

Drivers of Intention to Use MyTNB Mobile Applications among the Customers of Tenaga Nasional Berhad

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DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v15-i12/27171>

Published Date: 26 December 2025

Abstract

The utility industry is leveraging the mobile application features to enhance customer value, customer satisfaction, and towards the continuance of usage intention. Specifically for Tenaga Nasional Berhad (TNB), as the main electricity utility company in Malaysia, customer satisfaction is one of the crucial factors that has led TNB, as an electricity service provider, to explore and adopt digitalization in its services. Categorized under smart retail technologies, myTNB mobile applications have been introduced by TNB as a medium to improve the customer retail experience by providing superior, personalized retail services. The intention to continuously improve and exceed customers' expectations by providing mobile solutions makes this study necessary, as it explores the status of the myTNB mobile applications and aligns with the company's strategies for profit and sustainability. Moreover, understanding the factors that drive customers' mobile app use and how they affect myTNB's usage intention could inform and support its business strategy and performance. Hence, this study investigates the relationships among the Technology Acceptance Model (TAM), perceived ease of use, perceived usefulness, and Technological Readiness (TR) with customers' attitudes and usage intentions toward myTNB mobile applications. The data will be collected from registered customers of TNB, and Smart Partial Least Squares (SmartPLS) 4.0 will be used for the analysis. Findings should indicate whether perceived ease of use, perceived usefulness, and TR positively influence the customer's attitude, which, in turn, influences their intention to use myTNB mobile applications.

Keywords: Utility Industry, Mytnb Mobile Applications, Usage Intention, Technology Acceptance Model (TAM), Technological Readiness (TR)

Introduction

Numerous service innovations are provided to customers today, supported by the widespread use of the internet and mobile technologies. In particular, the diversification of services offered has become increasingly important for companies, such as utility companies, as they seek to create a competitive advantage in the market, retain customers, reduce costs,

and ultimately increase business profitability through mobile applications. Moreover, there has been a surge in mobile application downloads driven by the proliferation of smartphones, with these programs designed specifically for smartphone users and becoming essential in the modern digital economy (Liu et al., 2023). According to the statistics, mobile applications were downloaded over 257 billion times globally between 2016 and 2023 (Statista, 2023), demonstrating stagnation compared to the previous year, 2016 to 2022. However, a slight increase was still recorded in 2023. Collectively, mobile applications have gradually become an indispensable part of various industries due to their mobility, wireless connectivity, and real-time nature. Amid the rapid growth of the mobile content market, various mobile applications have become popular in the workplace, including those that allow users to search the internet, manage billing, view outstanding amounts, access frequently asked questions, or submit feedback or complaints. According to the Malaysian Communication and Multimedia Commission (MCMC), Malaysian technology awareness and familiarity with using digital tools like mobile applications have tremendously increased, resulting in 94.8% internet users using smartphones. This directly increases mobile application usage, as it is the most widely used communication and social networking platform (Internet Users Survey, 2021). The remarkable growth in the mobile application market will undoubtedly create new opportunities for many companies, including Tenaga Nasional Berhad (TNB). Additionally, various services are available through TNB's myTNB mobile application, as displayed on its homepage, allowing users to view their current and latest six-monthly electricity bills and to make transactions directly through the app. Thus, these mobile payment features improve customer service and increase TNB's collection efficiency. The higher the collection efficiency, the better the retailer's cash flow. Given those business performances, the exploration of intention to use the myTNB mobile application through this study becomes significant.

Statistically, only 6.2 million customers subscribe to myTNB mobile applications out of TNB's total 10.6 million customers (TNB, 2022). There are about 4.4 million balance customers who are not yet considering the mobile application as their digitalization medium (TNB, 2022), which might lead to communication breakdown, as less awareness could be shared with them. Consequently, with such a high number of customers still not subscribed to the myTNB mobile application, TNB loses interaction with them when considering manual intervention, which also leads to higher costs than digital methods. The intention of continuous improvement and exceeding their consumer expectation makes this study necessary to conduct, as knowing the status of the myTNB mobile applications and aligning with the company's strategies of gaining profit and sustaining in the market by knowing the factors that their consumers use the apps and how it affects the usage intention of myTNB towards the company. Besides, consequent of the study towards the customers also makes this study significant, whereby the action of TNB improvising their mobile apps once the drivers of usage intention are assessed. This led to user experience improvement where users are more likely to use myTNB mobile apps confidently and regularly. Furthermore, allowing more personalized features by myTNB reflects the insight from the research, resulting clearer usage data and faster bill access. Customers' trust towards the usage of myTNB mobile apps will gain where they could manage their electricity usage, payments, and inquiries without needing to physically visit TNB's service counter anymore. An increase in mobile app users is anticipated as a result of the research, allowing more customers and companies to obtain goods and services at a reduced cost of company operations with transactions completed quickly and efficiently

Most of the existing literature centers on sectors such as banking, retail, and healthcare, as well as on mobile application usage. From past studies, although the Theory Acceptance Model (TAM) by Davis (1989) yields strong and positive results, it may not be adequate to explain the area of adoption of technology on its own (Dash & Mohanty, 2023; Khashan et al., 2024). Moreover, recent studies have suggested that perceived usefulness and perceived ease of use alone may not sufficiently explain users' behavioral intentions, particularly in populations with varying levels of digital readiness (Omar et al., 2023). Hence, given the limitations of the TAM as mentioned previously, past studies have integrated TAM with Technological Readiness (TR) into a single framework to assess mobile utility apps, particularly with a focus on existing customers rather than non-subscribers. As demonstrated by Cimbalević et al. (2023), integrating both theories—the TR and Acceptance Model (TRAM)—positions TAM variables as mediators between TR and the intention to use mobile applications, as presented in the research framework. However, despite those settings in TRAM, this study integrated the TR and TAM variables—perceived ease of use and perceived usefulness—as similar independent variables influencing the dependent variable, intention to use, with attitude serving as the mediator. Instead of the practical significance mentioned earlier, this research also could be beneficial towards higher education, as they could develop the intention to use in their future research. Applying this framework by using single retail apps, myTNB, allowing control of the factors, a more accurate measure of intention to use could be identified.

Literature Review

Underpinning Theory

One of the most common models, TAM, is used to examine the development of information technologies and the potential for end users to employ them (Davis, 1989, 1993; Davis et al., 1989). Refined by Davis (1989) through the Theory of Reasoned Action (TRA), TAM was proposed, which results in a cognitive model from the domain of information systems that shares similarities with the TRA (Fishbein and Ajzen, 1975). Furthermore, TAM is commonly used to evaluate an individual's acceptance of technology, including innovations such as electronic commerce, mobile commerce, social commerce, and electronic banking, based on the TRA (Dash & Mohanty, 2023). There are two core cognitive components, perceived ease of use and perceived usefulness (Dash & Mohanty, 2023). An individual's acceptance of innovative technology is determined by the intention to use it, which, in turn, influences the two components identified by Ferreira et al. (2023). Most recent studies forecast an individual's decision to accept and use technologies across different contexts, highlighting the significance of TR (Dash & Mohanty, 2023). Additionally, capacity readiness, technological infrastructure, and innovation are the extent of TR that support technology adoption (Ofosu-Ampong et al., 2023). Thus, this study conceptualized a theoretical model by integrating TR as a general determinant into TAM to examine the potential drivers of customers' usage intention for the myTNB mobile application in Malaysia.

Relationship between Perceived Ease of Use and Perceived Usefulness

The relationship between perceived ease of use and perceived usefulness is revealed to be significant (Herzallah et al., 2022). An argument always arises over how to differentiate between perceived ease of use and perceived usefulness, given their conceptual closeness, but in distinctly theoretical terms. Specifically, perceived ease of use refers to the effort required to use the system, and perceived usefulness refers to the benefits gained from using

it. Herzallah et al. (2022) noted the widespread availability of easy-to-use commercial websites on mobile devices, which customers can readily understand and are attracted to for frequent use. Consequently, when the technology or new system is easy to use and understand, perceived usefulness is enhanced (Kim et al., 2023). Furthermore, when no extra effort is required from customers when using the information system, they discovered it helpful and demonstrated a positive attitude towards mobile application use (S. ur Rahman et al., 2024). Hence, the following hypothesis was proposed for this study:

H1: Perceived ease of use has a positive and significant influence on perceived usefulness on intention to use myTNB mobile application.

Relationship between Perceived Ease of Use, Attitude, and Intention to Use

The relationship between perceived ease of use and intention to use of mobile applications is fundamentally shaped by the mediating role of customers' attitude (Soodan et al., 2023). In this context, Soodan et al. (2023) indicated that attitude fully mediates the relationship between perceived ease of use and usage intention for agro-advisory mobile applications. Experiencing smooth browsing of relevant products without obstacles between transactions results in a seamless experience, helping users stay focused on the transaction, preventing confusion, and reducing cognitive load (Anwar, 2024). Notably, ease of use enables easier transactions, and the resulting positive experience fosters a positive attitude toward mobile applications (Hasan 2022, Rahman et al. 2024). Therefore, attitude plays an important role in mobile application usage intention (Soodan et al., 2023). Considering mobile platforms as easy and less complicated for customers may increase the intent to use them. Hence, the following hypotheses were proposed for this study:

H3: Perceived ease of use has a positive and significant influence on intention to use myTNB mobile application.

H7: Perceived ease of use has a positive and significant influence on the attitude of intention to use myTNB mobile application.

H10: Attitudes positively and significantly mediate the influence of perceived ease of use on intention to use myTNB mobile application.

Relationship between Perceived Usefulness, Attitude, and Intention to Use

The relationship between Perceived Usefulness and Intention to Use of mobile applications is profoundly mediated by the customer's attitude, forming individual intention towards actual usage (ElSayad, 2024). A positive attitude, which exists prior to actual use, indicates that users are more likely to believe that using such technology improves their lives, including performance, and that it is useful (Khor et al., 2023). Such perceived usefulness may stem from providing faster services at a lower price compared to traditional methods (Almajali et al. 2023), health improvement through mobile health applications (Khor et al. 2023), and even based on the structure, design, and content associated with the mobile applications offered (Kampa, 2023). Perceived usefulness has been identified as a key driver of attitudes toward technology use among individuals who feel insecure about using it (Cimbaljević et al., 2023). However, Khor et al. (2023) noted that individuals who do not perceive mobile applications or other technologies as useful, depending on the objective, can still demonstrate a positive attitude towards them. Consequently, customers' positive attitude toward technology use serves as an indicator of actual use and technology acceptability (Khor et al. 2023). Thus, the following hypotheses were proposed for this study:

H2: Perceived usefulness has a positive and significant influence on intention to use myTNB mobile application.

H6: Perceived usefulness has a positive and significant influence on the attitude of intention to use myTNB mobile application.

H9: Attitudes positively and significantly mediate the influence of perceived usefulness on intention to use the attitude of myTNB mobile application.

Relationship between Technological Readiness, Attitude, and Intention to Use

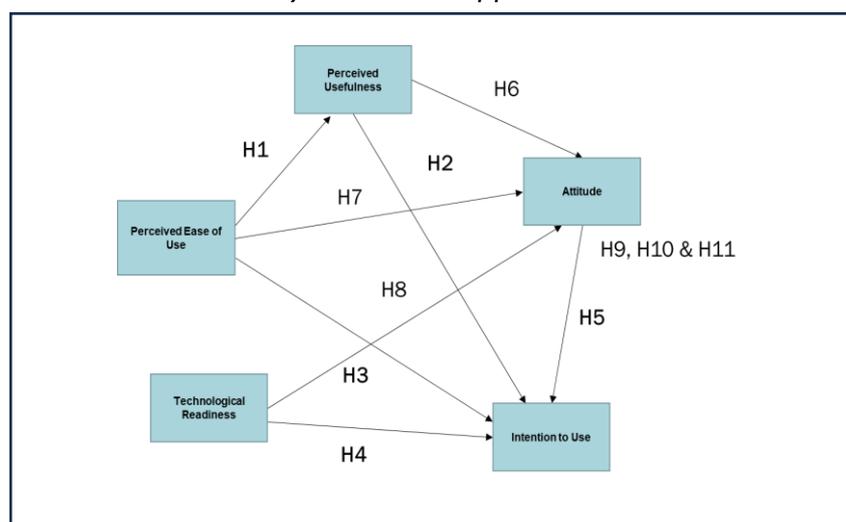
The relationship between TR and the intention to use mobile applications is strengthened by the mediating influence of customers' attitude (Alhammadi et al. 2023; Baltaci et al. 2024; Gopinathan 2024). Alhammadi et al. (2023) stated that the use of technologies such as mobile devices and applications is associated with cultural shifts in digitalization habits as an effort to expand the implementation of smart learning. Cultural shifts towards digital culture influence behavior and attitudes, which, in turn, shape the adoption and acceptance of new technologies (Alhammadi et al., 2023). Moreover, as a driver of intention to use technology, technology readiness suggests that individuals are more likely to adopt technology when their level of readiness is high (Ofosu-Ampong et al., 2023). Additionally, Ofosu-Ampong et al. (2023) highlighted that managers need to deliver the essential tasks of earlier training to the required individuals to deploy technology that reflects the significance of technology readiness for users' behavioral intention. Collectively, the mentioned study indicates that a robust theoretical framework holds that TR alone does not directly translate into intention to use, but that the formation of a favorable attitude operates through it. Thus, the following hypotheses were proposed for this study:

H4: Technological readiness has a positive and significant influence on intention to use myTNB mobile application.

H8: Technological readiness has a positive and significant influence on the attitude of intention to use myTNB mobile application.

H5: Attitude has a positive and significant influence on intention to use myTNB mobile application.

H11: Attitudes positively and significantly mediate the influence of technological readiness on intention to use the attitude myTNB mobile application.



Research Methodology

This study intends to use a cross-sectional study to determine the drivers of usage intention for myTNB mobile applications, as it provides a snapshot of the population or phenomenon at a given time and offers the benefit of being time- and resource-efficient (Creswell, 2014). Specifically, the study will sample a minimum of 92 from the target population of registered residential customers of TNB, 8.9 million as per TNB's annual report (TNB Annual Report, 2023). Registered residential customers of TNB include both the owner and the tenant of a residential premises, depending on TNB's treatment of the account owner. Furthermore, the study will collect primary data only, and the quantitative data generated will be analyzed using descriptive statistics, including percentage distributions, means, and frequency counts, before proceeding to inferential testing. Subsequently, Partial Least Squares (PLS) via SmartPLS will be used in this study, with SmartPLS serving as the data analysis tool. Finally, all the hypotheses will be tested using Multiple Linear Regression (MLR). The researcher will test two aspects in MLR on the path relationship and significance values ($p < 0.05$). This analysis will be used to accept or reject those hypotheses.

Conclusion

This study will establish that perceived ease of use, perceived usefulness, and TR influence the intention to use myTNB mobile applications, both directly and through the critical mediating role of customer attitude. The findings will demonstrate that while these attributes are important external drivers, their ultimate impact on usage decisions will be filtered through the customer's attitudinal evaluation. A positive attitude, cultivated by perceptions of effortless performance improvement and control, will emerge as an essential psychological mechanism that translates product features into strategic commercial action. Consequently, insights from the research that enable more personalized features in myTNB mobile applications lead to higher customer engagement, ensuring transparency and smooth interaction between both parties. Customers will gain trust in using myTNB mobile applications, where they can manage their electricity usage and enjoy the features provided without physically visiting TNB's service counter. Thus, it is expected that the increase in mobile application subscribers will enable more customers and businesses to access goods and services at low cost for commercial activities and for transactions to be completed quickly.

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