



The Effect of Human-Computer Interaction on Users' Intention to Use in Mobile Applications: Evidence from State Banks in Sri Lanka

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Abstract

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The banking industry has changed due to the quick development of mobile banking apps, which highlights how crucial human-computer interaction is to improving user experiences. This study examines how users' intentions to use mobile banking applications in Sri Lankan state banks, specifically their intention to continue using these services, are influenced by important crucial human-computer interaction factors, including perceived usefulness, findability, desirability, and ease of use. Guided by the Technology Acceptance Model a quantitative research design was employed using data collected from 385 users. The findings indicate that perceived usefulness and desirability have significant positive effects on users' intention to use mobile banking applications, while perceived ease of use and findability do not show significant influence. Despite these insights, the model explains only 9.1% of the variance in user intention, suggesting that other factors such as trust, accessibility, or security may also play critical roles. This underscores the complexity of user behavior and the need for more comprehensive models. The study offers practical implications for state banks, developers, and policymakers seeking to improve mobile banking experiences and user adoption through user-centered design.

Keywords: Human-computer interaction; Mobile applications; Technology acceptance model; User intention.

1. Introduction

Through the simple growth of commercial transactions made possible by mobile phones, a wide range of business prospects have been established through wireless transmission. These advancements make doing business, trading, and buying products and services more effortless. It has become essential for companies to alter their services to offer convenience to their customers, given the rising usage of e-commerce by households throughout the globe (Changchit et al., 2020). Like other companies, banking services understand that their operations must be conducted at their customers' convenience. Online service delivery may influence customer satisfaction, retention of consumers, and, eventually,

the profitability of businesses. Both customers and banks now place more value on mobile banking, and usage has significantly increased. To increase their competitive advantages, banks and other financial institutions are transforming their business models to reduce costs, enhance performance, expand markets, and transform products (Changchit et al., 2020).

As mobile applications have become essential to daily life Human-Computer Interaction (HCI) within these applications is gaining higher importance. To satisfy users' expectations, which may eventually influence the choices they make, mobile app developers must continuously enhance the user experience (Kaewkitipong et al., 2022). HCI is an academic discipline focused on enhancing user-computer interactions. HCI does this by creating interactive computer interfaces that fulfil consumers' requirements and needs (Guarav et al., 2023). The article defines the essential principles of HCI, its aims, and its importance, while offering examples to exemplify its use. The principal emphasis of HCI research is on the development, implementation, and evaluation of collaborative computer systems for human use, together with the notable phenomena associated with them (Guarav et al., 2023; Kheder, 2023). HCI principles aim to develop systems that minimize the gap between the computer's comprehension of users' tasks and the human cognitive model of their objectives, hence providing the most effective interface possible within current constraints (Slegers, 2022).

Recent HCI literature emphasizes that the field now extends beyond interface usability to include user satisfaction, emotional design, accessibility, and contextual adaptability (Hassenzahl & Tractinsky, 2006; Slegers, 2022b). The ISO 9241-210 standard outlines core dimensions such as effectiveness, efficiency, and user satisfaction in real-world contexts (International Organization for Standardization, 2019). Similarly, Norman's interaction Design principles highlight the importance of intuitive design, feedback, and affordance in shaping digital behavior (Norman, 2013). By adopting this broader lens, the study conceptualizes HCI not merely as a technical interface but as a user-centered process that integrates functionality, perception, and engagement that is relevant in mobile banking environments.

Understanding the impact of HCI on mobile applications can significantly contribute to improving the overall user experience (Packia et al., 2024). By identifying user preferences, expectations, and pain points, state banks can tailor their mobile applications to meet customer needs effectively. Increased customer satisfaction, loyalty, and engagement can result from improved user experience (Harahap et al., 2024). In order to encourage more consumers to embrace digital banking, the study's focus on HCI attempts to pinpoint the elements that affect the uptake and use of mobile banking (Singh & Malik, 2024).

According to the findings of the pilot survey, most of the participating users utilize State Bank mobile applications for their mobile banking needs, and these consumers have noticeable user interface and design and experience problems with these mobile apps. The mobile banking users are using mobile banking apps from several state banks in Sri Lanka for various tasks, such as checking account balances and paying bills (Ruwini & Pushpika, 2024). Most respondents are aware of mobile banking and possess both a smartphone and an internet connection. Although many users complain about usability, functionality, and design aesthetics, some find the user interfaces sufficient (Syamsuar et al., 2022). There are conflicting opinions about features like clear navigation menus and support for persons with impairments. In general, the majority indicate that in order to improve the mobile banking experience, user-friendliness, technical performance, and visual design need to be improved, and Google app reviews show that customers have serious concerns with the user interface,

design, and overall user experience of mobile banking run by Sri Lankan state banks (Sally, 2023).

This research study on the effect of human-computer interaction on mobile applications in state banks in Sri Lanka will benefit multiple stakeholders. The main beneficiaries include state banks themselves, mobile application developers, users of mobile banking applications, regulatory bodies, policymakers, and academic and research communities. The findings of this study will provide state banks with insights to improve their mobile application design and user experience. Mobile application developers can utilize the recommendations to create user-friendly and desirable applications. Users will benefit from enhanced ease of use, desirability, findability, usability, and accessibility in their mobile banking experience. Regulatory bodies and policymakers can shape effective policies and guidelines. The study contributes to the academic community by expanding the knowledge base on human-computer interaction in banking. Overall, the study aims to enhance mobile banking experiences, promote technology adoption, and support the growth of digital banking in Sri Lanka.

2. Literature Review

2.1 Theoretical Foundation

The Technology Acceptance Model (TAM), introduced by Davis (1989), has been widely used to understand user behavior toward new technologies. It posits that perceived usefulness and perceived ease of use are two primary determinants of a user's behavioral intention to adopt and use technology (Charness & Boot, 2016; Mois & Beer, 2020). Perceived usefulness refers to the extent to which a user believes that using a system will enhance their performance, while perceived ease of use reflects the effort required to interact with the system. These constructs are influenced by individual attitudes and subjective norms, social expectations that guide behavior, thereby shaping intention (Rauniar et al., 2014). TAM has been instrumental in identifying the cognitive and social factors that contribute to the acceptance and integration of technology across various organizational and user contexts (Lindsay et al., 2011).

Mobile banking application adoption and user satisfaction are commonly analyzed using the TAM. According to these models, user satisfaction and intention to use mobile banking services are significantly predicted by perceived usefulness and ease of use. An intuitive mobile application that makes it simple for users to locate essential features can improve perceived utility and boost the chance that users will keep using it (Alhejji et al., 2022; Sudirjo et al., 2024). Furthermore, the alignment of app features with user expectations is crucial for enhancing competitiveness in the mobile banking market, as it directly addresses user needs and preferences (Younis, 2023).

Research has shown that the perceived ease of use of mobile banking applications significantly affects users' intention to adopt these services. Users are more likely to engage with applications that they find intuitive and easy to navigate. This is particularly relevant in state banks, where the demographic may include users who are less familiar with technology. A focus on user-centered design can help ensure that mobile banking applications cater to a diverse user base, thereby improving findability and overall user satisfaction (Saadilah et al., 2021; Sudirjo et al., 2024).

2.2 Understanding Human-Computer Interaction (HCI)

HCI is a multidisciplinary field focused on the design, evaluation, and implementation of interactive computing systems for human use and the study of major phenomena

surrounding them (Zhang, 2015). While HCI originally focused on usability and ergonomics, its scope has evolved to include emotional design, cognitive modeling, accessibility, and broader user experience (Hassenzahl & Tractinsky, 2006; Slegers, 2022b). According to ISO 9241-210, 2019, HCI-centered systems should be designed with attention to effectiveness, efficiency, satisfaction, and user context. Similarly, Norman's Interaction Design framework emphasizes affordance, feedback, visibility, and conceptual models as key to designing intuitive systems (International Organization for Standardization, 2019; Norman, 2013). These theoretical foundations frame HCI as not just a technical interface issue, but a deeply human-centered process.

In this study, HCI is conceptualized primarily through the lens of user-centered interaction design, where both cognitive and emotional responses to system features shape behavior. The four constructs selected, perceived usefulness, ease of use, desirability, and findability, are operationalized as measurable proxies of user interaction and perception within mobile applications. While these Constructs are often seen in UX design literature, they are deeply rooted in HCI frameworks when viewed through a usability and design cognition lens (Kaewkitipong et al., 2022; Perlman, 2021).

In this study, the dependent variable, user intention, is defined as the intention to continue using mobile applications provided by state banks (Venkatesh et al., 2003). This refinement clarifies that the study focuses on post-adoption behavior, which is especially relevant in digitally mature user environments. In HCI and TAM-related research, behavioral intention is considered a strong predictor of actual system use and is influenced by a mix of functional (usefulness), usability (ease of use, findability), and emotional (desirability) factors.

2.3 Hypothesis Development

Perceived usefulness and ease of use originate from the TAM (Davis, 1989) but are widely applied in HCI to assess user satisfaction and behavioral intention (Rauniar et al., 2014). In HCI terms, usefulness aligns with task success and efficiency (International Organization for Standardization, 2019), and ease of use reflects interaction simplicity and cognitive load (Norman, 2013). These constructs remain foundational in evaluating the functional aspects of interaction.

2.3.1 Perceived Usefulness

"The extent to which a person believes that using an et al system would enhance his or her job performance and effectiveness" is the definition of perceived usefulness (Basoglu et al., 2014). Perceived Usefulness of Mobile Banking may be defined as the extent to which consumers believe mobile banking will be beneficial in satisfying their banking demands when looking at perceived usefulness in an organizational environment (Changchit et al., 2020). Usability is defined by indicators that are measured, which include "satisfaction, effectiveness, efficiency, and overall" (Yu & Huang, 2020). Researchers anticipate that attitudes towards using mobile banking will be positively influenced by perceptions of the utility of mobile banking (Changchit et al., 2020). An individual will perceive an application to be beneficial if they believe it is straightforward, simple, and requires little effort on their part to utilizes (Kusyanti et al., 2022). Accordingly, it is proposed that:

H1: Perceived usefulness significantly impacts users' intention to use mobile applications in State Banks in Sri Lanka.

2.3.2 Perceived ease of use

Perceived ease of use, defined as “the extent to which a person believes that using a system would be free of mental effort” (Basoglu et al., 2014). This factor is crucial in understanding how different people react to technology because it provides evidence of the big impact perceived ease of use has on usage intention (Changchit et al., 2020). Perceived use of ease was described as “the extent to which the user expected the target system to be free of effort,” and consumers choose to buy only if the product they select is simple to use and is assured to provide satisfaction (Nawaz & Yamin, 2018). An individual's level of belief that employing a specific system would increase his performance at work is characterized as perceived usefulness. Users who believe a technology can benefit them and enhance their performance are more likely to want to use it in the future (Kusyanti et al., 2022). Accordingly, it is proposed that:

H2: Perceived ease of use significantly impacts users' intention to use mobile applications in State Banks in Sri Lanka.

2.3.3 Desirability

Desirability reflects a user's emotional response to visual and interactive elements of an interface, and is a key pillar in HCI's expansion into affective design and user engagement (International Organization for Standardization, 2019). Desirability also aligns with Norman's concept of emotional design, where the aesthetic and visceral appeal of a system influences user motivation and long-term use. In mobile banking, a desirable interface may increase trust, brand perception, and satisfaction (Norman, 2013). Consequently, the desirability of mobile banking applications may be amplified through social networks and peer recommendations, further driving user engagement. In addition to these factors, the design and functionality of mobile banking applications significantly affect their desirability. Reavis, (2015), highlights that key feature, such as check deposits and transaction capabilities, are essential for attracting users to mobile banking apps. The integration of advanced features, such as artificial intelligence, can also enhance user engagement by providing personalized experiences (Lee & Chen, 2022). Therefore, the desirability of mobile banking applications is closely linked to their ability to meet user needs through innovative and functional design. Accordingly, it is proposed that:

H3: Desirability significantly impacts users' intention to use mobile applications in State Banks in Sri Lanka

2.3.4 Findability

The concept of findability refers to how easily users can locate and access the features and functionalities of a mobile application. It maps directly to navigability, information architecture, and learnability, all of which are critical dimensions in HCI frameworks. Nielsen and Molich (1990), showed “visibility of system status” and “recognition over recall”, both of which underpin findability. Visibility and affordance as key principles of intuitive design (Norman, 2013). This aspect is critical in enhancing user satisfaction and ultimately influences the intention to use mobile banking services (Sudirjo et al., 2024). The impact of findability on user intention is further supported by research indicating that user satisfaction is a critical determinant of continued use of mobile banking applications. Users who find it easy to locate and utilize the features of a mobile banking app are more likely to report higher levels of satisfaction, which in turn influences their intention to continue using the service (Sampaio et al., 2017; Sharma, 2024; Sun et al., 2017). This relationship underscores the importance of designing mobile banking applications with a focus on findability, as these elements are

integral to fostering a positive user experience. The findings from various studies suggest that the integration of user feedback into the design and development of mobile banking applications can significantly enhance findability and overall user satisfaction. By actively engaging users in the design process and incorporating their feedback, banks can create applications that are more aligned with user expectations, thereby improving findability and increasing the likelihood of adoption (Alhejji et al., 2022; Sulistiyani et al., 2024). Accordingly, it is proposed that:

H4: Findability significantly impacts users' intention to use mobile applications in State Banks in Sri Lanka

Figure 01 shows the Conceptual Framework. There are four independent variables and one dependent variable. Arrows show the relationship and influence of independent variables on the dependent variable.

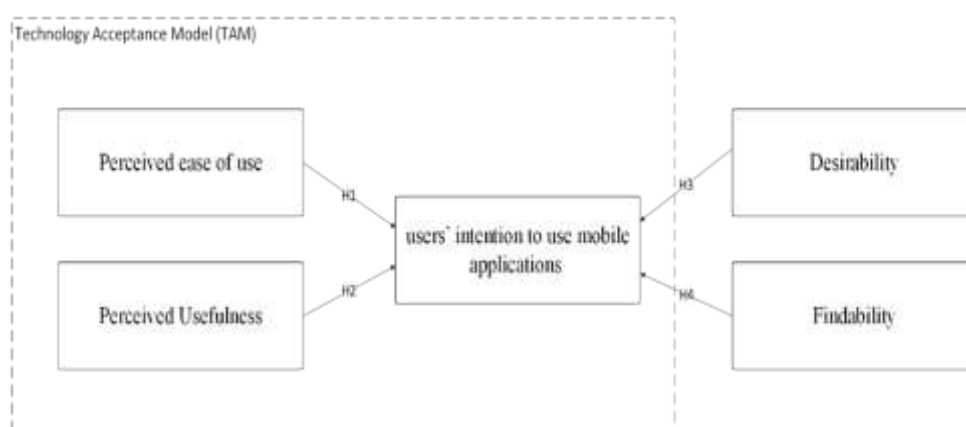


Figure 01. Conceptual Framework

3. Methodology

3.1 Research Approach, population, and sample

This study adopts a post-positivist epistemological stance, which aligns with a quantitative research methodology. Post-positivism emphasizes systematic observation, empirical testing, and the development of hypotheses grounded in existing theories. The research approach is deductive and explanatory, as it seeks to test hypotheses regarding the effects of HCI on users' intention to use mobile banking applications in state banks. Hypotheses were developed based on a robust review of the literature and tested empirically through the collection of quantitative data.

All users of the mobile banking apps provided by Sri Lankan state banks represent the study's population. These applications serve a wide range of users, including people from various age groups, occupations, and geographical locations, since the state banking industry provides services to a sizable section of the populace. Industry data indicates that there are roughly 2.48 million active users of mobile banking services across 718 Colombo district branches in Sri Lanka (Central Bank of Sri Lanka, 2023). This broad population ensures that the study reflects a wide array of user behaviors and experiences with mobile banking applications. Given the large population size, a representative sample was drawn using

judgmental (purposive) sampling techniques. This method was used to ensure the inclusion of experienced users of mobile banking applications from Sri Lankan state banks, but the method introduces potential bias (Etikan, 2016; Tongco, 2007). Respondents may not represent the full spectrum of mobile banking users, especially those who are less engaged or less technologically inclined. This limitation restricts the generalizability of findings beyond the specific context of urban, digitally literate users in the Colombo district. However, given the study's focus on understanding HCI-related user perceptions within active user segments, this sampling strategy was considered appropriate for exploratory purposes (Palinkas et al., 2015). Future studies should consider employing probabilistic or stratified sampling techniques to enhance external validity and represent broader user populations across regions.

The required number of participants was determined using a 95% confidence level and a 5% margin of error, resulting in a target sample of 385 respondents. The study sent 400 questionnaires to users of mobile banking applications in Colombo, Sri Lanka's commercial center and location of most state bank branches, in order to guarantee sufficient representation and reduce response biases. The individual user of mobile banking apps serves as the study's unit of analysis. Data collection focused on gathering responses from individuals who actively use these applications to perform financial transactions, such as account inquiries, bill payments, and fund transfers.

3.2 Questionnaire Development

In order to collect demographic data and evaluate the study variables using the operationalization of constructs, the questionnaire was created. All variables were measured using multi-item reflective indicators using a 5-point Likert scale from 1 (meaning "strongly disagree") to 5 (meaning "strongly agree"). In order to ensure relevance to the context of mobile banking applications, the items for these constructs were modified from well-established literature and tailored to the study's goals.

The TAM was selected as the theoretical foundation due to its proven effectiveness in explaining user behavior and technology adoption across digital platforms. Although TAM originated in information systems research, its constructs, perceived usefulness and ease of use have been widely adapted in HCI studies to evaluate user experience and interaction quality (Moon & Kim, 2001a; Rauniar et al., 2014). Furthermore, recent HCI research integrates TAM with user-centered design principles to assess how interface-related factors affect user acceptance and sustained interaction (Kaewkitipong et al., 2022). In this study, TAM is extended to include two key HCI-related constructs- desirability and findability, allowing for a more comprehensive evaluation of the behavioral intention to continue using mobile banking applications.

The measured constructs included perceived ease of use, usefulness, desirability, findability, and users' intention to use mobile applications. Items for these constructs were developed based on prior studies in human-computer interaction, user experience, and technology acceptance, with references such as Perlman (2021), providing a basis for adaptation. Each variable was operationalized with multiple indicators to comprehensively capture the intended dimensions. For instance, "perceived ease of use" included items assessing users' ability to navigate and conduct transactions easily, while "desirability" focused on aesthetic appeal and engagement with the application.

The questionnaire's development followed a two-step validation process to ensure its reliability and validity. First, the face validity was established through a review by academic

experts, who evaluated the clarity and relevance of the items. Second, a pilot test was conducted with a subset of mobile banking app users to assess the questionnaire's usability and alignment with the study's objectives. This process ensured the content and construct validity of the questionnaire, guaranteeing its appropriateness and accessibility for the intended respondents.

3.3 Data Collection

Data collection was conducted online using a Google Form to efficiently gather responses from users of mobile banking applications in Sri Lanka. The survey began with initial filtering questions to ensure the suitability of respondents for the study, such as: "Do you currently use mobile banking applications provided by state banks in Sri Lanka?" and "Have you conducted a transaction using a mobile banking application in the past three months?" These questions helped identify active users of mobile banking services. The questionnaire was carefully designed to include a manageable number of questions, minimizing respondent fatigue while ensuring comprehensive data collection (Podsakoff et al., 2003). The survey link was disseminated via email and social media platforms, targeting potential respondents through networks of state bank customers and promotional efforts within the Colombo district, a major hub of mobile banking activity. The data collection process spanned two weeks, during which several reminders and follow-ups were issued to encourage participation. In total, 400 responses were received, out of which 385 were deemed usable after data validation checks. The sample distribution reflected diverse demographics and fairly represented the population, encompassing a range of age groups and occupations of mobile banking users.

3.4 Data Analysis

The data analysis for this study was conducted using the Statistical Package for Social Sciences (SPSS), a widely recognized tool for statistical analysis. Each questionnaire item was coded for administrative purposes, with variables such as "Ease of Use" labeled as "EOU." Regression analysis was employed to explore relationships between the dependent variable (users' intention to use mobile applications (UI)) and independent variables (ease of use (EOU), perceived usefulness (PU), desirability (DB), and findability (FB)), while t-tests and one-way ANOVA were used to compare means across groups and assess significant differences. The pilot study refined the questionnaire, ensuring reliability and validity through a preliminary test with Sri Lankan mobile banking app users.

4. Results

The gender distribution of the 385 participants in this survey showed that 61.3% of respondents were men and 37.4% were women. 1.3% of respondents made the decision not to reveal their gender. Regarding age, 54.5% of participants were between the ages of 16 and 30, followed by 34% in the 30-45 age group and 11.4% beyond the age of 46. None of the individuals in the 'Other' category was reported to be younger than 15. Based on the district allocation, every participant belonged to the Colombo District, which comprised 100% of the respondents.

Based on Table 01, study's validity can be evaluated using the Kaiser-Meyer-Olkin (KMO) test, Bartlett's test of sphericity, and significance. All of the variables had KMO values between 0.834 and 0.549, meaning that all of the values are greater than 0.5, that the significant values of Bartlett's test of sphericity are below 0.5, and that the requirements of validity are reached. It is also possible to demonstrate statistically that the indicators used to

measure the variables are valid. Additionally, each variable's Cronbach's Alpha value was higher than 0.7, indicating that the variables' internal consistency is at a good level. All variables had Cronbach's alpha values between 0.926 and 0.724. This study used scatter plots to evaluate linear correlations between independent and dependent variables, using a five-point Likert scale to quantify both variables. The figure showed that the independent and dependent variables had a linear relationship.

Table 01. Descriptives and Reliability Statistics

Variable	Mean	Standard Deviation (SD)	Cron. alpha	KMO Value
PU	4.553	0.578	0.724	0.549
EOU	4.220	0.917	0.926	0.834
DB	4.496	0.536	0.745	0.776
FB	3.931	0.693	0.724	0.702
UI	4.941	0.220	0.911	0.758

In the context of human-computer interaction in mobile applications for Sri Lankan state banks, the correlation analysis performed on the variables—Perceived Ease of Use, Perceived Usefulness, Desirability, Findability, and Users' Intention—offers important insights into the relationships among these factors. Table 02 indicates that the results show significant correlations, highlighting how these variables are interconnected. Notably, there is a positive correlation between perceived usefulness and perceived ease of use ($r = 0.465$, $p = 0.000$), supporting the notion that people are more likely to find mobile applications useful if they are simple to use.

Table 02. Correlation Coefficient among Core Variables

Variable	PU	EOU	DB	FB	UI
PU	1				
EOU	0.465**	1			
DB	0.551**	0.461**	1		
FB	0.736**	0.336**	0.402**	1	
UI	-0.032	0.170**	0.192**	-0.078	1

** $p < 0.01$. Correlation is significant at the 0.01 level (2-tailed); $N=385$

Source: Survey Data

Furthermore, Perceived Ease of Use ($r = 0.551$, $p = 0.000$) and Perceived Usefulness ($r = 0.461$, $p = 0.000$) also exhibit a strong positive correlation with Desirability, indicating that users find applications more appealing when they are easy to use and provide useful functionality. Perceived Ease of Use ($r = 0.736$, $p = 0.000$) and Perceived Usefulness ($r = 0.336$, $p = 0.000$) also show a positive correlation with findability, suggesting that users are more likely to view applications as helpful and easy to use when they are easily located within the interface. Users' intention, on the other hand, shows a significant positive correlation with perceived usefulness ($r = 0.170$, $p = 0.001$) and desirability ($r = 0.192$, $p = 0.000$), but a non-significant correlation with perceived ease of use ($r = -0.032$, $p = 0.527$).

A weak negative correlation between "Findability" and "Users' Intention" is indicated by the correlation ($r = -0.078$, $p = .128$), which is not statistically significant at the traditional 5% significance level. This implies that users' intentions to interact with mobile applications in Sri Lankan state banks are significantly shaped by perceived usefulness and desirability, even though perceived ease of use may not have a direct impact. These results highlight how crucial it is to create mobile applications that prioritize not only usability and ease of use but also desirability and findability to improve user experience overall and positively influence user intentions.

Table 03 presents the regression results of the model for the analysis of the effect of human-computer interaction on mobile applications in state banks in Sri Lanka reveals interesting insights.

Table 03. Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.492	0.111		40.550	0.000
PU	0.065	0.022	0.170	2.954	0.003
EOU	-0.040	0.020	-0.166	2.047	0.041
DB	0.103	0.025	0.251	4.118	0.000
FB	-0.036	0.023	-0.113	-1.572	0.117

$R = 0.302a$; $R^2 = 0.091$; Adjusted $R^2 = 0.082$; Std. Error of the Estimate = 0.211.

According to the table, The R-value of 0.302 suggests a weak positive correlation between the predictors (Findability, Perceived usefulness, Desirability, Perceived Ease of Use) and the dependent variable. While the regression model is statistically significant, the explanatory power remains weak, with an R^2 value of 0.091. This indicates that only 9.1% of the variance in users' intention to use mobile applications is explained by the four HCI-related predictors: perceived usefulness, ease of use, desirability, and findability. Such a low value suggests that other influential factors, such as trust, security, personalization, accessibility, or system reliability, may play a more substantial role in determining user behavior. The Adjusted R Square, considering the number of predictors and sample size, is 0.082. The standard error of the estimate is 0.211, reflecting the average distance between observed and predicted values. The change statistics indicate that the predictors collectively contribute significantly to the model, as evidenced by an F change of 9.544 with a p-value less than 0.001. This suggests that the model is statistically significant. However, the overall explanatory power remains relatively modest.

In table 03, the regression analysis examined the relationship between Desirability, Findability, Perceived Usefulness, Perceived Ease of Use, and a dependent variable. Findability displayed a statistically significant negative relationship (Beta = -0.113), suggesting that the dependent variable tends to decrease as the ease of locating information decreases. Perceived Usefulness exhibited the most substantial positive impact (Beta = 0.170), implying that an increase in perceived usefulness corresponds to an increase in the dependent variable. Perceived Ease of Use displayed a statistically significant negative relationship (Beta = -0.166), indicating that the dependent variable tends to decrease as the perceived ease of

utilizing the system decreases. However, Desirability did not demonstrate a statistically significant relationship with the dependent variable in this analysis. Therefore, perceived usefulness appeared to be the most influential factor positively affecting the dependent variable, while perceived ease of use and findability had negative impacts.

5. Discussion

The study examined the impact of HCI factors on users' intention to use mobile applications in Sri Lanka's state banks, focusing on perceived ease of use, perceived usefulness, desirability, and findability. The results provide valuable insights into user perceptions and behaviors in mobile banking, highlighting both significant and non-significant influences. While certain hypotheses were supported by the data, others revealed complexities that underscore the importance of context-specific research in understanding technology acceptance in Sri Lankan State Banks.

The hypothesis related to perceived ease of use (H1) was rejected as the data showed a statistically significant but negative relationship between ease of use and users' intention to use mobile banking applications. This result contradicts the expectations of the TAM and prior findings (Perlman, 2021; Changchit et al., 2020), which commonly demonstrate a positive association between ease of use and behavioral intention. A possible explanation for this unexpected direction is that users of Sri Lankan state bank mobile applications may associate overly simplistic or minimalistic design with a lack of functionality, reliability, or even security, critical concerns in financial technology contexts. In other words, if the interface appears too easy, users may question the depth or robustness of its capabilities. Additionally, in a market where mobile banking has become a routine part of users' lives, ease of use may be considered a baseline expectation, not a value-adding differentiator. Thus, users may instead prioritize advanced functionality, trustworthiness, or aesthetic and emotional satisfaction, reducing the influence of ease of use on continued usage intention. This finding underscores the importance of considering cultural, contextual, and sector-specific nuances in applying traditional technology acceptance constructs.

The hypothesis regarding perceived usefulness (H2) was robustly supported, with significant positive correlations and regression coefficients confirming its strong influence on users' intentions. These findings align with prior studies, such as Chen and Zhou (2016), reinforcing the role of perceived usefulness as a consistent determinant of user behavior across various contexts. The results underscore the importance of designing mobile applications that provide functional and practical value, as this factor is pivotal in driving user engagement and intention within the state banking sector.

The hypothesis addressing desirability (H3) was also confirmed, showing a significant positive relationship with users' intentions. The findings align with prior research, including Perlman (2021), and Moon and Kim (2001), emphasizing the importance of subjective satisfaction and enjoyment in shaping technology adoption. This result highlights the value of aesthetic appeal and emotional engagement in mobile application design, providing actionable insights for improving user experience and enhancing adoption within Sri Lanka's state banks.

The hypothesis concerning findability (H4) was rejected due to a weak and non-significant correlation. This outcome contrasts with some prior studies that emphasize the role of navigability and feature discoverability in influencing technology acceptance (Sudirjo et al., 2024; Sampaio et al., 2017). Most mobile banking applications in Sri Lanka, particularly among state banks, follow similar interface conventions, such as bottom navigation tabs, menu

icons, and standardized service labels. As a result, users may become familiar with app structures after initial exposure, diminishing the influence of findability on continued use. Furthermore, in task-driven environments like banking, users often rely on habitual navigation patterns rather than exploratory behaviour, reducing the perceived importance of easily finding new features. It is also possible that other factors, such as perceived trust, transaction success rate, or data security, are more salient to users in this context. This result implies that while findability is foundational to user experience, its role in predicting ongoing behavioral intention may be reduced once a minimum threshold of usability is met.

In summary, the study's findings provide a nuanced understanding of HCI's role in mobile banking applications within Sri Lanka's state banks. While confirming the significant impact of perceived usefulness and desirability, the rejection of hypotheses for ease of use and findability underscores the complexity of user behavior in this specific context. The results contribute to the broader discourse on technology acceptance, offering valuable insights for researchers, policymakers, and practitioners aiming to enhance digital banking adoption. Future research should explore additional factors and contextual nuances to develop a more comprehensive understanding of user behavior in diverse organizational and regional settings.

5.1 Theoretical and Practical Implications

This study contributes to the theoretical understanding of HCI in mobile banking applications, particularly within the context of Sri Lankan state banks. By focusing on perceived ease of use, perceived usefulness, desirability, and findability, the study aligns with and extends the TAM. It highlights how specific HCI factors, such as desirability and usefulness, influence user behavior, providing empirical evidence that supports the significance of emotional and functional components in technology adoption. The rejection of hypotheses for perceived ease of use and findability adds to the discourse by emphasizing the role of contextual and regional nuances in shaping technology acceptance. This study broadens the theoretical framework of HCI by demonstrating its applicability and limitations in mobile banking within emerging markets, encouraging further exploration of unexamined variables like trust, security, and personalization to refine existing models.

From a practical standpoint, the study offers actionable insights for state banks, mobile app developers, and policymakers in Sri Lanka. The findings underscore the importance of enhancing perceived usefulness and desirability to improve user engagement and intention. Banks and developers should prioritize creating applications with functional value and visually appealing designs to attract and retain users. Addressing usability concerns, particularly those related to ease of navigation and feature findability, is crucial for improving user satisfaction and adoption rates. Policymakers and regulatory bodies can leverage these findings to establish guidelines that promote user-centered design and ensure accessibility. Additionally, the study provides a foundation for app developers to integrate advanced features, such as AI-driven personalization, to meet user expectations and foster loyalty. By adopting a user-centric approach, stakeholders can enhance the digital banking experience, contributing to the broader goal of financial inclusion and digital transformation in Sri Lanka.

6. Conclusion

This study provides a comprehensive analysis of the impact of Human-Computer Interaction HCT factors—perceived ease of use, perceived usefulness, desirability, and findability—on users' intention to use mobile banking applications in Sri Lankan state banks. While perceived usefulness and desirability demonstrated significant positive impacts on user

intentions, perceived ease of use and findability yielded non-significant results, highlighting the complex nature of user behavior in this context. These findings emphasize the importance of usability, functionality, and emotional engagement in mobile banking application design. By offering actionable insights, the study contributes to the ongoing discourse on technology acceptance, providing valuable recommendations for state banks, developers, and policymakers to enhance user experiences and promote digital banking adoption. Limitations, such as the confined scope to state banks and the low explanatory power of the model, underscore the need for broader, more diverse investigations to generalize the findings beyond this specific context.

Future research should explore unexamined factors such as trust, security perceptions, personalization, and social influence to uncover additional determinants of user intention in mobile banking. Qualitative approaches, such as user interviews or ethnographic studies, could provide deeper insights into user behaviors and preferences. Comparative analyses between state and private banks or cross-country studies may reveal cultural and organizational influences on user interactions. Longitudinal studies tracking changes in user behavior over time, usability testing to refine applications, and investigations into ethical and legal implications of data privacy are promising avenues. Additionally, integrating emerging technologies, predictive analytics, and behavioral economics principles could expand the understanding of user behavior in mobile banking, offering holistic insights to further enhance adoption and engagement within the evolving digital banking landscape.

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