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Factors Influencing the Intention to Choose Transportation Applications in Bangkok, Thailand

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Abstract

This research delves into the factors that influence individuals' choices when selecting transportation applications in the bustling urban environment of Bangkok, Thailand. The study focuses on perceived usefulness, perceived ease of use, perceived efficiency, and system availability as key determinants shaping users' intentions. Employing a quantitative methodology, the primary data collection method involved the distribution of questionnaires to a sample comprising 400 active users of transportation applications in Bangkok. Convenience sampling was utilized to select participants. The study rigorously tested hypotheses and conducted detailed data analysis using analytical software and statistical techniques. The results have convincingly shown that perceived usefulness, perceived ease of use, perceived efficiency, and system availability collectively hold substantial sway over individuals' intentions when it comes to the adoption of transportation apps in this dynamic urban setting. These findings contribute significantly to a deeper understanding of user behavior and preferences within the realm of modern mobility solutions.

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1. Introduction

Transportation applications, recognized as vital technologies, have arisen as transformative instruments in the domain of urban mobility, fundamentally altering the manner in which people traverse and engage with transportation systems within metropolitan regions. These apps serve multifaceted intentions, offering a spectrum of services ranging from on-demand ridesharing and real-time public transit information to efficient route planning and sustainable mobility options like bike and scooter rentals. They empower users to make well-informed decisions about their transportation choices, be it optimizing for speed, reducing environmental impact, or streamlining daily commutes. This phenomenon underscores the critical role of technology in enhancing urban mobility, resulting in significant time savings and contributing to the broader goal of sustainable and efficient transportation systems (AltexSoft, 2018; Monstarlab, 2021; Rizzoli, 2021).

According to Mahakheeta et al. (2023), several factors influence an individual's intentions to use and adopt technology. In this context, the Technology Acceptance Model (TAM) stands out as a well-recognized framework initially developed by Davis. TAM seeks to elucidate the process of individuals adopting information systems, drawing from principles rooted in rational behavior theory (Limna, Kraiwanit, & Jangjarat, 2023). As noted by Karim et al. (2020), Tahar et al. (2020), Woodeson (2022), and Shaengchart (2023), perceived ease of use pertains to users' subjective assessment of the simplicity and user-friendliness of a technology. It reflects the extent to which users believe a particular technology or system is easy to navigate. High perceived ease of use can act as a catalyst for technology adoption, as users are more

inclined to engage with systems they perceive as user-friendly. Conversely, when a system is perceived as challenging to use, user engagement diminishes. On the other hand, perceived usefulness refers to users' belief that a technology or system will effectively assist them in accomplishing their goals and tasks. It is a crucial factor in technology adoption, as users are more likely to embrace and continue using technology when they perceive it as beneficial in achieving their objectives. In a study by Phetnoi, Siripipatthanakul, and Phayaphrom (2021), the factors influencing the purchase intentions of Thai consumers on online shopping platforms and applications during the COVID-19 pandemic were explored. Their research revealed that both perceived ease of use and perceived usefulness exerted significant influence on purchase intention.

Perceived efficiency refers to an individual's subjective assessment or judgment of how efficient a particular process, system, or action appears to be. It is based on a person's perception or opinion rather than objective, quantifiable data. Perceived efficiency can play a significant role in influencing behavior and decision-making because people often make choices and form attitudes based on their perceptions of how efficiently something is being done or how efficient a product or service appears to be. It can be influenced by factors such as user experience, ease of use, speed, and the overall effectiveness of a process or system as perceived by the individual (Green, Tesler, & Sharon, 2021; Phan & Ngu, 2021). Dhir and Chakraborty (2023) investigated the significance of the human resources (HR) department's perceived efficiency in impacting employee satisfaction and performance. The findings underscore the importance of cultivating a positive perception through high-quality HR services, as such services can significantly boost employee performance.

System availability is the extent to which a computer system, software application, or technology infrastructure is operational and accessible for users over a specific period. It is a critical metric in information technology and is typically expressed as a percentage, indicating the proportion of time that a system is available for use. High system availability is desirable in various contexts, especially for mission-critical systems and services. The calculation of system availability considers both planned and unplanned downtime, maintenance, and any other factors that may affect the system's accessibility (AltexSoft, 2022; Eisner, 2022). Webster and Ahuja (2006) explored the enhancement of web navigation system design, taking into account the influence of user disorientation on engagement and performance. Their proposal suggested that navigation features should be consistently available in fixed positions on every page, similar to the use of frames, to improve user experience and usability.

This study investigates factors influencing an individual's intentions to choose transportation applications in Bangkok, Thailand. In this study, perceived usefulness significantly impacts users' intentions. This suggests that if users perceive these apps as valuable tools for addressing their transportation needs, they are more likely to intend to use them. Perceived ease of use plays a pivotal role, indicating that user-friendliness and ease of navigation within the apps can strongly influence user intentions. Perceived efficiency significantly impacts users' intentions, emphasizing the importance of the apps' effectiveness in providing transportation solutions. System availability significantly influences user intentions, suggesting that consistent and reliable access to these apps positively affects their intention to use them for transportation purposes. Thus, perceived usefulness, perceived ease of use, perceived efficiency, and system availability may have a significant impact on the intention to select transportation apps. Figure 1 illustrates the study's conceptual framework, and

the research hypotheses are outlined as follows.

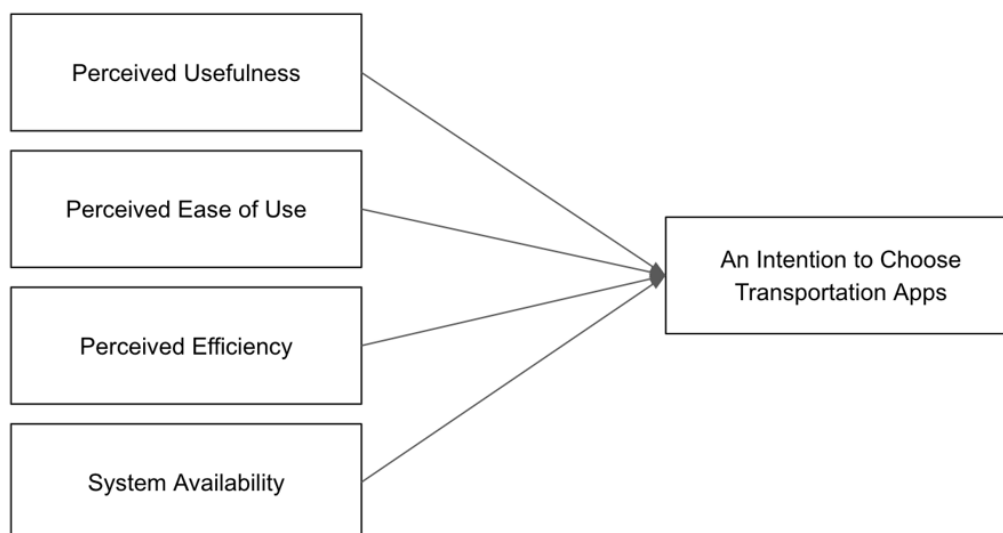


Figure 1. Conceptual Framework

- H1: Perceived usefulness significantly influences intention to choose transportation apps.
- H2: Perceived ease of use significantly influences intention to choose transportation apps.
- H3: Perceived efficiency significantly influences intention to choose transportation apps.
- H4: System availability significantly influences intention to choose transportation apps.

2. Methodology

This study adopted a quantitative research approach, utilizing online closed-ended questionnaires with Likert's Rating Scale for data collection. A five-point Likert Scale, ranging from 5 (strongly agree) to 1 (strongly disagree), was employed to assess the key variables. The questionnaire items were thoughtfully crafted using established and validated research data, with a focus on ensuring measurement instrument validity, indicating the accuracy in measuring the intended concepts (Siripipatthanakul et al., 2023). Prior to full distribution, the questionnaire underwent pre-testing with 30 respondents, following the recommendations of Siripipatthanakul et al. (2022) and Sitthipon et al. (2022). Data collection was executed through an online survey created using Google Forms, disseminated across various online platforms such as Facebook, Line, and Twitter (referred to as X). Ethical practices were maintained by providing a clear explanation of the study's purpose to potential respondents, seeking their willingness to participate before distributing the online questionnaires.

The study targeted an unspecified number of transportation app users in Bangkok, Thailand, with participants aged over 18. According to Sirisacorn et al. (2023) and Thetlek et al. (2023), following standard survey practices with a confidence level of 95%, a minimum of 385 samples was required using probability sampling (Stratified Random Sampling) at $p=0.5$, with a sample error of 5% and a precision level of 95%. The study ultimately gathered data from a sample size of 400

respondents who were transportation app users in Bangkok, Thailand, selected through convenience sampling. For data analysis, analytical software was employed, incorporating various statistical methods for comprehensive examination. Moreover, descriptive statistics were utilized to summarize general characteristics, as well as behaviors, and factors associated with an individual's intentions to choose transportation apps, presented through frequency tables, percentages, and means. Inferential statistics were subsequently applied to test hypotheses and establish relationships between independent and dependent variables, adhering to specific assumptions.

3. Results

A comprehensive dataset was collected from 400 transportation app users located in Bangkok, Thailand, who willingly participated by filling out online questionnaires. Following data collection, a thorough coding process and rigorous analysis were meticulously undertaken to effectively address the research objectives.

Table 1. Reliability Statistic

Cronbach's Alpha	N of Hypotheses
0.769	4

Table 1 presents Cronbach's Alpha, a measure of internal consistency reliability, with a value of 0.769. This value indicates a high level of internal consistency among the four hypotheses analyzed in the study. In essence, it confirms that the items within these hypotheses effectively measure the same underlying concepts consistently.

Table 2. Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.666 ^a	0.443	0.438	0.325

^a Predictors: (Constant), H1, H2, H3, H4

As shown in Table 2, a model summary, the statistics provide valuable insights into the regression model's performance. The coefficient of determination (R^2) for predicting the intention to use transportation apps is 0.443. This R^2 value signifies that approximately 44.3% of the variability in the intention to use transportation apps can be accounted for by the predictors incorporated into the model.

Table 3. Coefficients^a

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Results
1	(Constant)	0.949	0.207		4.573	0.000	
	H1	0.181	0.037	0.209	4.843	0.000	Accepted
	H2	0.157	0.048	0.167	3.275	0.001	Accepted
	H3	0.164	0.046	0.165	3.524	0.000	Accepted
	H4	0.287	0.044	0.317	6.525	0.000	Accepted

^a *Dependent Variable: The intention to use transportation app*

The statistical analysis conducted in this study, as shown in Table 3, offers a comprehensive understanding of the determinants influencing the intention to use transportation apps. In the analysis of the hypotheses, the findings provided compelling insights into the factors influencing users' intentions to use transportation apps. H1, indicating that perceived usefulness significantly impacts the intention to select transportation apps, was confirmed with a Sig. value of 0.000, demonstrating a strong statistical significance. H2, which suggests that perceived ease of use plays a significant role in influencing the intention to choose transportation apps, was also accepted, with a Sig. value of 0.001, indicating statistical significance. Likewise, H3, proposing that perceived efficiency significantly affects the intention to choose transportation apps, was supported with a Sig. value of 0.000, signifying a substantial statistical influence. Lastly, H4, indicating that system availability significantly influences the intention to choose transportation apps, was confirmed with a Sig. value of 0.000, highlighting a noteworthy statistical impact.

4. Discussions

The discussion reveals that perceived usefulness, perceived ease of use, perceived efficiency, and system availability collectively wield significant influence over individuals' intentions when it comes to selecting transportation apps. These factors are pivotal in shaping user preferences and decisions in the realm of app adoption for transportation needs. The acknowledgment of perceived usefulness underscores the importance of these apps in addressing specific transportation requirements, motivating users to choose them as their preferred solutions. Additionally, the influence of perceived ease of use emphasizes the critical role of user-friendly design in attracting and retaining users. Perceived efficiency further cements the importance of these apps in optimizing transportation experiences, while the assurance of system availability bolsters users' trust and reliance on them. In sum, these findings offer valuable insights for app developers and providers, highlighting the need to optimize these factors to enhance user satisfaction and promote the widespread adoption of transportation apps as indispensable tools in modern mobility solutions.

The findings of this study are consistent with previous research. For instance, Kasilingam (2020) affirmed that perceived usefulness, perceived ease of use, perceived enjoyment, price consciousness, perceived risk, and personal innovativeness collectively exerted a significant impact on users' attitudes toward chatbots. Rafique et al. (2020) also indicated that perceived usefulness and perceived ease of use emerged as significant predictors of users' intentions to

use these applications. Furthermore, Green, Tesler, and Sharon (2021) studied how income levels (above or below the average monthly wage) influenced elderly individuals' effectiveness in seeking online health information and found that perceived efficiency played a mediating role between health status and awareness of online sources.

5. Conclusions

This study has established that perceived usefulness, perceived ease of use, perceived efficiency, and system availability collectively exert a substantial influence on individuals' intentions when it comes to selecting transportation apps. These factors are pivotal in shaping user preferences and choices within the realm of transportation app adoption. Recognizing the importance of these elements not only reinforces their role as key determinants of user intentions but also underscores their significance in enhancing the overall user experience and promoting the widespread adoption of transportation apps as essential tools in modern mobility solutions. Future developments and optimizations in these areas are likely to continue driving user satisfaction and further solidify the adoption of transportation apps in the ever-evolving landscape of urban transportation.

Despite the valuable insights offered by this research into the factors influencing the selection of transportation applications, several limitations must be acknowledged. The reliance on convenience sampling may introduce bias, potentially limiting the findings' generalizability. In addition, the study's focus on specific factors may omit other relevant variables impacting user intentions. The absence of an exploration of Bangkok's unique cultural and contextual elements may also constrain the study's applicability. Moreover, the reliance on self-reported data could introduce response bias. To address these limitations, future research could employ more diverse sampling methods, investigate a broader range of factors, delve into qualitative aspects of user experiences, consider external influences, and conduct comparative studies across different urban settings to provide a more comprehensive understanding of transportation app adoption in diverse contexts.

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