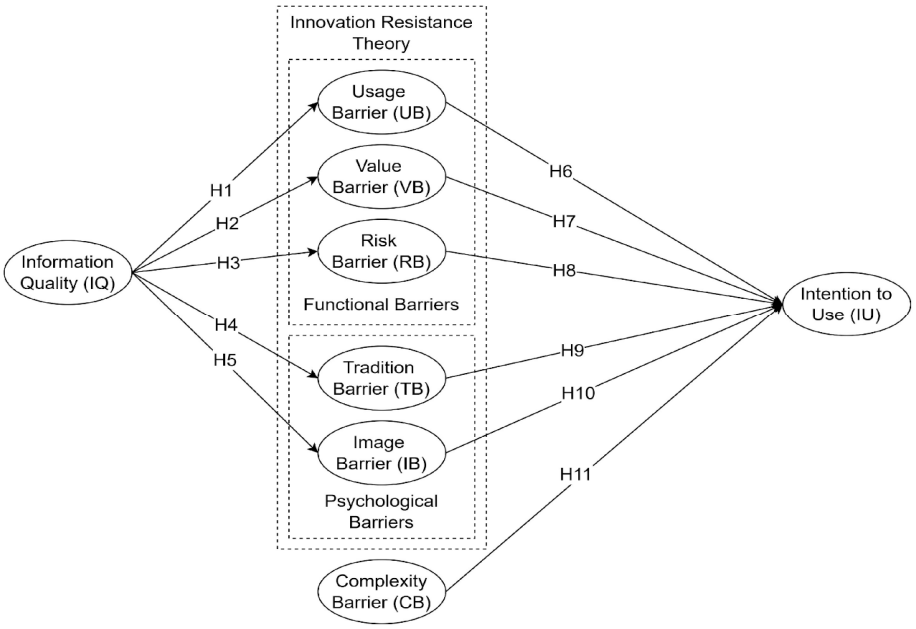

Fig. 1 Proposed Conceptual Model.

When users feel that the advantages of a new system are not enough to encourage them to use it, they face value barriers [35]. If they do not see significant value additions from existing applications, they may refuse to use new applications [36]. Reliable and well-structured information enhances the appeal of innovation by highlighting its benefits, including ease of use, efficiency, and cost-effectiveness [37]. By providing users with accurate details on how a system directly benefits their journey, users are more likely to be able to see its value, thus making perceived barriers to adoption seem comparatively lower. On the basis of such perception, the following hypothesis is suggested:

H2: Information Quality (IQ) has a negative significant influence towards Value Barrier (VB)

Risk barrier refers to concerns about harmful consequences that would result from adopting a new technology, such as security threats, financial risks, or adverse technical malfunctions [38]. Public transportation app users may encounter challenges like inaccurate ticketing, inconsistent real-time tracking, or privacy concerns. However, when users receive clear and reliable information regarding system dependability, security measures, and accessible customer support, they are more likely to feel confident in using the app [38]. Providing high-quality information can play a crucial role in alleviating these concerns [38]. The results lead to the following hypothesis:

H3: Information Quality (IQ) has a negative significant influence towards Risk Barrier (RB)

Customers prefer to maintain existing habits rather than try new things, which causes tradition problems [24]. Because they are already accustomed to the traditional system of public transportation, some users may be resistant to switching from conventional ticketing methods to app-based ticketing in the context of public transportation. Comprehensive and easy-to-understand information about the benefits of the new system, such as increased efficiency and seamless integration, can help change the way users see the world [39]. When users realize the practical benefits of the new system through high-quality information, their tradition barriers will decrease. The results lead to the following hypothesis:

H4: Information Quality (IQ) has a negative significant influence towards Tradition Barrier (TB)

Poor perceptions of goods, brands, or systems that may hinder adoption are called image barriers [40]. Users may perceive government-backed public transportation apps as inefficient or difficult to use. High-quality information can overcome this by providing clear and positive picture of the app, emphasizing its effectiveness, ease of use, and

successful case studies. High-quality information can help reduce image barriers and encourage adoption by addressing misconceptions and reinforcing a good reputation [41]. The results led to the following hypothesis:

H5: Information Quality (IQ) has a negative significant influence towards Image Barrier (IB)

2) Usage Barrier

If new innovations disrupt existing consumer habits, procedures or customs, then adaptation becomes difficult [24]. Leong et al. [13] also said that when a new innovation causes inconvenience of conflicts with existing habits, it becomes difficult to use. Therefore, major adjustments are required before it is accepted. As described by Rogers [42], these barriers are often associated with functional usability and complexity. It causes resistance due to the difficulty of understanding or using the innovation. Previous research has found a negative relationship between barriers to use and users' intention to adopt technology, indicating that high barriers to use reduce the likelihood of adoption [4], [12], [30]. In the context of public transportation applications, factors such as user-unfriendly interfaces of complicated processes may discourage users from adopting the technology. Based on these findings, the proposed hypothesis is as follows:

H6: Usage Barrier (UB) has a negative significant influence towards Intention to Use (IU)

3) Value Barrier

When customers don't see a compelling reason to adopt a new innovation because it doesn't provide superior benefits compared to existing alternatives, they face a value barriers [4]. In the context of Innovation Resistance Theory, barriers to adopting innovation can be categorized as functional or psychological [4], [24]. Functional barriers relate to challenges in product usage, perceived value, and potential risks, whereas psychological barriers arise from consumer habits and perceptions of the product's image [4]. Value barrier is categorized as a functional barrier, as it represents consumers' assessment of whether using an innovation like T-Express provides greater benefits compared to other ticket purchasing methods. Several studies have shown that value barrier negatively impacts consumers' intention to use mobile-based applications, such as in online purchasing [43] or entertainment systems in vehicles [44]. Chen et al. [4] argued that value barrier reduces intention to use, as perceived relative advantage aligns with the concept of value barrier in mobile ticketing. Based on these findings, the hypothesis is proposed:

H7: Value Barrier (VB) has a negative significant influence towards Intention to Use (IU)

4) Risk Barrier

Risk barrier relates to the degree of uncertainty and possible unexpected drawbacks of an innovation, encompassing physical, financial, functional, and social risks [4]. Innovation Resistance Theory classifies adoption barriers into two categories, namely functional and psychological [24]. Risk barriers fall under functional barriers, as they stem from customers' perceptions of potential risks associated with a new product or service. As Gurendrawati et al. [45] point out, the greater the perceived risk, the greater the likelihood of rejection, with concerns about security and privacy being the main concerns [46]. Studies have shown that risk barriers influence mobile app adoption [47] and can increase resistance to innovation [48]. Users may feel significant risks in terms of safety, functionality and reliability in public transportation applications, which may deter them from using them. The results show the following hypothesis:

H8: Risk Barrier (RB) has a negative significant influence towards Intention to Use (IU)

5) Tradition Barrier

When new innovations go against existing consumer habits, tradition barriers arise [4]. According to Innovation Resistance Theory, challenges that hinder the adoption of innovation are classified as functional or psychological, tradition barriers are included in the category of psychological barriers [24]. This barrier shows the level of difference between the conventional methods consumers use, such as buying tickets directly, and new systems, such as T-Express. Previously, research has shown that tradition barriers affect customers' desire to implement innovation in various situations, such as mobile financial services [49] and online shopping [43]. Furthermore, tradition barrier is found to have a significant negative impact on older consumers [47], as well as on adoption of entertainment systems in vehicles [44]. Studies have also shown that higher tradition barriers increase resistance to innovations, such as hydrogen-electric motorcycles [48]. In the case of small businesses, tradition barrier also presents a challenge in adopting new technologies, such as financial record-keeping systems [45]. Based on these findings, the hypothesis is proposed:

H9: Tradition Barrier (TB) has a negative significant influence towards Intention to Use (IU)

6) Image Barrier

Image barrier occurs when an innovation is associated with a negative image, typically stemming from its industry or country of origin, leading to resistance [4]. According to Innovation Resistance Theory, barriers to adoption can be categorized as functional or psychological, with image barrier being classified as a psychological barrier [24]. Image barrier refers to the perception that consumers have of the innovation, whether it is positive or negative. In Chen et al.'s [4] study, image barrier pertains to consumers' impressions of the T-Express service. Previous studies have shown that image barrier negatively impacts the adoption of innovations, such as in the case of vehicle entertainment systems [44]. On the other hand, positive image branding, such as green image branding in hotels, has been shown to positively influence customers' willingness to return [49], and branding in financial services also positively impacts consumers' intention to use the service [50]. Similarly, Gurendrawati et al. [45] found that the image of service providers influences technology adoption, especially by SMEs, as it helps build trust and reduces concerns about technological risks. Based on these findings, the hypothesis is proposed:

H10: Image Barrier (IB) has a negative significant influence towards Intention to Use (IU)

7) Complexity Barrier

Complexity barrier reflects how challenging an innovation appears to be in terms of comprehension and usage, which can hinder its adoption [42]. Rogers [42] highlighted that higher complexity in an innovation reduces the likelihood of its adoption. Users often resist adopting new technologies when they struggle to comprehend their functions and benefits [51]. Eriksson et al. [52] found that digital payment adoption is hindered by complex procedures, discouraging users from engaging with the system. In workplaces, employees often resist adopting new technologies if they find them too complex or requiring excessive time to learn [53]. For SMEs, financial technology adoption is also affected by procedural complexity, leading to hesitation in adoption [45]. Based on these findings, the hypothesis is proposed:

H11: Complexity Barrier (CB) has a negative significant influence towards Intention to Use (IU)

8) Intention to Use

Intention to use refers to an individual's personal readiness to engage with a technology, influenced by their attitude and subjective norms surrounding its use [54]. Research shows that intention to use strongly correlates with actual system usage, making it a crucial predictor of adoption [55]. Behavioral intention is a key factor in determining user actions, with additional variables potentially influencing behavior indirectly through this intention [56]. In this sense, intention to use serves as a significant determinant of whether a technology is ultimately used. Chen et al. [4] highlights that intention to use specifically refers to consumers' personal intention to use the T-Express service. Various internal and external factors influence consumer behavior, but these factors in conformity with the willingness determine whether or not a consumer will shop. Consequently, examining actual intent to use is necessary not only for forecasting but also for promoting the adoption of well-established technologies.

III. METHODS

A. Data Collection

The questionnaire was created using official survey platform provided by Universitas Indonesia (survey. ui. ac. id). A readability test was done to check for clarity of the questionnaire before the full-scale survey. The case of JakLingko was chosen as it reflects a real-world implementation of integrated public transport apps in Indonesia, and serves here solely as an empirical setting to observe user resistance phenomena. The exercise was performed in September 2024 with nine people from different demographics who had previously used the JakLingko app. This was done through face-to-face interviews or online meetings using services such as Google Meet. Feedback from participants on clarity of the questions and suggestions for refinements were invited to minimize potential misunderstandings. This feedback was then used to refine the questionnaire before proceeding to the next round. After the readability test, we carried out a pilot study on the questionnaire's reliability assessed with Cronbach's Alpha (CA). This phase, which took place between September and October 2024, included 30 participants across multiple backgrounds. Reliability testing was conducted with IBM SPSS Statistics 27, using 0.7 or above as an acceptable CA threshold [57]. Through this phase, the questionnaire was able to be statistically validated prior to its broader distribution. After the readability test and pilot study had been completed, the final version of the questionnaire was distributed via various social media platforms, such as LINE, Instagram, X, WhatsApp and TikTok. Written informed consent was obtained from all participants prior to participating in the study in accordance with the appropriate ethical guidelines.

TABLE 1
RESEARCH INSTRUMENT

Variables	Codes	Items	References
Information Quality	IQ1	I feel that the information presented in the JakLingko application does not suit my needs	[58]
	IQ2	I feel that the JakLingko app does not provide the information I need at the right time (e.g. route or schedule information does not appear when I am on the move and really need it)	[58]
	IQ3	I feel that the information provided by JakLingko is not enough	[58]
	IQ4	I feel that the JakLingko app provides information that is difficult to understand	[58]
Usage Barrier	UB1	I feel that the JakLingko application is not suitable for the way I complete my work in using public transportation services (for example: ordering public transportation tickets, viewing schedule and route information, etc.)	[30], [59]
	UB2	I feel that the JakLingko application does not suit my needs in using public transportation applications	[30], [59]
	UB3	I feel that the JakLingko app is inconvenient to use because it cannot be used at any time (e.g. late at night, outside working hours, etc.)	[30], [59]
	UB4	I feel that the JakLingko application is inconvenient to use because it cannot be used in any situation (for example: when the signal is weak, in locations that are out of reach, etc.)	[30], [59]
	UB5	I find the JakLingko app inconvenient to use because it is complex (e.g. convoluted flow and functionality)	[30], [59]
Value Barrier	VB1	I feel that the JakLingko application does not provide the benefits provided by other mobile public transportation applications	[59], [60]
	VB2	I feel that the JakLingko application is not superior to other mobile public transportation applications	[59], [60]
	VB3	I feel that the JakLingko application cannot solve problems that can be solved by other mobile public transportation applications	[59], [60]
	VB4	I feel that the JakLingko application is not an ideal application for finding information related to public transportation	[59], [60]
Risk Barrier	RB1	I have some doubts about the reliability of the JakLingko app	[59], [60]
	RB2	I doubt the advertised functions of the JakLingko app	[59], [60]
	RB3	I am worried about making mistakes when using the JakLingko application	[59], [60]
	RB4	I am worried about entering the wrong information when using the JakLingko application	[59], [60]
	RB5	I am worried that this JakLingko application will experience damage or malfunction (e.g. the application stops forcibly)	[59], [60]
Tradition Barrier	TB1	I find it difficult to solve my problem when using the JakLingko app	[30], [60], [61]
	TB2	I find it difficult to get information about using JakLingko	[30], [60], [61]
	TB3	I feel that using the JakLingko application requires a lot of effort	[30], [60], [61]
	TB4	I prefer to use other mobile public transportation applications to find public transportation information compared to using the JakLingko application	[30], [60], [61]
	TB5	I prefer to use traditional transportation information search tools (e.g. guidebooks, information boards) rather than using the JakLingko app)	[30], [60], [61]
Image Barrier	IB1	I think that the JakLingko service is difficult to use (e.g. the display and information are not informative enough)	[24], [30], [62], [63], [64], [65], [66]
	IB2	I think that the use of JakLingko is often too complicated (e.g. convoluted flow and functionality)	[24], [30], [62], [63], [64], [65], [66]
	IB3	I think using the JakLingko app for the first time will require a lot of effort (the flow of use is too complicated and not user-friendly for beginners)	[24], [30], [62], [63], [64], [65], [66]
	IB4	I have a negative view of the JakLingko app	[24], [30], [62], [63], [64], [65], [66]
	IB5	I think it will be difficult to learn how to use the JakLingko application (lack of application instructions)	[24], [30], [62], [63], [64], [65], [66]
Complexity Barrier	CB1	I find it difficult to book public transportation tickets on the JakLingko app if there is no guide	[24]
	CB2	I see that the appearance of the JakLingko application is too complicated	[24]
	CB3	I feel that the information available is limited when using the JakLingko application service	[24]
	CB4	I need directions or instructions when using the JakLingko application	[24]
Intention to Use	IU1	I plan to use the JakLingko app to order public transportation services in the future	[30], [67], [68], [69]
	IU2	I intend to use the JakLingko application when I use public transportation services in the future (e.g. to view schedules, routes, and other information related to public transportation)	[30], [67], [68], [69]
	IU3	I predict that I will use the JakLingko application in the future to order public transportation services	[30], [67], [68], [69]
	IU4	I plan to use the JakLingko app more often	[30], [67], [68], [69]
	IU5	I will use the JakLingko application if I have access to buy vehicle tickets through the application	[30], [67], [68], [69]

This phase adds richness to the analysis and strengthens claims made in the hypothesis testing from the first quantitative phase by introducing new evidence from qualitative data collection. Specifically, in-depth interviews were conducted with 30 selected participants who were chosen from the pool of quantitative respondents. The interviews were conducted synchronously via face-to-face meetings or video calls to ensure direct interaction and richer data collection. These interviews aimed to gain deeper insights and more detailed explanations regarding the quantitative findings. This approach allows the research to capture more of the reasoning around why respondents accept or reject the hypotheses. Qualitative data was collected with in-depth interview on the measurement items of each variable analyzed by the quantitative phase. In order to further guarantee the validity of the respondents, some demographic questions were added. The criteria for selecting participants for the interviews were similar to the criteria used in the quantitative data collection stage. All subjects who participated in this study gave written informed consent, confirming their voluntary participation in accordance with the ethical guidelines.

A. Instrument Development

Questionnaires were structured in terms of consent, demographics, and questions based on indicators. The consent part contained a statement confirming the confirmatory willingness to participate in the study and to use the data collected for research purposes. The demographic section included how respondents use public transportation services. The indicator part was in accordance with the research model variables and included questions that questioned the respondent's experience in using the JakLingko app. The variables were measured by four to five indictor questions rated on a five-point Likert scale, where "1" meant "strongly disagree" and "5" "strongly agree.". Table 1 presents the research instrument used in this study, which includes a list of questionnaire items categorized by variables, item codes, statements, and supporting references.

Qualitative interview questions were developed based on the result of the quantitative phase of the study to enhance understanding of the experiences and perceptions of respondents in using the JakLingko app [15]. These questions were designed to align with the survey variables but also to explore the rationale behind some of the attitude or behavior that may prevent app uptake. Reconnecting with users would allow us to better understand their thoughts on the app, what features they found useful or not, and any pain points experienced during use.

B. Data Analysis

The quantitative data were collected through questionnaires and were then processed and analyzed with the software Microsoft Excel, IBM SPSS 27, and SmartPLS 3. Data from 443 respondents was analysed using the PLS-SEM (Partial Least Squares Structural Equation Modeling) approach. This method has been chosen because the objective of the research is to verify and validate theories about the challenges of the implementation of the mobile-based public transport applications [70]. PLS-SEM enables more flexibility in exploring relationships between latent variables compared to traditional SEM methods. The impact of each variable and the research hypotheses were tested using the developed model. These hypotheses were tested using statistical analysis results that offered explicit insights into user resistance factors towards the JakLingko app.

Qualitative data gathered from the interviews was subjected to content analysis to derive thematic categories that either confirmed or were counter to the quantitative findings. Content analysis was chosen because it is suitable for identifying recurring themes and patterns in textual data, particularly when exploring users' perceptions and behaviors in depth [71]. This consisted of conducting a full reading of the interview transcripts to discern participants' actions and reactions. Then, the data were grouped by the indicators applied to evaluate the research variables. Following this, patterns and insights were identified within each category to explain how respondents perceive the studied variables and their reasoning behind their perceptions. Analyzing these aspects provides insight into the underlying reasons behind the users accepting or rejecting the app. The qualitative findings provide a more nuanced understanding of the topic and are meant to complement and triangulate the quantitative findings. All these findings will eventually lead to conclusions and recommendations that can improve mobile-based public transportation application in Indonesia.

IV. RESULTS

A. Respondent Demographic Data

The survey collected 443 responses through the University of Indonesia's survey system. However, after eliminating nine outliers, only 434 valid responses were included in the final analysis. Respondents answered demographic questions relating to gender, age, education, occupation, income, residence, and experience using public transportation apps to provide insights into their background and usage behavior. To gain deeper insights, interviews

were conducted with 30 respondents who met the research criteria, including Indonesian citizens who live in Jabodetabek, are 17 years old and above, and have experience using the JakLingko app. The selection of interview respondents ensured that their perspectives aligned with the target demographics, thus strengthening the relevance of the study. Integrating quantitative and qualitative data offered a thorough insight into the factors affecting the adoption of public transportation applications. Table 2 displays the respondent profile for the quantitative study based on gender, age, employment status, education level, monthly income, domicile, duration of public transportation app usage, and frequency of using the JakLingko app. Table 3 presents the respondent profile for the qualitative study based on gender, age, education level, employment status, and domicile.

TABLE 2
PROFILE OF QUANTITATIVE RESPONDENTS

Aspect	Description	Frequency	Percentage (%)
Gender	Male	206	46.5%
	Female	236	53.5%
Age	<18 years old	12	2.71%
	18-25 years old	166	37.47%
	26-35 years old	168	37.92%
	36-45 years old	86	19.41%
	>45 years old	11	2.48%
Employment Status	Student	78	17.61%
	Civil Servants	78	17.61%
	Private Employee	187	42.21%
	Self-Employed	86	19.41%
	Unemployment	7	1.58%
	Other	7	1.58%
Education Level	Elementary / junior high / high school / equivalent	99	22.35%
	Diploma I / II / III	97	21.9%
	Diploma IV / Bachelor	227	51.24%
	Master / Doctor	20	4.51%

TABLE 3
PROFILE OF QUALITATIVE RESPONDENTS

Aspect	Description	Frequency	Percentage (%)
Gender	Male	14	46.7%
	Female	16	53.3%
Age	17-19 years old	2	6.7%
	20-25 years old	15	50%
	26-35 years old	8	26.7%
	36-45 years old	2	6.7%
	>45 years old	3	10%
Education Level	Elementary / junior high / high school / equivalent	14	46.7%
	Diploma III	3	10%
	Diploma IV / Bachelor	10	33.3%
	Master	3	10%
Employment Status	Student	8	26.67%
	Civil Servants	3	10%
	Private Employee	12	40%
	Self-Employed	2	6.67%
	Unemployment	4	13.33%
	Other	1	3.33%
Domicile	Jakarta	22	73.3%
	Depok	1	3.3%
	Tangerang	3	10%
	Bekasi	4	13.3%

B. Analysis of Reliability and Validity

Reliability testing was performed to evaluate the internal consistency of the measurement instrument by calculating Composite Reliability (CR) and Cronbach's Alpha (CA) values [72]. A CA value of at least 0.70 is considered acceptable [73], while the minimum acceptable CR value is also 0.70 [70]. Higher CA and CR values indicate greater consistency among items in measuring the latent variables [72]. Table 3 presents the CA and CR values for all variables used in this study. As shown in Table 4, all CA and CR values exceed the threshold of 0.70. Therefore, the measurement model is deemed to have met the reliability criteria.

TABLE 4
RELIABILITY AND VALIDITY ANALYSIS

Variables	Composite Reliability	Cronbach's Alpha	Average Variance Extracted (AVE)
Information Quality (IQ)	0.711	0.839	0.635
Usage Barrier (UB)	0.777	0.870	0.692
Value Barrier (VB)	0.742	0.851	0.656
Risk Barrier (RB)	0.772	0.852	0.591
Tradition Barrier (TB)	0.774	0.855	0.597
Image Barrier (IB)	0.784	0.861	0.607
Complexity Barrier (CB)	0.745	0.847	0.651
Intention to Use (IU)	0.896	0.923	0.706

C. Convergent Validity

The Average Variance Extracted (AVE) measures the average squared factor loadings of indicators for a given construct, obtained by dividing the total squared loadings by the number of indicators. Therefore, AVE is equivalent to the construct's communality [74]. Table 3 presents the AVE values for each latent variable in this study. As shown in the table, all variables exhibit AVE values exceeding 0.50, indicating that the measurement model meets the ideal AVE threshold and satisfies the convergent validity criteria

D. Discriminant Validity

Discriminant validity testing evaluates how well a construct differs from others. The Fornell-Larcker criterion is a widely used method, stating that the square root of a construct's AVE should exceed its correlations with other constructs [70], [75]. Table 5 presents the Fornell-Larcker criterion results, showing that all constructs meet this requirement. Additionally, the model passes the cross-loading test, further confirming discriminant validity. Therefore, the measurement model satisfies the necessary criteria for discriminant validity.

TABLE 5
DISCRIMINANT ANALYSIS

Variables	Complexity Barrier (CB)	Image Barrier (IB)	Information Quality (IQ)	Intention to Use (IU)	Risk Barrier (RB)	Tradition Barrier (TB)	Usage Barrier (UB)	Value Barrier (VB)
Complexity Barrier (CB)	0.807							
Image Barrier (IB)	0.668	0.779						
Information Quality (IQ)	-0.536	-0.700	0.797					
Intention to Use (IU)	-0.326	-0.442	0.465	0.840				
Risk Barrier (RB)	0.487	0.685	-0.630	-0.375	0.768			
Tradition Barrier (TB)	0.557	0.757	-0.666	-0.525	0.639	0.773		
Usage Barrier (UB)	0.511	0.588	-0.588	-0.514	0.590	0.616	0.832	
Value Barrier (VB)	0.413	0.609	-0.599	-0.538	0.603	0.715	0.649	0.810

E. Hypothesis Testing

Hypothesis testing aimed to assess the significance of the relationships proposed in this study. A one-tailed method, with a significance level of 0.05 was used. This indicates that a theory is acceptable if the p value is less than 0.05 [74]. This provides an adequate assessment of variable interactions within the research model. It was found that some hypotheses were not confirmed, indicating that there are several barriers affecting app use for these users. Table 6 provides a full summary of these results.

Three tested hypotheses—CB → IU, IB → IU, and RB → IU—were not supported. It means that complexity barriers (CB), image barriers (IB) and risk barriers (RB) do not notably affect the IU of users to use (IU) App. The rejection of CB → IU therefore suggests that complexity is not an important barrier to adoption. In a similar vein, the insignificance of IB → IU means that there is little effect of users' perception of the image of the application on their decision to use it. In addition to this, the fact that the users rejected RB → IU shows that security or performance risks are likely not that critical for discouraging the adoption of the system that is presented.

However, some relations were statistically significant which presented significant factors for adoption. The results of this study showed that the five innovation resistance barriers which are usage barrier (UB), value barrier (VB), risk barrier (RB), tradition barrier (TB) and image barrier (IB) have a negative influence on information quality (IQ). Also, the implication of usability, perceived value, and unwillingness to change on the IU is significant, where UB,

VB, and TB showed a significant effect on the IU. These results highlight the need for high quality information to reduce resistance and increase adoption rate.

TABLE 6
HYPOTHESIS TESTING

Hypothesis	Path	Sample Mean	Standard Deviation	T Statistics	P Values	Significance
H1	Information Quality (IQ) → Usage Barrier (UB)	-0.589	0.036	16.268	0.001	Significant
H2	Information Quality (IQ) → Value Barrier (VB)	-0.599	0.033	18.110	0.001	Significant
H3	Information Quality (IQ) → Risk Barrier (RB)	-0.630	0.035	18.196	0.001	Significant
H4	Information Quality (IQ) → Tradition Barrier (TB)	-0.666	0.029	23.133	0.001	Significant
H5	Information Quality (IQ) → Image Barrier (IB)	-0.701	0.027	25.549	0.001	Significant
H6	Usage Barrier (UB) → Intention to Use (IU)	-0.246	0.051	4.842	0.001	Significant
H7	Value Barrier (VB) → Intention to Use (IU)	-0.250	0.056	4.394	0.001	Significant
H8	Risk Barrier (RB) → Intention to Use (IU)	0.091	0.058	1.508	0.066	Insignificant
H9	Tradition Barrier (TB) → Intention to Use (IU)	-0.229	0.068	3.345	0.001	Significant
H10	Image Barrier (IB) → Intention to Use (IU)	-0.046	0.073	0.628	0.265	Insignificant
H11	Complexity Barrier (CB) → Intention to Use (IU)	0.012	0.052	0.333	0.370	Insignificant

F. Qualitative Insights

The qualitative responses for the hypotheses that were accepted reinforce the quantitative findings by providing deeper insight into user perceptions. Respondents generally highlighted that the quality of information—such as accuracy, timeliness, and clarity—significantly influences their experience with the JakLingko app. Many users felt frustrated when route or schedule information was outdated, incomplete, or difficult to interpret, which affected their perception of ease of use and reliability. Others mentioned that limited or unclear instructions reduced the app's perceived usefulness and value. Conversely, when the information was deemed accurate and easy to understand, respondents reported greater trust in the system and a stronger intention to continue using the app. These findings validate the positive impact of Information Quality on overcoming barriers such as usage, value, risk, image, and tradition.

In contrast, qualitative insights related to the rejected hypotheses offer explanations for why certain barriers did not significantly affect user intention. For example, risk barrier was found to be negligible, as most users expressed confidence in the app's performance despite some minor technical issues. Similarly, image and tradition barriers appeared less relevant, with users already familiar with the app's functionality and not particularly influenced by its branding or deviation from traditional methods. Complexity was mentioned occasionally, but most users indicated that they were still able to use the core features without much difficulty. These insights suggest that while these barriers are theoretically valid, they may be less impactful in practical contexts where users are already accustomed to using digital transport tools or prioritize utility over usability challenges.

V. DISCUSSION

A. Analysis of Qualitative Data

These results demonstrate the effect of information quality on challenges such as usage barrier (H1), value barrier (H2), risk barrier (H3), tradition barrier (H4), and image barrier (H5). Respondents systematically correlate good information with accuracy, relevance, real-time updates, completeness and clarity, the analysis shows. On the other hand, the lack of good quality information in the JakLingko app are viewed as a barrier, in the context of usefulness according to the perceived value, reliability, and image of the application. The outcomes of the interview corroborate that users who face, challenging access to accurate and complete information of documentation, perceive barriers more in using the app.

Also, qualitative analysis is consistent with quantitative analysis that these barriers influence intention. Usage, value, and tradition barriers significantly impact respondents' willingness to continue using the JakLingko app (H6, H7, H9). Most respondents agree that difficulties or discomfort in using the app decrease their interest in adoption, while some remain willing to use it despite existing challenges. Respondents who perceive a lack of added value compared to other apps are less likely to continue using JakLingko, while a few believe similar benefits across apps do not impact their intention. Furthermore, those who find the app misaligned with their habits tend to hesitate in adopting it, unless it offers significant advantages. These findings reinforce the role of user perception in determining adoption behavior.

Conversely, qualitative results also support the rejection of hypotheses related to risk, image, and complexity barriers on user intention (H8, H10, H11). The majority of respondents indicate that concerns about security, app reputation, or complexity do not significantly affect their decision to use JakLingko. Instead, they prioritize functionality, usability, and value when choosing a transportation app. While some respondents express concerns about security risks and app reputation influencing their decisions, most do not consider these factors major obstacles. Similarly, although a portion of respondents believes complexity affects their intention to use the app, the overall sentiment suggests that users prioritize efficiency and benefits over perceived technical difficulties.

B. Hypothesis Measurement Result

The quantitative analysis shows a significant negative relationship between information quality and usage barrier, confirming Hypothesis 1 (H1). This suggests that when users perceive high-quality information in the JakLingko app, their experience of usage barriers, such as system learning efforts, is reduced. The findings are consistent with Kang and Namkung [76], who showed that information quality improves perceptions of ease of use. Similarly, studies by Tegenaw et al. [77] and Zhou [78] support the positive impact of information quality on system usability. Qualitative data further affirms this, as 93.33% of respondents emphasized the importance of information quality in reducing usage barriers. Respondents reported that inaccurate or outdated information, such as incorrect map locations and non-real-time schedules, caused confusion and disrupted trip planning. Some users found that missing route details forced them to frequently recheck information, increasing effort and frustration. In contrast, those who perceived the app's information as accurate and clear experienced fewer obstacles in its usage.

The quantitative analysis found a strong link between value barriers and information quality, supporting Hypothesis 2 (H2). This means that when users get better information, they feel fewer value barriers, like the effort needed to decide if using the app is worth it. Research by Jenneboer et al. [37] and Kaur et al. [30] also shows that clear benefits help reduce value barriers. The qualitative data supports this finding, with 96.67% of respondents agreeing that clear and relevant information makes the app more valuable. Many users said that when the information is incomplete or incorrect, the app becomes less useful for planning trips and feels unreliable. Some people were unhappy with slow updates and missing details about transportation, making the app less helpful. However, those who use JakLingko regularly find it useful because it provides complete and accurate information for public transportation.

The quantitative analysis confirms Hypothesis 3 (H3), demonstrating that information quality has a significant impact on risk barriers. JakLingko app users who feel they receive better information quality feel less risk, which is important for adoption. This finding aligns with the research of Noui and Zaiem [79], which suggests that access to reliable information reduces users' perceived risks in e-health systems. In the same way, Chen et al. [4] showed that detailed information helps reduce the risk challenges associated with mobile ticketing. All respondents agreed that accurate and timely information can reduce perceived risks when using the app. Users reported feeling more assured in planning their trips and minimizing errors due to JakLingko's precise, up-to-date, and comprehensive information.

The quantitative analysis confirmed Hypothesis 4 (H4), revealing a strong negative correlation between information quality and tradition barriers. This means that high-quality information makes it easier for users to transition to the JakLingko app, even if they are accustomed to other transportation methods. These findings align with Chen et al. [4], who found that detailed and reliable information reduces resistance to adopting new technology. In qualitative interviews, most respondents stated that outdated or incorrect information led them to stick with traditional methods, whereas clear and relevant information encouraged them to use the app. Users who found JakLingko's information limited or delayed preferred using other apps like Google Maps or Moovit, as they offered more reliable route updates. However, respondents who experienced accurate, real-time, and complete information in JakLingko felt more confident using the app, highlighting its potential to replace traditional methods. This shows how important high-quality data is to reduce traditional barriers and encourage people to use public transportation apps.

The quantitative analysis, which supports Hypothesis 5 (H5), shows a similar pattern of the relationship between information quality and image barriers. Better information quality helps reduce psychological barriers by fostering trust and improving the image of the app. Reliable information improves user perception and increases trust in a platform, according to Chen et al. [4] and Noui and Zaiem [79]. The qualitative results confirm this as they emphasize that accurate, real-time, and clear information increases trust and reputation of the app. In contrast, unclear, outdated, or incomplete information raises doubts and decreases JakLingko's trustworthiness. Due to these limitations, some users even prefer alternative apps such as Google Maps or Moovit. These results suggest that the formation of positive perceptions and the reduction of image barriers depend on the information quality.

As shown by the significant relationship found in the quantitative analysis, which supports Hypothesis 6 (H6), usage barriers negatively impact users' desire to use the JakLingko application. Users have a lower inclination to keep using an app when they experience challenges while using it. This is in line with other research conducted by Kaur et al. [30] and Hameed et al. [12], that found usability barriers to adoption and user intention. The qualitative findings

further strengthened this, where 86.67% of respondents stated that being unable to operate the JakLingko app decreased motivation to continue utilizing the app. Because the app was designed for that very purpose of providing ease in travel movements for users, they will be less likely to abandon the app if it adapts to their needs. But inaccurate schedules or unmet expectations frequently lead to abandonment in favor of better-integrated alternatives. These findings highlight the importance of improving usability to enhance user engagement with public transportation applications.

The quantitative part confirmed Hypothesis 7 (H7), that value barriers negatively affects users intention to use application. There is a link between the perceived value of the JakLingko app and the users' intention to use it. Other studies by Kaur et al. [30] and Hameed et al. [12] found similar results. These studies emphasize the value proposition in technology adoption. This research is supported by qualitative research in which 93.33% of respondents agree that their perception of the value of the JakLingko app has an impact on the intention to use the JakLingko app. If users find features useful — such as integrated fares and multiple payment options — they are more likely to continue using the app. But those people who feel the app offers no value, whether because the information is incorrect or the app is simply slow, don't use the app for the long term either. That demonstrates how perception translates to actual usage of public transportation apps.

Hypothesis 8 (H8) was not supported because risk concerns were not strongly related to the intention to use the JakLingko app. This means that, given that it is free to use, fears about technical problems or inaccurate data do not have much influence on whether people will download the app. This result differs from the previous study conducted by Gurendrawati et al. [45] and Chen et al. [4] they also said that fear of risks is a barrier to people adopting new technology. The results of the survey resonate with the findings of the interviews as 63.33% of the users stated that their thoughts related to errors or wrong data could not limit them from using the app. Although some used the app for basic transportation purposes they mentioned these problems. This indicates that most users are not particularly discouraged from using the app by risk concerns.

The results of the study support Hypothesis 9 (H9), showing that traditional habits strongly affect whether people use the JakLingko app. If the app disrupts users' usual way of traveling, they are less likely to use it. This finding agrees with studies by Kaur et al. [30] and Hameed et al. [12], which state that people are less likely to adopt new technology if it changes their routines. The interview results also confirm this, with 53.33% of respondents saying their existing travel habits influenced their decision to use the app. Some users found that the app aligned with their habits, such as easy payment and ticket purchasing, which made them more likely to use it again. However, others preferred traditional methods after experiencing disruptions in their routine due to issues like limited route options or a confusing interface. These findings indicate that traditional barriers play a significant role in influencing the adoption of public transportation apps.

Hypothesis 10 (H10) was not supported, as the quantitative analysis revealed no significant link between image barriers and users' intention to adopt the JakLingko app. The minimal negative impact suggests that users' opinions on the app's design do not influence their decision to use it. A similar finding was reported in studies by Chen et al. [4] and Hameed et al. [12], which proposed that concerns about the appearance of an app may deter adoption. The quantitative and qualitative results support the notion that image barriers do not play a significant role in the users' intention to use the app. About 60% of respondents said their perception of the app's visual appeal did not affect their decision. Looks were less important to users who wanted to be able to use features like integrated fares and QRIS payments. Hence, users still remain indifferent to how the interface looks or their first impressions are weak, it does not sway their choice against using the public transport applications even if they face such a flaw while using the app.

The quantitative analysis results indicate that there is no meaningful relationship between the complexity barrier and users' intention to use the JakLingko app. Struggling with the interface or features of the app does not seem to play a significant role in adoption decisions. This contrasts with the findings of Chung and Liang [24] and Gurendrawati et al. [45], which suggest that overly complex features can discourage user adoption. This indicates the rejection of Hypothesis 11 (H11). The quantitative results are in line with the qualitative results, complexity barrier does not affect users' intention to use the JakLingko application. About 53.33% of respondents agreed that difficulties in understanding the app's interface or features did not impact their usage intentions, as they prioritized the app's functionality. While some users noted challenges with the app's interface, they still found it sufficient for their daily transportation needs, with the main focus being on the app's ability to provide route information and other functional features. Therefore, complexity barriers seem to have little influence on users' decision to adopt public transport apps like JakLingko.

C. Contributions and Implications

This study contributes theoretically by expanding the application of Innovation Resistance Theory in the context of public transportation app adoption. The findings confirm that information quality significantly influences innovation

barriers, including usage barrier, value barrier, risk barrier, tradition barrier, and image barrier [4]. These results align with previous research indicating that high-quality information reduces resistance by enhancing user confidence in the technology [32], [80]. Additionally, this study provides new insights into the indirect effect of information quality on intention to use, reinforcing its critical role in mitigating resistance [24]. By addressing these gaps, this study deepens the understanding of how users assess information quality when adopting transportation apps. Although this research utilizes JakLingko as the case under study, the application itself serves merely as a contextual data source. The core contribution of this study lies in the theoretical extension of IRT through the integration of information quality, not in the case study per se.

From a practical perspective, this study highlights the need for improving *information quality* in public transportation apps like JakLingko to enhance user acceptance. The findings indicate that accurate, complete, real-time, and easy-to-understand information reduces perceived barriers and increases user trust [26]. To reduce usage barriers and value barriers, developers should prioritize improving the accuracy, relevance, and accessibility of information [32], [80]. In addition, providing clear and up-to-date information can reduce risk barriers and improve users' perceptions of app reliability [4]. By addressing these issues, app developers and policymakers will ensure greater adoption and improved usage of the apps [4].

The results imply that the government should set up the regulations which present some accurate information for public transportation applications. It is necessary that government agencies follow the data standards of timeliness, accuracy and accessibility to enhance user trust and engagement [32]. Moreover, adding functionalities that match with users' habits can lower traditional barriers and promote an easier interchange from classic transportation systems [4], [30]. The digital infrastructure must have improved for the implementation of public transportation information to be accurate and modern [12]. These strategies can foster wider adoption of transportation apps and lead to a happier and more efficient public transportation system overall.

D. Limitations and Future Research

There are some limitations to this study that warrant consideration prior to proceeding with further studies. Most participants were aged 18-35 years, with underrepresentation of both older and younger age categories. Moreover, this study focuses solely on the JakLingko application in the Jakarta metropolitan area. Although this aligns well with the application's intended user base and geographical coverage, future studies could explore similar transport applications in other Indonesian cities or regions to broaden the understanding of user resistance patterns in different contexts. Since different demographics have different perspectives, this limitation could affect the study's conclusions. Future research should attempt to incorporate a wider age range and increase geographical reach to better capture diversity of user perspectives. While comparative studies between a couple of cities or areas can offer a better insight. Additionally, qualitative methods such as interviews may provide richer context on user preferences and behaviours.

VI. CONCLUSIONS

Using Innovation Resistance Theory, this study investigates the predictors of user resistance of the JakLingko mobile application. Findings indicate that quality of information influences barriers of resistance of usage, value, risk, tradition, and image. Not all resistance factors are equally significant, our findings show that part of them (complexity) does not have a significant effect on people's willingness to use that specific app. This explains better way to comprehend how innovation resistance behavior affects the adoption process of public transportation application in Indonesia.

The results suggest that providing high-quality information reinforces multiple resistance barriers and the users feel how more useful the app is. The findings also indicate that factors associated with usage, value, and conventional habits play a major role in users' intention to use the JakLingko application. However, risk and image barriers did not have a significant effect, indicating that customers prioritize service performance and reliability over perceived risk and brand perception. This study suggests that improving the accuracy, completeness and clarity of information is essential to reduce resistance and encourage adoption.

While this study was useful, there are limitations that future research needs to address. The sample is predominantly composed of respondents aged 18-35 years and located in the Jakarta area, which may limit the generalizability of the findings to other demographic groups. Furthermore, this study focuses solely on Innovation Resistance Theory without incorporating other relevant theoretical frameworks that may provide additional insights into adoption behavior.

Future research should consider expanding the demographic scope by including respondents from a wider age range and geographic areas to enhance population representation. Additionally, since three out of six tested hypotheses were not supported, future studies could explore other factors influencing intention to use, such as behavioral, psychological, or environmental aspects. Researchers are also encouraged to evaluate additional app features that may

impact user experience, including customization options and notification systems. From a practical perspective, app developers should prioritize improving the accuracy and timeliness of public transport information to enhance user trust and satisfaction. Lastly, the government should support digital transport initiatives by ensuring seamless integration between mobile applications and public transportation infrastructure.

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REFERENCES

[1] M. Khafiffauzun, A. H. Nurdhi, and R. P. P. S, "Sarana dan prasarana transportasi perkotaan berkelanjutan penerapan konsep Transit Oriented Development (TOD) pada penataan kota." [Online]. Available: https://teknik.univpancasila.ac.id/semrestek/prosiding/index.php/12345/article/view/484

[2] N. I. P. Putri, "Pengaruh Transportasi Umum Terhadap Perkembangan Antar Wilayah Administrasi di Jakarta," *Jurnal Manajemen Bisnis Transportasi dan Logistik*, vol. 8, no. 1, p. 63, Jun. 2022, doi: 10.54324/j.mbtl.v8i1.1249.

[3] S. AlKheder, "Promoting public transport as a strategy to reduce GHG emissions from private vehicles in Kuwait," *Environmental Challenges*, vol. 3, p. 100075, Apr. 2021, doi: 10.1016/j.envc.2021.100075.

[4] C.-C. Chen, C.-H. Chang, and K.-L. Hsiao, "Exploring the factors of using mobile ticketing applications: Perspectives from innovation resistance theory," *Journal of Retailing and Consumer Services*, vol. 67, p. 102974, Jul. 2022, doi: 10.1016/j.jretconser.2022.102974.

[5] A. Agnitasari, "Menghadapi Dilema Jakarta dan Tantangan Transformasi Transportasinya." [Online]. Available: https://www.greenpeace.org/indonesia/cerita/57979/jakarta-dan-tantangan-transformasi-transportasinya/

[6] W. H. DeLone and E. R. McLean, "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research*, vol. 3, no. 1, pp. 60–95, Mar. 1992, doi: 10.1287/isre.3.1.60.

[7] R. Ram, "Exports and economic growth in developing countries: evidence from time-series and cross-section data," *Econ Dev Cult Change*, vol. 36, no. 1, pp. 51–72, 1987.

[8] D. Tricahyono, L. W. Utami, and W. Safitri, "The Impact of Viral Marketing on Consumers' Intention to Use (Case study: Spotify Indonesia)," in *Proceedings of the 1st International Conference on Economics, Business, Entrepreneurship, and Finance (ICEBEF 2018)*, Paris, France: Atlantis Press, 2019. doi: 10.2991/icebef-18.2019.144.

[9] A. Wijaya, B. M. Purwaamijaya, and R. G. Guntara, "The Impact of Informativeness of Live Streaming in TikTok Live Shop Based on SOR Framework," *Indonesian Journal of Digital Business*, vol. 4, no. 1, pp. 11–18, Jun. 2023, doi: 10.17509/ijdb.v4i1.59456.

[10] M. G. D. Cahyani, C. K. Dewi, A. Widodo, N. Rubiyanti, and A. Silvianita, "The Influence of Information Quality and Functionality on Intention to Use Mobile Apps with Perceived Usefulness as an Intervening Variable," *East Asian Journal of Multidisciplinary Research*, vol. 3, no. 5, pp. 1813–1820, May 2024, doi: 10.55927/eajmr.v3i5.9252.

[11] L. P. Calegari and D. C. Fettermann, "Analysis of barriers and benefits associated with e-health technology applications," *Journal of technology management & innovation*, vol. 17, no. 4, pp. 106–116, Dec. 2022, doi: 10.4067/S0718-27242022000400106.

[12] I. Hameed, U. Akram, and A. Ashraf, "Consumers' usage of mobile payment systems: an application of the innovation resistance and coping theory on the tourism sector," *Kybernetes*, vol. 54, no. 1, pp. 391–413, Jan. 2023, doi: 10.1108/K-03-2023-0495.

[13] L.-Y. Leong, T.-S. Hew, K.-B. Ooi, and J. Wei, "Predicting mobile wallet resistance: A two-staged structural equation modeling-artificial neural network approach," *Int J Inf Manage*, vol. 51, p. 102047, Apr. 2020, doi: 10.1016/j.ijinfomgt.2019.102047.
[14] C. Coursaris, K. Hassanein, and M. Head, "M-Commerce in Canada: An Interaction Framework for Wireless Privacy," *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration*, vol. 20, no. 1, pp. 54–73, Mar. 2003, doi: 10.1111/j.1936-4490.2003.tb00305.x.
[15] K. Siau and H. Sheng, "The value of mobile commerce to customers," *AIS Electronic Library (AISeL)*, 2004.
[16] H. Dai and P. C. Palvi, "Mobile commerce adoption in China and the United States," *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, vol. 40, no. 4, pp. 43–61, Oct. 2009, doi: 10.1145/1644953.1644958.
[17] S. Sutrisno, "Analysis of factor Leading to Mobile Commerce Adoption in Semarang City," *JURNAL IPTEKKOM Jurnal Ilmu Pengetahuan & Teknologi Informasi*, vol. 25, no. 2, pp. 205–224, Jan. 2024, doi: 10.17933/iptekkom.25.2.2023.205-224.
[18] C. Christina, H. H. Ariyanto, and P. Peranginangin, "Factors Influencing the Intention to Use Mobile Payment In Indonesia," *Wahana: Jurnal Ekonomi, Manajemen dan Akuntansi*, vol. 26, no. 1, pp. 93–109, May 2024, doi: 10.35591/wahana.v26i1.814.
[19] L. Barus, "Mass public transportation system policy in the millennium era in Indonesia," *Journal of Sustainable Development Issues*, vol. 1, no. 1, pp. 15–18, 2022.
[20] A. Nurbaiti, "Jakarta wins global 2021 Sustainable Transport Award for integrated transportation," The Jakarta Post. [Online]. Available: https://www.thejakartapost.com/news/2020/10/31/jakarta-wins-global-2021-sustainable-transport-award-for-integrated-public-transportation.html
[21] A. Gordon, "The role of public transportation systems in promoting sustainable mobility in green cities," *Humanities Commons*, 2021.
[22] A. Sofa, "Mengulik fitur transportasi publik di JAKI," Smart City Jakarta. [Online]. Available: https://smartcity.jakarta.go.id/id/blog/mengulik-fitur-transportasi-publik-di-jaki/
[23] S. Ram and J. N. Sheth, "Consumer Resistance to Innovations: The Marketing Problem and its solutions," *Journal of Consumer Marketing*, vol. 6, no. 2, pp. 5–14, Feb. 1989, doi: 10.1108/EUM0000000002542.
[24] K. C. Chung and S. W.-J. Liang, "Understanding Factors Affecting Innovation Resistance of Mobile Payments in Taiwan: An Integrative Perspective," *Mathematics*, vol. 8, no. 10, p. 1841, Oct. 2020, doi: 10.3390/math8101841.
[25] S. Graham, "Class and Conservatism in the Adoption of Innovations," *Human Relations*, vol. 9, no. 1, pp. 91–100, Feb. 1956, doi: 10.1177/001872675600900106.
[26] N. Gorla, T. M. Somers, and B. Wong, "Organizational impact of system quality, information quality, and service quality," *The Journal of Strategic Information Systems*, vol. 19, no. 3, pp. 207–228, Sep. 2010, doi: 10.1016/j.jsis.2010.05.001.
[27] W. A. Wibowo, "Pengaruh System Quality, Information Quality, Dan Service Quality Terhadap User Satisfaction Website Lion Airlines Dan Sriwijaya Airlines.," *Jurnal Strategi Pemasaran*, vol. 1, no. 1, 2013.
[28] I. Pozón-López, E. Higueras-Castillo, F. Muñoz-Leiva, and F. J. Liébana-Cabanillas, "Perceived user satisfaction and intention to use massive open online courses (MOOCs)," *J Comput High Educ*, vol. 33, no. 1, pp. 85–120, Apr. 2021, doi: 10.1007/s12528-020-09257-9.
[29] A. Allah Pitchay, Y. Ganesan, N. S. Zulkifli, and A. Khaliq, "Determinants of customers' intention to use online food delivery application through smartphone in Malaysia," *British Food Journal*, vol. 124, no. 3, pp. 732–753, Feb. 2022, doi: 10.1108/BFJ-01-2021-0075.
[30] P. Kaur, A. Dhir, N. Singh, G. Sahu, and M. Almotairi, "An innovation resistance theory perspective on mobile payment solutions," *Journal of Retailing and Consumer Services*, vol. 55, p. 102059, Jul. 2020, doi: 10.1016/j.jretconser.2020.102059.
[31] W. H. Delone and E. R. McLean, "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information Systems*, vol. 19, no. 4, pp. 9–30, Apr. 2003, doi: 10.1080/07421222.2003.11045748.
[32] R. R. Nelson, P. A. Todd, and B. H. Wixom, "Antecedents of Information and System Quality: An Empirical Examination Within the Context of Data Warehousing," *Journal of Management Information Systems*, vol. 21, no. 4, pp. 199–235, Apr. 2005, doi: 10.1080/07421222.2005.11045823.
[33] S. W. Sussman and W. S. Siegal, "Informational Influence in Organizations: An Integrated Approach to Knowledge Adoption," *Information Systems Research*, vol. 14, no. 1, pp. 47–65, Mar. 2003, doi: 10.1287/isre.14.1.47.14767.
[34] H. Yang, "Factors Impacting College Student Satisfaction, Perceived Usefulness, and Continuance Intention with E-learning in Dezhou, China," *Scholar: Human Sciences*, vol. 16, no. 1, pp. 171–180, Mar. 2024, [Online]. Available: https://doi.org/10.14456/shserj.2024.18
[35] D. D. Morar, "An overview of the consumer value literature - perceived value, desired value," *Marketing From Information to Decision*, vol. 6, pp. 169–186, 2013.
[36] X.-L. Jin, C. M. K. Cheung, M. K. O. Lee, and H.-P. Chen, "How to keep members using the information in a computer-supported social network," *Comput Human Behav*, vol. 25, no. 5, pp. 1172–1181, Sep. 2009, doi: 10.1016/j.chb.2009.04.008.
[37] L. Jenneboer, C. Herrando, and E. Constantinides, "The Impact of Chatbots on Customer Loyalty: A Systematic Literature Review," *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 17, no. 1, pp. 212–229, Jan. 2022, doi: 10.3390/jtaer17010011.
[38] B. Vatanasombut, M. Igbaria, A. C. Stylianou, and W. Rodgers, "Information systems continuance intention of web-based applications customers: The case of online banking," *Information & Management*, vol. 45, no. 7, pp. 419–428, Nov. 2008, doi: 10.1016/j.im.2008.03.005.
[39] V. Sigurdsson, R. G. V. Menon, A. G. Hallgrímsson, N. M. Larsen, and A. Fagerstrøm, "Factors Affecting Attitudes and Behavioral Intentions Toward In-app Mobile Advertisements," *Journal of Promotion Management*, vol. 24, no. 5, pp. 694–714, Sep. 2018, doi: 10.1080/10496491.2018.1405523.
[40] T. Laukkanen, "Consumer adoption versus rejection decisions in seemingly similar service innovations: The case of the Internet and mobile banking," *J Bus Res*, vol. 69, no. 7, pp. 2432–2439, Jul. 2016, doi: 10.1016/j.jbusres.2016.01.013.
[41] A. Tarute, S. Nikou, and R. Gatautis, "Mobile application driven consumer engagement," *Telematics and Informatics*, vol. 34, no. 4, pp. 145–156, Jul. 2017, doi: 10.1016/j.tele.2017.01.006.
[42] E. M. Rogers, "Diffusion of Innovations.," *The Free Press*, 1962.
[43] J.-W. Lian and D. C. Yen, "To buy or not to buy experience goods online: Perspective of innovation adoption barriers," *Comput Human Behav*, vol. 29, no. 3, pp. 665–672, May 2013, doi: 10.1016/j.chb.2012.10.009.
[44] H.-J. Kim, J.-M. Lee, and J.-Y. Rha, "Understanding the role of user resistance on mobile learning usage among university students," *Comput Educ*, vol. 113, pp. 108–118, Oct. 2017, doi: 10.1016/j.compedu.2017.05.015.
[45] E. Gurendrawati *et al.*, "An Empirical Study on the Barriers to Digital Financial Reporting Adoption Among Non-Adopting SMEs in Indonesia," *Journal of System and Management Sciences*, vol. 14, no. 3, Feb. 2024, doi: 10.33168/JSMS.2024.0306.

[46] A. Johnson *et al.*, "Barriers and facilitators to mobile health and active surveillance use among older adults with skin disease," *Health Expectations*, vol. 24, no. 5, pp. 1582–1592, Oct. 2021, doi: 10.1111/hex.13229.
[47] J.-W. Lian and D. C. Yen, "Online shopping drivers and barriers for older adults: Age and gender differences," *Comput Human Behav*, vol. 37, pp. 133–143, Aug. 2014, doi: 10.1016/j.chb.2014.04.028.
[48] H.-S. Chen, B.-K. Tsai, and C.-M. Hsieh, "The Effects of Perceived Barriers on Innovation Resistance of Hydrogen-Electric Motorcycles," *Sustainability*, vol. 10, no. 6, p. 1933, Jun. 2018, doi: 10.3390/su10061933.
[49] H. Chemingui and H. Ben lallouna, "Resistance, motivations, trust and intention to use mobile financial services," *International Journal of Bank Marketing*, vol. 31, no. 7, pp. 574–592, Oct. 2013, doi: 10.1108/IJBM-12-2012-0124.
[50] R. Bravo, T. Montaner, and J. M. Pina, "Corporate brand image of financial institutions: a consumer approach," *Journal of Product & Brand Management*, vol. 21, no. 4, pp. 232–245, Jul. 2012, doi: 10.1108/10610421211246649.
[51] J. E. Kivlin, "Characteristics Of Farm Practices Associated With Rate Of Adoption," 1960. [Online]. Available: https://www.proquest.com/dissertations-theses/characteristics-farm-practices-associated-with/docview/301922289/se-2?accountid=17242
[52] N. Eriksson, A. Gökhan, and M. Stenius, "A qualitative study of consumer resistance to mobile payments for in-store purchases," *Procedia Comput Sci*, vol. 181, pp. 634–641, 2021, doi: 10.1016/j.procs.2021.01.212.
[53] A. Setiadi, D. P. Alamsyah, D. Syarifuddin, D. Kurniadi, and E. Oktora, "Implementation of Green IT In Education Industries," in *2018 Third International Conference on Informatics and Computing (ICIC)*, IEEE, Oct. 2018, pp. 1–4. doi: 10.1109/IAC.2018.8780408.
[54] T. Teo, "Students and Teachers' Intention to Use Technology: Assessing Their Measurement Equivalence and Structural Invariance," *Journal of Educational Computing Research*, vol. 57, no. 1, pp. 201–225, Mar. 2019, doi: 10.1177/0735633117749430.
[55] K. Rattanaburi and R. Vongurai, "Factors Influencing Actual Usage of Mobile Shopping Applications: Generation Y in Thailand," *Journal of Asian Finance, Economics and Business*, vol. 8, no. 1, pp. 901–913, 2021.
[56] O. Giandi, I. Irawan, and R. Ambarwati, "Determinants of Behavior Intention and Use Behavior among Bukalapak's Consumers," *IPTEK The Journal for Technology and Science*, vol. 31, no. 2, p. 158, Aug. 2020, doi: 10.12962/j20882033.v31i2.5585.
[57] H. Lee, "Spatial Disparity and Residential Assessment of Housing Cost-Burdened Renters," *Land (Basel)*, vol. 13, no. 3, p. 394, Mar. 2024, doi: 10.3390/land13030394.
[58] S. Ozkan and R. Koseler, "Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation," *Comput Educ*, vol. 53, no. 4, pp. 1285–1296, Dec. 2009, doi: 10.1016/j.compedu.2009.06.011.
[59] V. Joachim, P. Spieth, and S. Heidenreich, "Active innovation resistance: An empirical study on functional and psychological barriers to innovation adoption in different contexts," *Industrial Marketing Management*, vol. 71, pp. 95–107, May 2018, doi: 10.1016/j.indmarman.2017.12.011.
[60] S. Jeon, S. Lee, and Y. Xu, "Investigating Tourists' Mobile Technology Resistance Behavior: An Application of Innovation Resistance Theory," *Journal of Quality Assurance in Hospitality & Tourism*, pp. 1–22, Apr. 2024, doi: 10.1080/1528008X.2024.2344634.
[61] A. M. Musyaffi, E. Gurendrawati, B. Afriadi, M. C. Oli, Y. Widawati, and R. Oktavia, "Resistance of Traditional SMEs in Using Digital Payments: Development of Innovation Resistance Theory," *Hum Behav Emerg Technol*, vol. 2022, pp. 1–10, Nov. 2022, doi: 10.1155/2022/7538042.
[62] K. Dotzauer and F. Haiss, "Barriers towards the adoption of mobile payment services: An empirical investigation of consumer resistance in the context of Germany," 2017.
[63] S. Brahim, "Typology of Resistance to e Banking adoption by Tunisian," *Journal of Electronic Banking Systems*, pp. 1–8, Feb. 2015, doi: 10.5171/2015.801654.
[64] T. Kuisma, T. Laukkanen, and M. Hiltunen, "Mapping the reasons for resistance to Internet banking: A means-end approach," *Int J Inf Manage*, vol. 27, no. 2, pp. 75–85, Apr. 2007, doi: 10.1016/j.ijinfomgt.2006.08.006.
[65] T. Laukkanen and V. Kiviniemi, "The role of information in mobile banking resistance," *International Journal of Bank Marketing*, vol. 28, no. 5, pp. 372–388, Jul. 2010, doi: 10.1108/02652321011064890.
[66] T. Laukkanen, S. Sinkkonen, M. Kivijärvi, and P. Laukkanen, "Innovation resistance among mature consumers," *Journal of Consumer Marketing*, vol. 24, no. 7, pp. 419–427, Nov. 2007, doi: 10.1108/07363760710834834.
[67] V. L. Johnson, A. Kiser, R. Washington, and R. Torres, "Limitations to the rapid adoption of M-payment services: Understanding the impact of privacy risk on M-Payment services," *Comput Human Behav*, vol. 79, pp. 111–122, Feb. 2018, doi: 10.1016/j.chb.2017.10.035.
[68] P. Luarn and H.-H. Lin, "Toward an understanding of the behavioral intention to use mobile banking," *Comput Human Behav*, vol. 21, no. 6, pp. 873–891, Nov. 2005, doi: 10.1016/j.chb.2004.03.003.
[69] Venkatesh, Morris, Davis, and Davis, "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly*, vol. 27, no. 3, p. 425, 2003, doi: 10.2307/30036540.
[70] J. F. Hair, C. M. Ringle, and M. Sarstedt, "PLS-SEM: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice*, vol. 19, no. 2, pp. 139–152, Apr. 2011, doi: 10.2753/MTP1069-6679190202.
[71] S. Elo and H. Kyngäs, "The qualitative content analysis process," *J Adv Nurs*, vol. 62, no. 1, pp. 107–115, Apr. 2008, doi: 10.1111/j.1365-2648.2007.04569.x.
[72] H. Triwidyati and F. Tentama, "Reliability and Validity of Subjective Well-Being Scale Construct ," *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, vol. 51, no. 2, pp. 191–200, May 2020, [Online]. Available: https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/10773
[73] K. S. Taber, "The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education," *Res Sci Educ*, vol. 48, no. 6, pp. 1273–1296, Dec. 2018, doi: 10.1007/s11165-016-9602-2.
[74] J. F. Hair, G. T. M. Hult, C. M. Ringle, M. Sarstedt, N. P. Danks, and S. Ray, *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R*. Cham: Springer International Publishing, 2021. doi: 10.1007/978-3-030-80519-7.
[75] J. F. Hair Jr, M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser, "Partial least squares structural equation modeling (PLS-SEM)," *European Business Review*, vol. 26, no. 2, pp. 106–121, Mar. 2014, doi: 10.1108/EBR-10-2013-0128.
[76] J.-W. Kang and Y. Namkung, "The information quality and source credibility matter in customers' evaluation toward food O2O commerce," *Int J Hosp Manag*, vol. 78, pp. 189–198, Apr. 2019, doi: 10.1016/j.ijhm.2018.10.011.
[77] G. S. Tegenaw, D. A. Sori, G. K. Teklemariam, F. Verbeke, J. Cornelis, and B. Jansen, "Evaluation of a Computer-Aided Clinical Decision Support System for Point-of-Care Use in Low-Resource Primary Care Settings: Acceptability Evaluation Study," *JMIR Hum Factors*, vol. 11, p. e47631, Jun. 2024, doi: 10.2196/47631.

[78] T. Zhou, "Examining the critical success factors of mobile website adoption," *Online Information Review*, vol. 35, no. 4, pp. 636–652, Aug. 2011, doi: 10.1108/14684521111161972.
[79] F. Ben Noui and I. Zaiem, "Information Perceived Quality: An Analysis of the Perceived Risks Related to E-Health Information Search," *Journal of e-health Management*, vol. 2020, 2020.
[80] L. Zhu, H. Li, W. He, and C. Hong, "What influences online reviews' perceived information quality?," *The Electronic Library*, vol. 38, no. 2, pp. 273–296, May 2020, doi: 10.1108/EL-09-2019-0208.